

**DEATH**

**CAPITALISM**

**in a world  
of crises**



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**siltala**

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DATA CAPITALISM  
IN A WORLD OF CRISES

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INTRODUCTION:  
*What I have Learned*

*Berlin, 2 March 2020*

Peter Altmaier looks every inch the prince that his status makes him. The imposing figure of the German Federal Minister for Economic Affairs and Energy dominates the scene as I sit with my advisers at the far side of the doughnut-shaped conference room table.

This man is responsible for everything that goes into German economic might: an aggressive industrial policy, an audacious energy transition, strongly state-supported business taxation, generous innovation funding, regulatory control of competition, telecommunications networks, postal services, space technology...

... and the data economy.

Altmaier cheerfully itemises the strategic goals of major European powers. Together with France, a decision has been taken to achieve technological sovereignty for the European Union. The entire data system must be independent of foreign powers, with data retained in the chambers of Europe. The USA should adapt to the needs of the European Union. Altmaier's great passion is the Gaia-X project: a subject of which I know desperately little.

I mumble through the notes of my own speech. While the responses from the civil service are knowledgeable, we have yet to hold a single strategic debate on the data economy within the Government, in my own ministerial team, or even at the Leppävaara Social Democratic Labour Association.

*Barcelona, 28 June 2021*

We squeeze into a tiny conference room at a Barcelona Exhibition and Convention Centre. Spanish Deputy Prime Minister Nadia Calviño makes an impression with her intensity, as does the equally charismatic Secretary of State for Digital Affairs Carme Artigas. These are women who want to achieve results.

Thanks to the pandemic, this year's Mobile World Congress nevertheless remains a mere shadow of its former spectacle. As the only European minister attending, I get VIP treatment everywhere. I make up for the absence of Business Finland at this leading IT event. The main attention-grabber in the entrance lobby is accordingly a giant E-ESTONIA signboard.

Spain is applying the European Union Recovery and Resilience Facility to invest 20 billion euros in digitalisation. Its national Government is refurbishing data transmission networks throughout the country and massively investing in artificial intelligence. Nadia Calviño is looking to Finland for inspiration. I am reduced to muttering to myself that our Ministry of Finance turned down the four million that we requested for necessary investment in cyber security.

*Paris, 4 October 2021*

“DMA, DSA, DGA, DA – what do you want to do?” Cédric O inquires. Dusk is already falling beyond the windows of the colossal Ministry of Economics and Finance building, and I am unable to respond. These abbreviations are the most important legislative initiatives of the European Union in the data sector.

Emmanuel Macron has made history. For the first time, a Head of State has declared that the data economy is one of the most important

issues facing the upcoming EU presidency. “The French Presidency must be a moment of truth for the regulation and accountability of digital platforms,” Macron insists.<sup>1</sup>

It is the job of Secretary of State for the Digital Economy, Cédric O (not a stage name, but a Korean surname) to make this happen. France is seeking to crush the US data giants. A digital services tax in force since 2019 has collected some 350 million euros in annual revenues from MAMAA (Meta, Apple, Microsoft, Amazon and Alphabet/Google) and other large platforms.

Listening to the speeches of my colleagues, I slowly realise that a struggle is going on for management of data and access to data. Data has become the most important economic factor of our times. The market value of the world’s most valuable businesses is based on data.

The data economy has become a theme of technology, trade, and foreign and security policy in large European Union Member States. Government representatives all have the same playbook for every situation.

What the Finns have considered to be merely objective and innocent technical consultation has become a financial interest worth billions of euros to others. Where we have been resolving issues by applying “appropriate and cost-effective methods”, others have pursued a calculatingly crude policy of national interest.

We simply have no data strategy.

WHILE EXCELLENT in all respects, and noting such points as the need to electrify the Laurila-Haparanda railway link and appoint an Animal Welfare Ombudsman in the Finnish provincial town of Seinäjoki, the programme of the Rinne-Marin Government included only a few scattered entries of a general nature concerning data.

Even if we wanted a data strategy, we would not have a unit with the terms of reference required to draft a proposal. Finnish statutes governing digital and data affairs assign competencies across several government departments. The Ministry of Finance is responsible for digitising public services and for data use, including taxation and population data. The Ministry of Economic Affairs and Employment administers business data from trade registers to patents, innovation policy and funding (Business Finland), and artificial intelligence separately. The Data Protection Ombudsman is attached to the Ministry of Justice. The Ministry of Transport and Communications is responsible for digital and data networks and other infrastructure, cyber security and related policy areas.

This decentralisation of data administration has made it impossible to form any kind of overview of the ongoing work of public administration in this field. Punctilious ministries will inevitably engage in duplicate work, with nobody positioned to oversee what important assignments might have been left undone.

The Government programme highlighted the issue of the *Real Time Economy* (RTE). This seeks to ensure that all exchanges are recorded as structured real-time data. In the first place a client would always have a digital receipt. In the same way, public authorities would receive required information and statutory remittances immediately, and without separate notification or supervision. Business accounting would also be automatic, with no annual reporting. Details of Christmas sales at retail outlets or the volume of taxi usage on a particular weekend in terms of times and locations would be immediately available for use. Artificial intelligence could enable forecasts and optimisation of supply and demand, enhancement of services and elimination of waste.

Obviously the transition to such an ambitious system could not be implemented overnight. Even to achieve it within a decade, it was vital to get the preparations swiftly under way. A year and a half of the

Government's term of office had passed before it occurred to me to ask how this project was progressing. Weeks went by before I found that it had got stuck in some government agency due to a failure to secure additional funding of two million euros.

We could not go on like this.

So we negotiated between ministers, Secretaries of State, assistants and Permanent Secretaries before reaching a common understanding. By some miracle, three key managerial positions in digitalisation fell simultaneously vacant in three government departments, providing some relief from the customary demarcation disputes.

I was appointed to serve as the first Chair of the Digital ministerial group that began its work in October 2021, thereafter passing the gavel to the two other ministers. The senior public officials in charge of digitalising the same ministries then formed a DigiOffice to manage the actual preparatory work. The DigiOffice also became a single window service for the world beyond the confines of public administration; even for startup businesses that need to determine the rules that should be followed and the permits that should be secured for their operations.

Even the very first meeting of the ministerial group proved to be an enlightening experience, as for the first time we were shown a slide depicting all known digital and data projects of central government. A total of 74 boxes were arranged in the diagram. So it finally became possible to gain an overview, consider priorities, and notice duplication of functions.

As the DigiOffice and the ministerial group also had to make themselves known to all industry players at this time, we decided to become the first in Europe to prepare the Digital Compass. By the time the project was presented as a parliamentary report in the late autumn of 2022, some one thousand stakeholders had been involved in the process.



The European Union has developed a Digital Decade policy programme, under which each Member State will prepare its own digital compass strategy for ten years. The four points of this compass are skills and participation, infrastructure, the business community and public services. There is more here than fine-sounding speeches. The paper charts the key results to be achieved and the metrics for monitoring them. For example, nearly 87 per cent of people in Finland have acquired basic digital skills, which is enough to maintain clear leadership of the DESI index that compares the digital abilities of EU countries.

Why is it important to be first? While no small country can influence the EU through force and population, it can instead apply the power of *copy and paste*. Everyone who takes the path of least resistance by replicating Finland's programmes will also adopt our values and goals. We shall create consensus.

Indeed we have a lived experience that I hope has not been forgotten. It was the Finns who created the NMT (*Nordisk Mobiltelefon*) and GSM (*Groupe Spécial Mobile*) standards for mobile phones. We benefited immeasurably from these standards. Even now we have our pens at the ready as the 6G standards are drafted.

By thinking first and being proactive, we can influence those who are bigger than we are, whereas merely responding to the agenda set by others will see us erased from the map. I am accordingly grateful to the German, Spanish and French ministers who forced me to rise to this challenge.

Peter Altmaier became a dear friend to our entire family. Coming at the end of 2020, the German Presidency of the European Union coincided with a bad period of the COVID-19 pandemic when it was not possible to arrange any physical meetings at all. Altmaier arranged a virtual dinner party on the eve of one of the remote council meetings, where we gathered around our respective terminals to feast on dishes sent from Germany. Naturally the shipment included

sausages, mini pickles and good red wine, but there were also crisps, pretzels and chocolate sweets that wound up going to my children. For the youngest members of our family, this was enough to turn our virtual host into an eternally popular Uncle Peter.

THOUGH THERE ARE ample opportunities to discuss taxes, pensions, immigrants and public health centre queues when meeting ordinary folk on chilly campaigning days in Hakaniemi Market Square, nobody ever wants to talk about data policy. You might freeze to death waiting for such a question. Even though the collection, application and management of data lies at the heart of all business operations, determines the health of Finland's national economy, and thereby also affects the length of those queues at health centres, this topic never comes up in the public arena. Data is an underpoliticised subject.

And that's why you now have this book. An outline of Finland's data strategy will hopefully begin to take shape in the pages that follow.

I have also noticed an unintentional consistency in my publishing efforts. I tend to delve into themes that have come to determine the conditions of everyone living in the West while remaining far too complex for public debate. That is why I have dealt with globalisation in a TV documentary series, and with financial capitalism in my books of 2009 and 2014. Now it's the turn of data to face the same treatment.

\* \* \*

THE IDEA of this book is very simple: to share what I have learned from my privileged position about the data economy over the past three years.

It has been my honour to serve as Minister of Transport and Communications in the Government of Prime Minister Sanna Marin since December 2019. Everyone knows that the past few years have been special. Little did I know – when announcing to 600 people at the Transport and Communications Forum in March 2020 that my mission was to bring more liberty to people in Finland – that this would be the last large public event for two years, and that in the very same month I would be setting up roadblocks to isolate Uusimaa province from the rest of the country.

And then, just as the COVID-19 restrictions finally began to be lifted, Russia attacked Ukraine. These events that changed our era, the world and Finland influence every page of this account, as I try to come to terms with the new world order, at least to my own satisfaction. The twin crisis caused by the pandemic and the war permeates every line.

While cognisant of the pressure to include this or that new technological miracle as I write, I am not here seeking to provide any kind of overview of technological trends in the early 2020s. I would rather find a solid footing on the inventions of the 1920s or the sensations of the 1820s. Things like how inclusive liberalism, a social market economy and a welfare state can apply technology and the opportunities afforded by massive data streams.

I will inevitably disappoint anyone who was hoping for the latest insight into cryptocurrencies, virtual and augmented reality or the architecture of blockchains. I shall write about what I have learned. And what I haven't learned, I am learning now.

Obviously this is not a voyage of discovery that I have embarked upon alone. I owe a great deal of thanks to the members of my expeditionary team, in which the contributions of Johanna Juselius, Ilkka Hamunen, Matti Sadeniemi and Tino Aalto, and the particular data expertise of Antti Malste, have been influential at various times under the capable leadership of State Secretary Dr. Pilvi Torsti. Once

again, I thank my long-time associate Lauri Finér for providing insights on taxation.

The fun part of a minister's job is that you can invite interesting people to lunch, and they agree to come. I have been pleased to enjoy excellent conversations with such distinguished guests as Taneli Tikka, Ville Peltola, Minna Ruckenstein and Ilkka Kivimäki. I am grateful to Mika Pantzar, Ilkka Halava, Jukka Relander, Heikki Hiilamo and Kim Väisänen of their coffee table wisdom every Sunday after floorball practice. My thanks also go to the *Tietopolitiikka* group, which draws its members from across the spectrum of parliamentary political parties and maintains a strong tradition of MyData activism under the capable leadership of Antti "Jogi" Poikola, and additionally to Marja Konttinen (Decentraland) and Samuli Simojoki in this context. I am greatly indebted in particular to Kristo Lehtonen of the Finnish Innovation Fund (Sitra) and Olli Tiainen (Equilibrium Group) for their valuable comments.

I have also – hopefully in moderation – applied the expertise of the Ministry of Transport and Communications. Current and former key officials in this context include Laura Eiro, Laura Vilkkonen, Maria Rautavirta, Anna Wennäkoski, Taru Rastas, Juhapekka Ristola, and National Cyber Security Director Rauli Paananen. And nothing would ever get done without our capable assistants Riitta Mäkelä and Kirsi Leino-Hidalgo.

Growing up in the shadow of a paper mill, I never imagined that there would ever be any shortage of paper. For reasons of ecology and ergonomics, the list of sources for this book will only be available online at [timoharakka.fi/datacapitalismi](http://timoharakka.fi/datacapitalismi). I really wonder why this is not a common practice for 'popular non-fiction', especially when most sources are digital nowadays and are therefore accessible at the click of a mouse.

While this book is a 60th birthday present to myself, I would like to dedicate it to the women of the family: to my spouse and partner Anu

and to our daughters Saimi and Linnea. Thank you for keeping me sane throughout these difficult times and onerous responsibilities. Thank you for allowing me to be involved in real life with you: in a world of school bus schedules, dance classes, bath bombs and Korean pop music. And not sharing any of my interest in data capitalism.

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## 1. THE ERA OF DATA CAPITALISM

OVER 20 YEARS AGO the international thinkers Manuel Castells and Pekka Himanen discerned three distinct regional models emerging in the global economy: the Asian, the Anglo-American and the Nordic.<sup>1</sup> Following up on this idea, I have suggested that these options in capitalism can be divided according to three modalities of action: to control, to conquer, or to collaborate.<sup>3</sup>

The differences between these three systems are particularly pronounced and prominent in a global economy where data has become a key production factor. One might even argue that they are engaged in a technological cold war as the twin crises arising from the global pandemic and Russia's unjustified invasion sharpens the struggle for control of data between China, the USA and the European Union. The alternative visions are evident all the time. The main uses of data in the modern world are for social control and surveillance, or conquering markets, or creating spaces for sharing and collaborating.

The choice is ours.

### A CAPITALISM OF ALL ERAS

*Ruoholahti, 6 October 2022*

“You must be the first government minister in the world ever to do this,” quips Marja Konttinen in the Ruoholahti auditorium of the Finnish Innovation Fund – Sitra in Helsinki. We are transferring an *NFT* from a Web 3.0 platform to my crypto-wallet, for use by my avatar in the metaverse.

It's no wonder. Web 3.0, crypto-wallet, *NFT*, avatar, metaverse...?

The very subject of this transaction is unfamiliar to the vast majority. The mode of transaction is alien. And both parties to the transaction are complete strangers.

Only a few years ago, cryptocurrencies were a fringe craze, avatars were confined to science fiction films, and nobody had even heard of Non-Fungible Tokens (NFT), meaning tokens that entitle their owner to control digital assets. And there were no Web 3.0 platforms like the Decentraland that Marja now represents.

And trade is booming. People are willing to pay millions for the NFT rights that enable them to “own” these databits. A player of Fortnite can dress up as a banana. The outfit costs 12 dollars. Multiply that by 83 million users and you have a billion dollar market.

What sense can we make of this?

Technology continually evolves, regenerates and changes radically. Unprecedented opportunities are opening up. Crowds gather every week to extol the latest hot invention. But the things that change are not what really interests me. I am more fascinated by what endures. While items traded may change from day to day, there will always be trading. Capitalism prevails.

*Capitalism is a success story.*

Capitalism is literally the greatest success story of all time. It survives and thrives because it adapts and conforms to the needs and opportunities of each era.<sup>4</sup>

It manifests itself at any given time in many different versions, both in liberal democracies and in authoritarian states, with a differing emphasis on production and technology in various cultures and traditions. But it nevertheless retains certain identifying features as an overall package with some kind of market system, accrual of capital, corporate power and private property.

While manifest in many forms, capitalism is structured according to the emerging mode of production or new capital at any given time.

The industrial revolution of the early 19th century changed the world because it was accompanied by the introduction of efficient mechanical inventions and a gradual expansion of production methods from the sphere of hand crafting to the scale of manufacturing. The Fordism of the early 20th century combined standardisation and mass production with the growth of consumer demand, and was further refined in the middle of the century into Japanese efficiency innovations. Cheap labour and multinational production chains enabled through digitalisation revolutionised the commercial principles of manufacturing, and then also of services.

The turn to neoliberalism in the 1980s elevated finance to become the principal force of Anglo-American capitalism. Climate and environmental awareness have subsequently created pressure for sustainable investment, as further boosted by taxonomy, meaning the green classification.

Capitalism is shaped by the institutions and laws of each era, new modes of production and forms of capital, new individual needs and community demands. The beginning of the 21st century is characterised by data capitalism.

#### THE MARKET OF IMAGINATION

Capitalism is indifferent to crises and disasters, to which it is equally prone in prosperous Western countries. It is completely resilient. Even when our planet has become fit only for cockroaches to live in, they will busy themselves in trading on the stock exchange and establishing startups.

Even though the financial crisis of the early 2000s obliterated an estimated 8,000 billion dollars from the world's wealth, the stock markets are still chugging away as before, and public authorities are once again being asked to make concessions to dangerous 'financial innovations' such as cryptocurrencies.



With globalisation coming to an abrupt halt in recent years due to both the COVID-19 crisis and Russian aggression, capital, manufacturing and trade will find new channels.

I believe that the underlying reason for the onward march of capitalism is that we simply cannot conceive of any other kind of societal rationale in the Western world. Capitalism is our reality.<sup>5</sup>

Even though our individual lifestyles, interpersonal relationships and ethical values may not be wholly directed by market doctrine, we are unable to organise communities in any other way than through the agency of the market. We find the ultimate justification for various common goods – such as comprehensive schools – in the economic benefits that they deliver. And the answer to the mental health problems of young adults always comes down to an increase in funding.

So where does that leave us with climate change? Climate change is absolutely a major failure of capitalism: an outcome that economists call an externality that was sidelined in the drive for profit. Living standards in Western industrialised countries have been achieved through massive debt, gambling and fraud, for which future, innocent generations will be held to account.

Even though Finland's largest circulation daily newspaper *Helsingin Sanomat* reported already 50 years ago the the unanimous warnings of natural scientists, global warming was never priced into manufacturing operations and commodity markets.

It was only in 2006 when Sir Nicholas Stern presented a rough estimate of the trillions of euros in losses caused by climate change that politicians and the most watchful businesses began to wake up. That initial estimate was such a rough approximation that Stern doubled it the very next year. The important thing was not that a scientific analysis provided an exact result, but that it was able to express a non-market phenomenon in language that the market –

meaning humankind – could understand. Climate change came at a price. And finally we can act.

It is touching that we believe we can use a market mechanism to resolve a problem that this mechanism caused in the first place. Even more faith is required for such means to be at all credible. Climate change is a complex system whose causal relationships and impacts may be wholly other than were forecast. It is purely a matter of faith to assume that economists can optimise costs and benefits in a way that engages both public and private actors, while those splendid financial innovations are sending the right price signals complete with incentives and insurance arrangements.

Capitalism is quite literally a matter of faith that enjoys universal *credit* only for as long as it remains a common *creed*. This is our collective imagination.

And it may very well be a source of much amusement to people in the 22nd century. They will likely shake their heads at how we busied ourselves with emissions trading, taxonomies and sustainability funding, much as our own generation does at the prediction that “there’s a world market for maybe five computers” made by IBM CEO Thomas Watson in 1943.<sup>6</sup>

At least I hope someone will be laughing.

## DATA AND 17TH CENTURY CAPITAL

Capitalism is a societal order in which private and cumulative ownership of capital determines economic relations, and thereby also affects the conditions of life, human interaction, and our activities in the natural environment more broadly.

The concept of capital comes from the Italian word *caputa*, which actually refers to the head of a cow. An owner of cattle with many such heads controlled the capital. Capital does not necessarily take the

form of money. The boss, or *capo*, is one who wields power, which is always ultimately guaranteed by the ability to employ violence.

Heads were counted in 17th century Sweden as the heads of subjects, because the state was seeking population growth in order to maximise the size of its armed forces. The capital in this case was military power, the ability to employ violence. The census required statistics, meaning demographic data, or as we say nowadays, customer data. Census data could be used to collect taxes to pay for military adventures. Data and taxes are inextricably linked.

A market society at the level of a system only became possible in the mid-19th century when all forms of capital could be converted into money by common measures. This is the key thesis of the 1944 landmark work *The Great Transformation* by the Hungarian-American political economist Karl Polanyi.

Many people consider it more sophisticated to talk about the market economy than capitalism. Capitalism concerns a more profound power structure than mere exchange. It permeates the whole of society and the relationship of people with one another and with other living species. The economic order shapes politics and culture, which in turn create new conditions and opportunities for the economy.

Value in the capitalism of the early 21st century is primarily generated with data.

The era of data capitalism got under way at the end of the last century when the power of computers, the capacity for data communications and the Internet opened up unprecedented opportunities for expansion and efficiency almost at a stroke. Capital moved around the world in microseconds, and manufacturing could be devolved to countries that provided cheap labour or a tax haven, or both.

Digitalisation is the first stage and a necessary condition of data capitalism.

How marvellous that anyone can now browse 19th century Finnish newspapers from their home terminal, with no need to travel to the

National Archives and book time on the microfiche reader. Digitalised information pools can now be browsed as the mood takes us, without bothering to consider how much we really need the information.

Digitalisation has made the collection and processing of information incomparably cheaper and more efficient, because everything on the planet can be converted into electronic numbers (digits) in a format that a computer (calculator) can interpret and transmit to the other side of the world.

The digitalisation of products and services has changed the economic system – so why aren't we talking about digital capitalism?

#### FROM DIGI TO DATA

“Information wants to be free,” declared early internet hippie idealist Stewart Brand in 1984. This has become one of the most widely misunderstood sentences in the online world – just as it is here. Brand was actually thinking about the price of information. The gospel reading in terms of liberty loses much of its force when interpreted correctly as “knowledge seeks to be free *of charge*”.

The characterisation in terms of gratuitousness nevertheless inspired Chris Anderson, the then editor of *Wired* magazine. His 2009 book *Free* notes that information technology is an enabler of exponential growth. As the cost of semiconductors, optical fibre and transmission lines fall at a tremendous rate, prices will tend towards zero and digital products will become free of charge.

Indeed the marginal cost of a digital product, meaning the cost of making each new copy – is zero. If 500 copies of this book are printed, then copy no. 501 will still require the same share of paper and board, printing ink and printing press time as the very first; its transportation will involve costs according to weight, and its warehousing will incur expenses by volume, not to mention the costs of salaries at every stage of the process. It is precisely the unreasonable marginal cost that

determines the economics of publishing printed books: editions go out of print, and certain volumes inevitably become scarce.<sup>7</sup> The digital world rejects any such ideology of scarcity, and with good reason, when an unprecedented abundance is available to us at almost no cost.

Even so, there is no such thing as a free lunch, even in the virtual domain.

Digital services consume natural resources like the plague. We cannot pick billions of terminals like berries from the forest and recycle them with biodegradable refuse. Instead we need mines, factories and hazardous waste processing plants.

Digitalisation increases global electricity consumption, meaning that we should generate electric power in cheap and renewable ways. Even this will still require power stations and a transmission and distribution infrastructure based on iron and concrete. The Finnish Ministry of Transport and Communications has released the world's first climate and environmental strategy for the ICT industry. This publication shows that digital services use 4-10 percent of electric power generated globally, causing between 3 and 5 per cent of total greenhouse gas emissions.<sup>8</sup>

The freedom that Chris Anderson envisioned has yet to materialise. Replacement of physical items by digital products – especially for films and music, and also for the printed word to some extent – has merely altered approaches to monetisation. I still cannot access cultural products for nothing while respecting statutory and copyright restrictions, and payment goes to the distributor as before. The foundations of society do not seem to be crumbling merely because I now make that payment to Spotify, Netflix, Sanoma or Telia instead of paying Warner or Universal.

Nor are unpaid services gratuitous, because instead of money the means of payment has become data itself. If a product is free, then the product becomes the users in person. Their behaviour patterns are

sold to Facebook's advertisers and their locations wind up in the Google map service. And the way in which data from everywhere is collected, combined, used, sold and recycled... this has changed the world.

That's why we are now talking about data capitalism.

#### OUR DATAFIED REALITY

Technological solutions do not foster profound change as a matter of course, and digitalisation has left many operating methods untouched.

While it is quicker to scan a paper invoice as an e-mail attachment than to put it in an envelope to be mailed, the recipient must save the document separately and maybe even print it as hard copy for accounting purposes. Change only happens when the necessary information is forced into structured data of the kind that most online invoicing systems require. The parameters of structure are precisely those limited options - ticks in boxes - that make all collected data formatted and uniform. Any combinations can be run from this dataset for necessary analysis and system optimisation. The largest data masses can nowadays be processed even with imprecise structures when quantity supplants quality. Then AI gets something to chew over for the needs of learning, forecasting and risk assessment.

Another example can be found in the corner of your living room, at least for now. The switch from analogue to digital TV was certainly a technological advance (as well as a major social effort from older generations). But a culturally significant shift nevertheless only occurred when linear TV viewing bound to time and place gave way to freely chosen viewing (VOD, Video on Demand). Digitalised material can be viewed on any platform, but the essential thing is to arrange the software to serve or even anticipate the taste of the viewer - while the service provider modifies its product based on the behavioural data that it collects, and targets advertising at the customer.

We have shifted from digital technology to datafied capitalism.

*Datafication* is a term introduced by Professor Viktor Mayer-Schönberger and journalist Kenneth Cukier in their 2013 classic *Big Data*. It means that all human activity is converted into measurable, formatted data that can be used for many purposes and that can generate new value with information.

Qualities are quantified, meaning that quality is converted into quantity. Researcher Tuukka Lehtiniemi has encapsulated datafication in the idea of creating data *from* everything that is automated, as opposed to mere automation. The converse is also conceivable. Huge volumes of data are revolutionising both business processes and public services. Artificial intelligence in particular is generating unpredictable and unprecedented solutions. Quantity turns into quality.

Everything, absolutely everything, is datafied. And this is valuable.

Humanity consumed about 79 zettabits of data in 2021, with estimates suggesting that this figure will more than double by 2025. Before you Google that prefix, I can tell you that zetta is 10 to the power of 21, or one thousand to the power of seven.

So that is 79 billion terabytes. That's 16 terabytes for each of the world's five billion internet users – an external hard drive of that size will cost you 515 euros at the Gigantti technology megastore in Helsinki.

And in a couple of years, the volume of data would have doubled. Data transfer statistics indicate that cross-border data flows grew more than 100-fold between 2008 and 2020.<sup>9</sup>

#### A MINUTE ON THE GLOBAL NETWORK

Within a single minute, humanity performs 5.7 million Google searches, composes two million Snapchat messages and sends 570,000 tweets, and watches 167 million TikTok videos and 694,000 YouTube

videos and 452,000 Netflix videos. Amazon customers spend USD 283,000.

Every-Single-Minute.<sup>10</sup>

All of these billions and billions of events leave a digital trace, both as individual performances and as the metadata and log entries that describe them. Items collect sensor data. Estimates suggests that there are already five billion IoT-capable (Internet of Things) devices in the world, generating five million terabytes of data every day. God only knows how this information is managed, or what is even done with it.<sup>11</sup>

The resale of data alone, meaning its monetisation, is a billion-dollar business worldwide. Services that collect personal data – meaning social media platforms, online stores and even electronic regular customer cards – trade huge volumes of data with one another that are impossible to trace. Advanced scraping software also combs data from websites to feed into artificial intelligence.

Data exchanges have also been opened in recent years, the largest in the Snowflake and AWS cloud services, as well as Datarade, where at least Amazon customer data can be purchased by anyone.<sup>12</sup>

The value of the global data economy is reckoned in the trillions. The value of the data economy projected for 2025 in the EU region alone (which is dwarfed by the United States and China) is already nearly one trillion euros.<sup>13</sup>

A single minute on global information networks generates USD revenues of 955,517 for Amazon, 848,090 for Apple, 433,014 for Google, 327,823 for Microsoft, 213,628 for Meta/Facebook, and 50,566 for Netflix. That is as much as a million dollars per minute for Amazon.

MAMAA, referring to the leading companies of data capitalism in the form of Meta, Amazon, Microsoft, Apple and Alphabet/Google generated a total profit of 1.4 trillion US dollars in 2021. The five of



them alone could maintain the entire economy of the United Kingdom.<sup>14</sup>

#### TO CONQUER, TO CONTROL, OR TO COLLABORATE?

Collecting, organising, reprocessing, trading, analysing, refining and using data has accordingly become the most important business of humankind. This is not to say that flipping burgers, building houses or running a shipping company is not also good business. But beating the competition is primarily a matter of collecting, organising, reprocessing, trading, analysing, refining and using the data related to making, marketing and selling those burgers.

There is an ongoing global power struggle to control data. A 2020 declaration of the Communist Party of China highlighted data as a production factor of equal importance alongside the traditional factors of finance, land (natural resources) and labour. The red stars of China have risen to rival and even surpass the data giants of Silicon Valley, challenging the Americans in all categories.

Alibaba and JD.com compete fiercely with Amazon as marketplaces. People are using Baidu instead of Google and WeChat instead of Facebook. The Chinese TikTok is crushing Instagram in the battle of messaging and video platforms.<sup>15</sup> Tencent has become a giant in the games industry, and is also the owner of the successful Finnish games company Supercell. After all, the devices have been made in China from the very beginning, and for some time also under their own successful brand names: Huawei, Xiami and Redmi, Lenovo, Oppo.

Technology is not a neutral entity detached from its environment. It is not a natural, but a synthetic phenomenon. Technology tells us about the society whose needs it reflects and creates. I remembered this from a fruitful conversation with Minna Ruckenstein, a professor at the University of Helsinki.

Let's hope I didn't get it completely wrong, because I'm going to call this statement *Ruckenstein's Law*.

And then the manner of applying technology – to control, to conquer, or to collaborate – influences society.

The models of data capitalism compete with one another. The stakeholders in data capitalism compete for power. Who gains possession of the data pools that can be used for feeding machine learning and investing in artificial intelligence? Who can deny access to others? Who possesses the systems that transform the diverse phenomena of life into formatted data that can be organised, modified, combined, exploited and sold at a hard price? And again, who can prevent others from doing this?

Many people have suggested that data is the oil of the 21st century. Is it really?

My answer to this comes in two parts. 1) Yes. 2) No.

## 2 AUTOMOTIVES AND AUTOCRATS

IS DATA the new oil? Yes, it is.

The fossil capitalism that is now enduring protracted death throes was originally based on the internal combustion engine. Its applications in mobility, manufacturing and construction gave rise to a society that was – and remains – dependent on such engines. The companies that controlled oil and internal combustion engines ruled the world.

Data capitalism is a social system in which the endless production and circulation of data is essential. The companies that control data and its applications are ruling the world.

On taking office in 2013, Chinese leader Xi Jinping observed: “The vast ocean of data, just like oil resources during industrialisation, contains immense productive power and opportunities. Whoever controls big data technologies will control the resources for development and have the upper hand.”<sup>16</sup>

The Standard Oil Company owned by John D. Rockefeller was the first giant corporation to emerge as a threat to national government. Its market share of US oil refining and oil product sales at the beginning of the 20th century was around 90 per cent. Found to be abusing its dominant market position, this *trust* (which we would nowadays call a consolidated company) was accordingly broken up into dozens of smaller companies in 1911.

The story of Standard Oil is a textbook example of a company whose success arises initially from its own expertise, but then equally from restricting competition after it achieves power. There are many ways to play this game. If you can afford to undercut prices, then others cannot profit by competing. Any competitor that manages to

take off can be bought out. You may seek to control the entire production chain (what we nowadays call vertical integration), but this has very damaging consequences, as we shall shortly discuss.

The abuses of Standard Oil were so extensive and repeated that the topic of trust busting, meaning the breaking up of giant corporations, became a political fashion.

This gave rise to our modern antitrust laws and to the first antitrust authority: the Federal Trade Commission (FTC). The market must be protected by statutes and regulations so that genuine competition is achieved, innovations flourish and new entrepreneurs can find a foothold.

#### TRUSTS OF DISTRUST

Some 70 years elapsed between the breakup of Standard Oil and the next trust bust. The reasons for dismantling the telecommunications company AT&T in 1984 strongly remind us of the position of our contemporary data giants. As the owner of dozens of local Bell telephone operators, and with a monopoly on long-distance telephone calls, AT&T was the world's most valuable publicly traded company at the time of its breakup. It was the Apple Corporation of its era.

Microsoft in turn narrowly avoided being broken up in 1998. Its power was nevertheless modest by modern standards compared to the contemporary stranglehold of MAMAA.

Meta (Facebook), Apple, Microsoft, Amazon and Alphabet/Google are monsters, each worth more than a trillion US dollars, and the share of their profits in gross national product is in the same category as characterised Standard Oil in its day. MAMAA collectively exceeds 15 per cent of the total value of the S&P index of the 500 largest companies.

The FTC accordingly filed a lawsuit against Facebook for abuse of a dominant market position in December 2020. The Justice Department had sued Google two months before this.

With the stock market value of Amazon standing at 50 times its annual earnings (p/e) even after a price collapse, investors are expecting this company to achieve an even more dominant position than it currently enjoys – squeezing out even higher prices, locking in its customers and stifling all competition.

The pricing power of the major platforms is strong: in an era of high inflation, the 12 per cent post-tax profits of US corporations are greater than at any time since the world wars.

“It’s better to buy than compete,” wrote Mark Zuckerberg to his staff back in 2008.

“Competition is for losers,” declared PayPal founder, billionaire investor and Trumpist financier Peter Thiel. “If you want to create and maintain permanent value, you must work to build a monopoly.”

#### FOUR CHARACTERISTICS

Data capitalism, the dominant form of production and consumption, interaction and social organisation of our era, is traditional capitalism on steroids.

Its megacorporations are more massive, its monopolies more total, its power more irresistible and its efficiency more effective than ever.

This ecology of size is manifest in four characteristics of data capitalism that are leading to an unprecedented concentration of wealth and power.

*In the first place*, growth is exponential and not linear or gradual. As already noted, the marginal costs of digital production tend to zero, meaning that a service can be rapidly scaled up from marginal to mega.

*Secondly*, the network effect of the internet means that the winner takes it all. Whoever gets the masses gets the money.

*Thirdly*, this competition does not seek market leadership, but market closure.

And *fourthly*, it is typical of data capitalism that capital is used to conquer the market and not to generate, still less distribute any profit. This also means in turn that no taxes can be collected to finance public services.

The winner takes it all. And a little more.

### STARVE, SUBDUE OR SWALLOW

At least if we are ready to accept the company's old slogan "Don't be evil" at face value, the Google founders Larry Page and Sergey Brin were only seeking to create an unbeatable search engine. Investors nevertheless complained that the technologically advanced service had no revenue model – which is a new, key concept of data capitalism.

It was not until the turn of the millennium that someone finally realised that the business could be financed by selling data on customer behaviour.

In the four years before the company went public, Google revenues grew by 3,590 per cent after it began collecting user data in payment for searches. Even after inflation, an investment in that initial share issue would have yielded 15,500 per cent by summer 2022.<sup>17</sup>

By trading the user data of billions, Google expanded into e-mail, a browser, street mapping cars, a cloud service and its own operating system. The Android system owned by Google is based on the open source Linux system originally developed by Linus Torvalds which, it must be admitted, had no revenue model.

The expression revenue model is apposite, as it does not refer to revenues generated in the here and now, but only later – after the

world has been conquered. The venture capital investor in a start-up business is particularly interested in how the operation can scale up.

The answer to this question for Spotify or Netflix was: massively. While a single new account costs practically nothing, the 1001st customer brings in the same returns as the one thousandth.

Exponential growth in consumer services requires a large network effect. The customer joins the service, because everyone else is on it too. Social media platforms seek the largest possible user base in order to maximise their sales of behavioural data, even as the customers remain aware only of their own bubble and its limits.

The network effect naturally strives to lock customers into the service. Even though some people switch to another network, leave completely or reduce their visits, it is difficult to function as a citizen in a media-mediated society if you are unhappy in the marketplace where everyone else is gathering.

It is likewise impossible for a new entrepreneur to establish a social medium from scratch. No competition emerges as the network effect closes the market.

The network effect is so crucial that platform businesses will do anything to maintain it. Facebook had to buy Instagram (for a billion dollars in 2012) and WhatsApp (for a whopping 22 billion euros in 2014) in order to dominate social media and build cross-dependence.<sup>18</sup>

Smaller competitors are beaten down through ruthless pillaging. Snapchat user numbers and the stock market value of Snap Inc. plummeted when its very own story function was simultaneously copied to Facebook's four major messaging services. The CEO of Instagram even had the audacity to publicly "thank" Snapchat for its great innovation.<sup>19 20</sup>

## A KILL ZONE FOR INNOVATION

The FTC competition authority filed a lawsuit against Facebook for abusing its dominant market position, because Facebook acquires its most threatening competitors and buys smaller companies only to bury their innovations (*buy and bury*) whenever it is unable to regenerate and respond to competition.<sup>21</sup>

Before this federal lawsuit, Facebook had been allowed to buy more than a hundred companies without any opposition. By summer 2021, Apple had swallowed 125 businesses and Amazon 110. Alphabet had consumed more than 260.<sup>22</sup>

The parent company of Google literally eats startups for breakfast, swallowing and digesting them by the hundreds.

Start-ups even refer to the Google *kill zone*, where you get destroyed. One victim of this kill zone was the Finnish Twitter competitor Jaiku, which Google purchased in its second year of operation and then shut down two years later.

Silicon Valley technopreneurs and investors whisper about Google like the mafia. If you are foolish enough to step into Google's most profitable business areas, "they'll make you disappear, they'll bury you" sighs Jeremy Stoppelman, founder of the Yelp peer review service.<sup>23i</sup>

This is what happened to Yelp when Google expanded its Maps service to encompass presentations and evaluations of services that appear on its maps. When I'm looking for directions in a foreign city, Google automatically offers to help me find a nice restaurant in the vicinity.

The most important acquisition of Google is obviously YouTube, which in turn enjoys pride of place in results generated by the search engine. On the other hand, it encourages everyone to upload content – free of charge – to YouTube, whose unparalleled volume makes it an unbeatable media platform.

Travelling the world, I have noticed that taxi drivers swear by the Waze map service. It is said to be much better than Google Maps. So



it stands to reason that Google bought that too. Once again, someone could have supplied a better product than Google, but instead checked out of the competition forever billions richer, while the world remained one innovation poorer.

A study confirms the presence of a similar danger zone around Amazon, Apple and Microsoft. The mere awareness that a new and better service can fall into the clutches of a giant corporation already curbs the enthusiasm of application developers to stick with a newcomer's platform, while dampening the interest of venture capital investors.<sup>24</sup>

The *kill zone* phenomenon is amplified by the fact that startup entrepreneurs and venture capital investors are in turn seeking an exit that enables them to cash in quickly. The imperative is to grow from initial financing to sell-out in the shortest possible time. This almost forces you to grow explosively and conquer the market ruthlessly.

For all the talk of innovations, they are often just a nuisance in terms of concentrating data power. The strong will simply steal them.

If the world were truly a fair place that rewarded the kind of originality and creativity that is a blessing to humanity, then Linus Torvalds would be the richest and most powerful person on the planet.

But it isn't.

#### WORLD DOMINATION AT ANY PRICE

There is one final distinctive feature that differentiates data capitalism from traditional capitalism. The purpose is not to make profits, but to conquer the world. And so we invite Tim Wu and Lina Khan to take the stage.

Both are involved in the administration of US President Joe Biden, and both set pulses racing in Silicon Valley. Tim Wu is a technology adviser and Lina Khan is Chair of the Federal Trade Commission

FTC. Both are both professors of business law at Columbia University, leading antitrust activists, and sworn enemies of digital giants.

Fifty-year-old Tim Wu is a successful author, whose work *Master Switch* already showed in 2010 how the anarchist zeal of Apple and its partners froze when they achieved positions of power. Their operations then began applying the brakes to technological progress and economic growth. Just like Standard Oil back in the day.

Does the competition legislation inherited from 1911 apply at all to a company that does not seek to make a profit for its owners? Does the model of regulatory market control apply to Amazon, which has not paid any dividends since it was founded in 1994, but has instead ploughed all profits back into the company to ensure and accelerate its global conquest?

This was the question that Lina Khan already asked as an up-and-coming young lawyer at Yale University in 2017 – and she answered it with a firm *no*.<sup>25</sup>

Dominant market position lawsuits seek to show that a corporation has caused harm to the consumer by restricting competition, because prices have become needlessly high. Such narrow evidence overlooks other forms of long-term damage to consumer interests. Trading platforms like Amazon can manipulate sales through unreasonable contract terms, commissions, and even copycat products of their own.

As the function of a company in traditional capitalism is to generate a profit that can be paid out to owners, the courts are generally unwilling to accept that companies will sell at loss-making prices. The business model in data capitalism does not adhere to this pattern. Financiers will even tolerate losses (and non-existent dividends) for years, as long as the company channels its funds into conquering the market - literally at any price. This is how Uber and Airbnb have crushed local operators, one after another.

Heavily capitalised businesses that are focused on aggressive growth conquer the market with predatory prices that starve out the compet-

ition. Leaked details about the operations of Uber indicate that the same aggressive approach can be brought to bear in order to modify the legislation of many countries in ways that serve the needs of this company. Even in Finland, some naïve politicians have been encouraged to push for “innovation” and “disruption”, though this comes at the cost of sacrificing domestic jobs on an altar of world conquest erected by Silicon Valley capital investors.

### MOVE FAST AND BREAK THINGS

*Disruption* is a magic mantra that Silicon Valley keeps repeating: it’s the language of breaking the mould. Data geniuses invent applications that serve customers much more efficiently than traditional, even centuries-old ways of working. “Move fast and break things” was the demand that the young Zuckerberg issued to his colleagues at Facebook.<sup>26</sup>

It is essential for creative destruction to shake up closed industries, cartels and gentlemen’s clubs, but technological innovations still do not bring better or more versatile services if they are backed by concentrated data capital. The joy is fleeting if a national monopoly is merely replaced by a transnational monopoly.

The most effective tactic for conquering at a loss is *blitzscaling*. A monopoly produced by explosive growth is a natural outcome of data capitalism. It is the rule, not the exception. The term was developed by Reid Hoffman, who initially created PayPal with the aforementioned Peter Thiel, and then later LinkedIn – which was in turn swallowed by Microsoft for USD 26 billion. This growth spurt is accordingly an important element in the culture of exiting.

This is also how the Finnish food delivery service Wolt won a dominant position in its chosen cities, until it was sold abroad. While the company made an operating loss of EUR 182 million in 2021 (30 per cent of turnover), its value at the time of sale was higher than the

price paid by Microsoft for the entire Nokia mobile phone business in 2013.

Data capitalism interprets losses as future gains. Century-old national taxation systems have no idea how to manage under global conditions, and they fail to understand the first thing about the rationale of transnational platform competition. Losses are worth making, because they are all deductible from the taxation of billions in profit from future market conquest.

A skilled financier can keep the tax collector completely at bay. This pleases investors, who do not want to see their businesses paying for the services of society that are in any case intended for losers and layabouts.

On the other hand, it is bad news for the politician who should be concerned about financing those very services. We shall return to this theme in chapter 7. Taxation has been unable to reform, or to redress growing global inequality in the era of globalisation and datafication.

#### THE POWER OF FORCED COMPETITION

What can we do? Already seeking some correction to the distortions of data power in 2018, *The Economist* magazine listed four options.

The first was to break up major corporations. This might not prove possible, due to the fragmented character of US politics. The second option was for society to regulate the sector as a public utility, much as the Finnish Government has imposed a universal service obligation on telecom operators. The state-guaranteed connection of 5 MBit/s is slower than the cheapest commercial internet speed that is now available. Data socialism is not the strongest competitor to data capitalism.

The third option is for customers to organise into consumer communities, as in the last century. Reliable intermediary services, meaning data operators, may also take charge of using the personal data of an individual user, thereby strengthening the power of the individual

over corporations. We shall return to the promising prospects of data activism later. Only in 2022 will this begin to enjoy tools from EU legislation that still did not exist four years earlier.

The fourth solution is forced competition. Contrary to the creed of market believers, the only thing that guarantees competition is the strong grip of a national government. Takeovers and mergers will be scrutinised. Restrictive ground rules will be established, with hefty sanctions imposed for breaking them.

We have decades of experience of forced competition. The economic success of Germany in the latter half of the 20th century was based on a strict state-led market ideology known as *ordoliberalism*. Small wonder that it also became a direction firmly backed by the European Union.<sup>27</sup>

The key individual in all of this is Margrethe Vestager from Denmark, who was Commissioner for Competition in the Juncker Commission (2014-2019). Promoted to Vice President in the von der Leyen Commission, she also secured the digital development portfolio.

It was not possible to tackle the tax avoidance of multinational corporations through international treaties, nor could anything be done about tax competition within the EU due to the unanimity requirement. The Commission then resourcefully decided to invoke state aid rules. When tax havens like Luxembourg, Ireland and the Netherlands offer tax breaks to foreign companies, they rely on prohibited state aid that distorts competition.

Vestager's team ordered Apple to pay EUR 13 billion in compensation to the Irish state, which politely declined the additional income. Though this judgement was later overturned, the Commission remains undeterred.

Once again, taxes and data overlap. And again this is no small wonder. The Gospel Christmas begins when Emperor Augustus "orders the whole world to be taxed". Everyone has to go to their own

city for the census, which amounts to a collection of fundamental data for the state, meaning statistics.

The European Union Directorate-General for Competition then delved into the business practices of platform services, operating systems and application stores. In groundbreaking manner, it declared that the data business is completely different from other commercial operations, recognising that one of its characteristics is to drift towards monopolies and oligopolies. Concentrations are the rule, not the exception. This means that stronger measures must be applied in this sector.

The EU authorities were not satisfied with a narrow definition of competition, whereby the price damage suffered by consumers had to be proven, holding instead that the potential for causing harm constituted sufficient basis for investigation and potential litigation targeting data businesses. While the ways in which customers may have to commit to platforms do not immediately appear to involve high prices, wriggling out of such commitments would cause unreasonable losses.

The European Commission imposed the largest fines in history on Google under competition law during the 2010s, totalling more than EUR 8 billion. It fined Google EUR 2.4 billion in 2017 for favouring its own products in search engine results, then fined it EUR 4.3 billion in the following year for also having to accept the Google search engine and the Chrome browser in the default Play Store settings on Android phones, and then EUR 1.5 billion in 2019 for abuses in online advertising.<sup>28 29 30 31</sup>

As of autumn 2022, the General Court of the European Union has upheld fines falling just short of EUR six billion. This sum is exactly equal to one month of Alphabet annualised operating profit according to the company's official figures from summer 2022.<sup>32</sup>

The British and Dutch publishers' associations are also planning a lawsuit due to Google advertising practices, pursuing a claim for damages that could reach EUR 25 billion.<sup>33</sup>

Dozens of lawsuits and fines that run into the billions do not seem to be adequate deterrents – particularly when proceedings in successive legal instances can take a decade and giant corporations have deep pockets when it comes to retaining legal counsel.<sup>34</sup>

In the meantime, competitors have already been devoured and buried, with consumers losing some major innovations or options. A lost option resembles an extinct species, and we may readily speak of accelerating loss of biodiversity in the digital world.<sup>35</sup>

Fines merely seem to be a normal operating cost for data platforms that only modify their conduct when forced to do so. The competition legislation of industrial societies must quite literally be updated for the digital age. This was probably the Commission's conclusion and its motive for invoking tougher measures.

#### THE BRUSSELS EFFECT

The relationship between Europe and Silicon Valley has been difficult, and tinged with resentment and envy.

The French take it personally that Anglo-American digital services have completely supplanted the French francophone media. After all, they already had Minitel way back in the 1980s! The Germans are galled not to be rulers of the internet, but among the ruled.

The EU only began to grasp data capitalism when it finally set about preparing its own data regulation. It took effect in 2018 as the General Data Protection Regulation (GDPR).

This groundbreaking statute gives users the right to ask an operator what information has been collected about them and for what purpose, to correct any mistaken information, to object to the collection

and sharing of personal information, and to demand its deletion. It is the GDPR that is responsible for those wretched check boxes on every web page. On the other hand, it is almost revolutionary that the information can be transferred elsewhere if you wish – even though many people still do not know how to use portability and instead remain trapped and at the mercy of the intermediary.<sup>36</sup>

The GDPR finally put the European Union on the global internet map. In the meantime, Anglo-Americans grumble sourly that the EU is unable to innovate anything other than bureaucracy. Despite this, all of the largest data corporations must comply with European data protection statutes if they wish to operate in a market of 450 million customers with substantial purchasing power on average.

The GDPR may have even increased the power of giant platforms. Responsibility for data protection has been left to the personal choice of users who lack the power to manage their data on hundreds of digital services. Giant corporations are free to own the data that they receive, based on a putatively bilateral “agreement”. The competitive status of small businesses is hamstrung by the problem of burgeoning administration.

We shall come back to this in the next chapter.

The statute has also been implemented in highly diverging ways in various Member States. In Ireland, where both Meta and Google happen to have their EU headquarters, the processing times for national data protection complaints are stalled by severe congestion, and there seem to be no penalties for infringement.<sup>37</sup> Luxembourg, where European Amazon happens to be based, is similarly easygoing. By contrast, data protection complaints in France are handled by an independent authority that intervenes so readily in cases of infringement that one local politician has claimed that even banking transactions are becoming impossible. Just like taxation, data control divides Member States, and for largely the same reasons.



The meaning of the data protection regulation does not ultimately lie in whether it truly protects internet users, but in the fact that the EU finally took the initiative. It went from passenger to pilot, from pathetic to policing.

Finnish professor Anu Bradford coined the idea of the *Brussels Effect* back in 2012 to describe the ability of the EU to lead the world in data regulation. A decade later, this is beginning to come true.

The appetite seemed to grow after the GDPR. And with competition investigations and court hearings initiated by the Commission becoming everyday occurrences, the need arose for a separate regulatory framework for the data economy. Instead of starting every data platform investigation from scratch and justifying it with ill-suited state aid rules, it would be more meaningful to apply our own legislation.

This work brought about a veritable tsunami in the early 2020s, with DMA, DSA, DGA, DA and AIA all completed almost simultaneously.

The first of these acronyms will be discussed shortly, followed by DSA on pages 124-125 and 131-132, DGA and DA on pages 141-143, and AIA on pages 135-136.

#### DMA: DISCIPLINING THE GATEKEEPERS

Negotiations for the Digital Markets Act (DMA) were already completed during the 2022 French Presidency, which must have been a pleasing assignment for Cédric O.

While EU legislation does not enable the breaking up of enterprises, the DMA gives the Commission new tools to prevent anti-competitive practices from emerging. Its targets are the largest gatekeeper businesses, such as the Google search engine.

The minimum limits on turnover (EUR 7.5 billion annually), market value (EUR 75 billion) and number of users (45 million people per month and 10,000 business users in the EU area) that define a gatekeeper just happen to cover the MAMAA companies.<sup>38</sup>

Gatekeepers are not permitted to favour their own products or services at the expense of a competitor. Competitors must be free to offer their applications via the platform of a major corporation, and their services via the applications of such a corporation. The EU is authorised to separate such commercially interlinked services by applying structural remedies if this is not achieved. Naturally any such separation of, say, Google and Chrome, or Apple's App Store and iOS would require repeated offences, so it remains to be seen whether this particular crowbar will ever be applied to prise them apart.

The DMA addresses unreasonable app store terms and conditions. Enterprises must also have access to the data generated when they use a gatekeeper's online platform.

Users must not be prevented from accessing services outside the platform, nor from removing pre-installed software and applications. Efforts will also be made to restrict targeted advertising.

Infringements may trigger brutal sanctions, with fines amounting to ten per cent of annual turnover, which could run into billions or even tens of billions for such corporations.

The influence of Brussels also reaches across the Channel, Brexit notwithstanding.

The UK Competition and Markets Authority (CMA) collaborates effectively with the EU to combat the concentration of data power. It has not allowed Meta to buy Giphy (a producer of GIF mini-animations), and it has opposed the intentions of Microsoft to strengthen its gaming empire by taking over Activision.

The CMA has also managed to supervise the privacy practices of Google. It is currently seeking to dismantle the Google-Apple

duopoly in mobile browsers, and to address the unfair practices of the AppStore.<sup>39 40</sup>

Control of competition is moving to a new level. Control of the horizontal market 1911-style, meaning mutual competition of similar products or services at the same value chain level, no longer suffices. We now need to tackle vertical integration. As a “vertical” entity, a corporation seeks to control the entire chain from raw materials to manufacturing, sales and use, and ownership of a brand and intangible assets.

It is this vertical character that embodies the greatest danger.

#### THE POWER LIES IN THE VERTICAL

AT&T enjoyed a near-monopoly as a telephone operator in 1974. In the face of necessity, it abandoned the *horizontal* and chose the *vertical*.

In other words, the corporation gave up its horizontal competitive edge in relation to other telecommunications businesses, transferring its telephone operator functions to seven separate companies under new ownership. This correspondingly reinforced vertical integration of the corporation, giving it control of the entire value chain from cables to telephone exchanges. Every AT&T telephone line was connected to a Western Electric telephone receiver, which was owned by the corporation. The group also owned the Yellow Pages that customers needed in day-to-day business. The US Federal Government allowed this. The company even secured permission to expand its hardware manufacturing to computers.

While AT&T had the right idea, its implementation was a complete failure. Western Electric became Lucent, then Alcatel-Lucent, and finally part of Nokia Corporation (meaning that Nokia runs the famous Bell Labs nowadays). Computer manufacturing never got off the ground.

This was a stroke of good fortune, as analysis by Tim Wu suggests that the vertical breakout of AT&T unleashed an avalanche of innovation. Telephone answering machines proliferated when this giant corporation was no longer attending and insisting on a cut of the proceeds. Automated telephone exchanges and competing service providers began to emerge and thrive.<sup>41</sup>

The dissolution of AT&T required Bell Labs to release about 8,000 patents, making them available to the public free of charge.<sup>42</sup> Much as the collapse of Nokia Corporation three decades later also had a silver lining when the redundancies of tens of thousands of employees were accompanied by Nokia releasing a swath of unused patents for more than a thousand startups to utilise. The ensuing success of the world's leading radio technology innovation community, 6G Flagship in Oulu, even gives cause to wonder whether the breakup of Nokia may have ultimately generated more added value than was lost.<sup>43</sup>

We now once again find ourselves facing a dearth of options. The power of the dominant platforms determines “what opportunities and competition exist in the application ecosystem,” remarked Riitta Katila, Professor of Management Science and Engineering at Stanford University in the Finnish business newspaper *Kauppalehti* (12 September 2022). “We have done too good a job in creating technology that dominates the ecosystem.”

The most avaricious vertical integrator of all has been Apple, setting up walls in its services, trapping users in incompatible services, and enslaving subcontractors to its App Store with a 30 per cent commission. Apple seeks to control everything from phone manufacturing to the AirPods used to listen to the Apple Music service, which is integrated into the iPhone operating system. Though just now characterised as an “ecosystem”, I personally prefer to think of this prepackaged entity as a *monoculture*.<sup>44</sup>

The most irritating manifestation of the Apple monoculture must be the Lightning connector that simply does not fit devices made by any

other company. It was accordingly of great symbolic importance that the European Union ordered the entire world to use the USB-C connector.<sup>45</sup>

Apple made its breakthrough in the early 1980s with a famous TV commercial directed by Ridley Scott, in which a young woman broke through a grey and despondent crowd and smashed a Big Brother image with a sledgehammer. The upcoming Macintosh computer would make sure that 1984 would not resemble the 1984 of George Orwell, Apple declared. “The degree of irony in this brief video clip has grown by leaps and bounds over the course of 38 years,” observed Niclas Storås in the leading Finnish daily newspaper *Helsingin Sanomat* (8 September 2022). Nowadays Apple itself has become the uniform culture described by Orwell, in which a Ministry of Truth stifles creativity and a Ministry of Love destroys freedom. It would seem that only Victory Gin should be served at Apple’s renowned product launches, where smaller and smaller ideas are always presented on a larger and larger scale.

The vertical of Amazon is dangerous in another way, ruthlessly exploiting its dual role as a platform operator and as a vendor on its own platform. “This dual role... enables a platform to exploit information collected on companies using its services to undermine them as competitors.” Lina Khan explains.<sup>46</sup>

A lawsuit filed by the Washington DC District Attorney contends that Amazon has collected data on the most popular products in its marketplace and then offered its own cheaper private label products instead. The European Union is also investigating an abuse of market position in the form of favouring the products of a platform on that platform.

I may be labouring the point too strongly in relation to giant corporations. Even a smaller business can enjoy a dominant position in a narrower vertical dimension. The Finnish *oikotie.fi* and *tori.fi* platforms can control and constrain competition, take possession of data and

reinforce their own network influence. Did we impose such a high turnover limit under the Digital Markets Act in order to rein in the Americans, only to see the decline of competition in our domestic market.<sup>47</sup>

#### CHINA CRACKS DOWN ON ITS DATA GIANTS

Trust busting nevertheless remains alive and well elsewhere. Despite the failings of the US and Europe, giant corporations have been successfully crushed in China, where party leader Xi Jinping has launched a forthright crackdown on technology companies.

When Alibaba founder Jack Ma erred by criticising the administration in autumn 2020, the Chinese Government responded by abruptly revoking the stock exchange listing of the group's digital payment company Ant Group.<sup>ii</sup> That share issue alone would have been the largest in the world, and with a valuation of USD 315 billion Ant Group would have become the world's largest financial institution and the fifth most valuable company in the Far East.<sup>49</sup>

Alibaba was then slapped with a fine of USD 2.8 billion on grounds that show a remarkable sense of humour from the Chinese Communist Party: the offence was distorting competition. Though managing to complete its share issue, the ride-hailing service Didi was massively convicted in an action for misuse of personal data and espionage. This similarly displays a certain dark sense of humour in a surveillance state.<sup>50</sup>

The slow pace of legal proceedings that compromises US and European competition control is not an obstacle in China, where the Cyberspace Administration of China (CAC) sprinkles random summary judgements like confetti. Exercising the broadest powers in the world with passionate enthusiasm, it has finally put a stop to the long-sustained pampering of techno-giants.

One by one, the major data corporations have seen sense in revoking their foreign IPOs, despite associated costs amounting to some USD two billion.

None of this bothers the Chinese Government. *Au contraire*.

The rapid growth and global conquest of Silicon Valley data companies despite heavy losses was possible when money was cheap and readily available everywhere in the West following the financial crisis. With costs rising due to the war in Ukraine, investors are beginning to demand returns on their outlay. The market values of the data giants have accordingly fallen sharply, with some smaller operators folding completely.

That does not worry Beijing. China views the global economy as a zero-sum game in which every American setback is a win for the Chinese. The data giants of China neither need to, nor even should seek astronomical returns. The lower their stock market value falls, the less major corporations threaten Party autocracy.

The Communist Party remained quite indifferent, even though the instability that it created caused a drop of USD 150 billion in the stock prices of Chinese IT giants even before the downturn of spring 2022. (At the same time the MAMAA corporations, heedless of all official investigations and lawsuits, increased their value by USD 1.5 trillion.)<sup>51</sup>

Beijing has actually sought conditions in which international investors are more dependent on Chinese companies than those companies are on foreign capital. The relative power of China is growing even further. By this reasoning, the same foreign fatcats suffer most even when Chinese corporations are threatened with delisting from US stock exchanges due to their failure to provide reports required by financial supervision authorities.

And where Steve Jobs and Elon Musk are American superheroes, President Xi incites the media and the masses to demonise and intimidate the best business minds in China. Mindful of the fate of Jack

Ma, the founders of Pinduoduo and ByteDance (TikTok) also announced that they would completely withdraw from public life.

The Chinese Government is even able to limit game playing by minors to three hours a week – which probably gives we parents of school-age children pause to consider whether there may be some upside to communism. On a less positive note, the administration is coercing gaming companies (doubtlessly also including Tencent-owned Supercell) to photograph and recognise the faces of users as a way of ensuring enforcement of this rule.<sup>52</sup>

These purges are part of a Shared Prosperity programme, whereby the Communist Party seeks to direct innovation away from entertainment applications and towards serious technologies that boost productivity, growth and competitiveness.

Popstars and actors were suddenly blacklisted by the Government. The party frowns on drugs and homosexual relations. It was even prophesied that a new cultural revolution might take hold, with indiscriminate persecution and massacres of the kind seen in the late 1960s.<sup>53</sup> Such fears were fuelled by a declaration published in several Party newspapers, boasting that “This change will wash away all the dust. The capital market will no longer be a paradise for capitalists to get rich overnight. The cultural market will no longer be a paradise for sissy-man stars. The news and public opinion will no longer worship Western culture. It is the return of red, of heroes, of hot-bloodedness.”<sup>54</sup>

Some people think the Western world should follow the Chinese example in strictly regulating the data giants. Such a policy would simply not be possible in states governed by the rule of law. It is also worth noting that while Chinese consumers may hold companies to

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<sup>1</sup> Funnily enough, as a teenage “privileged urban bourgeois” at the time, Xi Jinping was exiled to do hard farm work in the remote province of Shaanxi for six years.



account for abuses, they cannot seek remedies against the government or public authorities.

Chinese consumer protection is really state protection, in which companies also bear liabilities of the state and endure the wrath of the people. It is good to channel the spirit of public protest against the capitalists. The largest corporations lack even fleeting protection when the Party can order huge crowds onto the streets to stone corporate headquarters.

#### GOOGLE, CHILD OF EXECUTIVE AUTHORITY

The final irony is that Google and Amazon can thank the US authorities for their success, following the exercise of public power against Microsoft, which was the trust *du jour* in 1998.

Microsoft avoided a breakup only by promising that its operating system would be opened up to web browsers other than Internet Explorer. It's hard to remember that IE was once something more than a museum relic from the dawn of the online world.<sup>55</sup>

So public authorities gave rise to Google.

Public power must rescue capitalism from capitalism in order for new innovative enterprises – as Google was 25 years ago – to make it as far as the starting blocks of competition. Will any more Googles or Amazons emerge in the age of data power?

Even as major corporations harp on about innovation, they do everything in their power to stop it and maintain the status quo. The mythical garages of Silicon Valley - where Messrs Hewlett and Packard worked in the 1950s, Jobs and Wozniak in the 1970s, and Page and Brin in the 1990s - have now been taken over by the Teslas of the oligarchs.

No, data is not the new oil, and data refiners are not oil refiners. Data capitalism is not just a souped-up version of the old capitalism, but something else entirely.

When it comes to big data, we often stress that quantity becomes quality. The results of processing huge volumes of data are not what we expect, and are often unpredictable, surprising, and even inexplicable.

Data capitalism is something else entirely. But what is it?

### 3. DATA AS CAPITAL

Is data the new oil? No.

Is data a critical raw material for the global economy – in the same way that oil has been for the fossil fuel economy over the past century? It is not.

This is a misleading metaphor. We tend to speak of extracting data, suggesting that it is stashed away somewhere, lurking in the depths like oil or some rare mineral, waiting for the prospector. Silicon Valley is conveniently located in the landscape of the 1850s Californian gold rush.

“There is a treasure hunt under way,” enthused Professor Viktor Mayer-Schönberger in 2013. The goal is “insights to be extracted from data and the dormant value that can be unleashed”. And it doesn’t stop there. “It’s not just one treasure. Every single dataset is likely to have some intrinsic, hidden, not yet unearthed value, and the race is on to discover and capture all of it.”<sup>56</sup>

But data is not a natural resource waiting to be gathered. Information flows are the outcome of human activity and human needs. Data measures a person or the environment of a person. Data is actually gathered concerning the physical or mental activity of each individual, meaning things like health information, gene maps, internet use and manufacturing chains. The phones, vehicles, household appliances and other recording devices that people use absorb terabytes of information about us all the time.

Though we often speak of *raw data*, this is really a contradiction in terms. Data is always a record of something, and the recording is not accidental. It doesn’t exist unless it is saved to some medium.<sup>57</sup>

It is not in the nature of data to be owned, at least not in the legal sense. The very origin of the word is in the Latin verb *dare*, meaning something "given" or "donated". To paraphrase Stewart Brand, it is characteristic of data to be free; meaning both gratuitous and liberated, neither owned nor limited.

The difference between data and oil is that data is not a depleting or even a private commodity. Someone always owns oil, and only one party can use it, whereas data may be regarded as a *public good*. It is *non-excludable* and *non-rivalrous*, meaning that it can be used without limit, and its use by one does not deprive another.<sup>58</sup>

The value of data even grows with each new use as it circulates. Data gets better. Five times more data is collected globally than is ever used, so we must ensure that information flows remain open and unobstructed, accessible to everyone everywhere; liberated.<sup>iii</sup>

But this is not the case. A global misunderstanding prevails. Large and small companies alike imagine that the data they acquire is an asset that they do not wish to share for the common good. They even consider it their most valuable asset.

How could we dispel this misunderstanding?

#### PRIVACY UNCONCERN

As was previously made clear, thousands of data transactions occur every second. Of course, all transactions are not equal. Every move I make while socialising on social media is measured and sold. Every commercial website requires you to accept tracking. This is not a negotiation, but something imposed by dictat; not a trade, but a hijacking.

The *Digivalta* (Digipower) report on digital power from the leading Finnish think tank Sitra summarises this exploitation by observing: "The individuals involved in gratuitous products are not customers, but a product that could even be called a modern data proletariat".<sup>59</sup>

One study suggests that it would take 244 hours, or 16 full working weeks plus half of one Saturday, for anyone to actually read through all of the “agreements” that they concluded online over the course of a year. And this study was done 15 years ago.<sup>60 2</sup>

Another report finds that seventy per cent of website customers claim to have read the terms of use, while only one per cent has actually done so.<sup>61</sup>

This means that the agreement concerning personal data is based on a lie. The negotiation is conducted on a “take it or leave it” basis. The problem lies in an imbalance of bargaining power between the individual, meaning the modern data proletariat, and the corporate digital service.

Even so, we remain indifferent to the use and fate of our own data. Nearly everyone allows algorithms to peek into their living rooms, and even into their bedrooms.

I have found two explanations for this lack of concern.

The first is that few people actually realise what data about them is being sold that could enable manipulators to profile a susceptible customer. Even though the GDPR requires data companies to report where they have sold a user’s data, few people ask about their data.

And while clicking to grant consent is quick and involves little thought, tracking down your information is laborious and slow: you have to find the contact point and specify the claims in writing, and then you have to wait and wait.<sup>62</sup>

The Sitra Digivalta investigation disclosed a failure on the part of Google, Facebook and other data giants to comply with the GDPR.<sup>63</sup>

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<sup>2</sup> As the researchers were economists, they also calculated the opportunity cost of the wasted working time. With 3.8 million adults in Finland continually online, the loss to the national economy would be EUR 9.2 billion annually based on hours used and an hourly wage of ten euros. The annual expenditure of the Ministry of Education and Culture is around EUR 7.5 billion.

Fifteen selected influencers from Finland and abroad tried to track down their information. Most were shocked by how extensively, and in what surprising contexts, this consensually obtained data had spread.

Miapetra Kumpula-Natri, member of the European Parliament, who is an activist in matters related to data, discovered that by accepting a cookie on the website of the Gigantti technology megastore, a customer also accepted 231 cookie partners – including the Russian Yandex cookie for a period of ten years. The whereabouts of Kumpula-Natri were also tracked, even though no location information had been provided.

Former EU Commissioner Jyrki Katainen requested personal data from Apple, Google and Zalando in vain.

There may also be another reason for our indifference. It seems that we do not regard our own privacy as something priceless after all. It is not fatally threatened, unless someone hijacks a social media account, hacks into credit information, or steals health records (as occurred at the Vastaamo Psychotherapy Centre). Such tragic events nevertheless remain exceptional.

Data protection inspires us about as much as democracy. It remains something that is nice and self-evident, right up to the moment when the right to criticism or abortion is taken away. Many people do not even take the trouble to vote. Much as few families begin by designing an alarm system when moving to a new home.

A lunchtime conversation with professor Minna Ruckenstein might even make you think that all the fuss about data protection is overblown. As and when technology reflects our society, we will also look to the internet to connect with others and share common ground. People in Finland do not need to continually ensure their own safety and protection in the street or on the computer monitor.

Data protection is a false concern, or at least it distracts us from what is important. We speak of individual rights, when we should be talking about societal power.

#### DATA THIEVING

A fatal misconception has arisen. Even though information is nobody's property, those who possess it consider it their own.

This hijacking of data and power became clear in spring 2020, when the leaders of Western countries sought the help of giant platforms in building COVID-19 alert applications. Google and Apple sulkily declined to release data that they considered to be their own – even though it had been loaned or donated to them. The companies loftily announced that they protect personal data, which of course they also sell freely to paying customers or use in their own “ecosystem”.

So it turned out that even when a global contagious disease emergency arose, supreme policymaking power was not vested in Emmanuel Macron or Sanna Marin, but in big business.

This subversion of power is also illustrated by the fate of Jyrki Katainen in the Digivalta trial. This former Finnish Prime Minister and Vice President of the European Commission has to take pains in requesting information that he had supplied about himself. He receives an extraordinary 172-page profile from the major Finnish retail chain Kesko illustrating the kind of Frankenstein monster that had been created without his knowledge. Weeks and months then pass without Apple, Google and Zalando even bothering to respond to the request from this former statesman. They are holding the data and refusing to release it.

Protection of personal data is also misused to prevent the free flow of data from those who hold it to those who need it.

No amount of contemplating the details of data protection will make digital power relations any fairer. Instead of restrictions and

prohibitions, we must establish duties that liberate and empower. Instead of seeking to restrict access to their own data, users should insist that others may not obstruct its use. Information that has been supplied must be returned to circulation from the silos of major corporations.

Smart new methods will replace the need to pry into private information. *Zero Knowledge Proof (ZKP)* is an increasingly common approach applied in various contracts. It means that only the information required as a minimum for the contract is used, and neither party need disclose personal or any other information that they hold. Anonymisation of datapools is also developing. A *federated artificial intelligence model* yields the desired result without needing source information on the original data.

Companies and society must share data for beneficial uses. Zettabits of data material will nourish universal artificial intelligence and learning systems to increase understanding and promote the common good.

In autumn 2022 Professor Viktor Mayer-Schönberger has a completely different sound on his watch than a decade ago. Data is no longer a conquerable treasure that its finder gets to keep, but common property that has been hijacked by major corporations. In his 2022 book *Access Rules* he laments: “It’s simply foolish to let a few data-rich corporations limit the value and insights society can gain from data.”

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“Data monopolies are theft of progress. Data usage is service to the common good.”<sup>65</sup>

#### FROM ABUNDANCE TO SCARCITY

If data is a non-rivalrous public good that can be limitlessly created and recycled without being taken away from anyone, then why are the data giants fighting such a fierce battle to control it?



Because the basic rule of capitalism is to create scarcity from abundance.

Mainstream economics relies heavily on the theorem of scarcity. Resources are always limited (except those that are externalised for exploitation, but that's another story), meaning that rational choices have to be made (except they're not rational in the traditional sense, but that's also another story).

Profits are made when demand exceeds supply, meaning that there is a scarcity of the desired item. Wealth is generated by creating scarcity.

Money was thought to be a scarce commodity for a long time, but globalisation transported Chinese savings and Saudi oil wealth to the USA and the UK as the gaming chips of the largest financial markets. This financed not only a huge financial bubble, but also many digital innovations that brought down IBM and broke the monopoly of Microsoft.

Even though money has continued to be readily available due to an unprecedented international interest rate stimulus – at least until an inflationary spiral boosted by the war in Ukraine – newcomers remain unable to challenge the data giants. While this is partly because they have grown to be omnipotent, as noted in the previous chapter, the most important reason is nevertheless data itself. It is hard to challenge the established companies in any way because they control the data.

The value of data arises from the fact that it can be combined to create profiles of millions of customers for which advertisers and sellers are ready to pay handsomely. If everyone had huge volumes of data and the tools to process it, then corporations would no longer enjoy their relative edge. This explains why the data holders are unwilling to share what they have accumulated.

Wealth is generated by creating scarcity. Apple created a scarcity of data from rival data giants when giving its customers the option of

limiting the sharing of behavioural data with advertisers in 2021. Many of us were happy to see this, if only out of *schadenfreude*. An embittered Mark Zuckerberg publicly bemoaned the “decreasing data quality” decision that caused Facebook, Snap, Twitter and YouTube to lose an estimated USD 18 billion in revenue, with Meta alone reporting an overnight loss of ten billion.<sup>66</sup>

Estimates suggest that mobile advertising shrank by as much as a quarter. Snap Inc. share prices also fell by a whopping 25 per cent.<sup>67</sup> Great! we all exclaimed. But behind the apparent progress are three factors that are increasing the concentration of data power.

Firstly, Apple did not eliminate tracking out of the goodness of its heart but, as we already discussed, because its revenue model is based not on advertising, but on an enslaving ecosystem. It conquers positions at the expense of competitors. Wealth is generated by creating scarcity.

Secondly, the data rich are getting richer as the data poor get poorer. Big advertisers with big advertising money simply added resources to analytics. “Our strategy has been to embrace the change in paradigm, turn this disruption into an opportunity to grow our business,” a representative of the game company Rovio gleefully announced.<sup>68</sup> The artificial intelligence purchased by the company replaces the missing customer data by reasoning and mathematical modelling, seeking even more effective deep profiling (albeit with poor results, as will be discussed in Chapter 5). At the same time, the sales of thousands of small webshops have collapsed, because they had focused their marketing on Facebook, which lost about half of its user data in the USA.<sup>69</sup>

The third conclusion is that competition is only growing. The autocratic companies or states that seize huge data flows cannot help but seize even larger data flows. They are driven by the data greed imperative.

You can find a good example of the governing principle of data capitalism close at hand. Just check out your nearest home appliance.

#### COLD DATA

Whirlpool filed suit against Samsung and LG in 2017 because the US company believed that competitors were selling refrigerators at dumping prices. What made the Koreans sell so cheaply?

Data.

Whirlpool symbolises Western countries more broadly. We are still living through the previous industrial revolution, in which the features that brought a competitive refrigerator to the market were R&D, quality and value for money. The more reliably it keeps food chilled, the more certainly the buyer will purchase a replacement machine of the same brand 10 years from now.

To Far Eastern companies, by contrast, a refrigerator is a data platform. Its real purpose, at least in the long term, is to measure, collect and transmit consumer data to be combined and refined into a business with a higher margin than that of refrigeration appliances.

The ostensible purpose of smart devices is to facilitate everyday processes, such as arranging a family movie night by locating, hiring and paying for a film by a couple of mouse clicks. Their true function is nevertheless to generate data for others: for hardware manufacturers, network operators, service providers, payment card companies, and so on. And out of billions of filaments in a mycelium, one ends up stored in Yandex for a decade.

The drawback of a refrigerator as a data gatherer is that it stays in one place. It would be handier if the sensor platform moved around the apartment, hovering up everything that it detected...

So the Roomba robot vacuum cleaner is now owned by Amazon, and stands ready to roam and report on every square inch of your home!

The next step is naturally a *smart city* populated by the kind of smart devices that we worship in Finland. I have addressed a few smart city events, and have always asked the same question: smart for whom, for whose needs? Does the smart city council serve the interests of smart city residents?

The ostensible purpose of a smart city is similarly to harmonise life and movement, saving energy, labour and resources. This is only possible by monitoring and guarding, controlling and limiting the activities of smart city residents, their movements, and even their appearances.

Chinese cities have been organised as “smart cities”, and cameras programmed with facial recognition software are everywhere. China is home to the world’s largest surveillance equipment companies: Huawei, Hikvision, ZDE and Dahua. Huawei boasted in 2021 that it had sold 160 smart city applications to over a hundred countries.<sup>70</sup> The configuration includes security cameras, terminal devices, fixed and wireless networks, artificial intelligence applications, and other software.<sup>71</sup>

Exports also accelerate when you push them a bit. Interest-free loans guaranteed by the Chinese Government have brought technology to developing countries that they otherwise could not have afforded.<sup>72</sup> That includes Myanmar, where the regime is still killing and torturing the civilian population more than any other country in the world.<sup>73</sup>

Some Chinese smart cities are also emerging in Europe. Intelligent lighting, traffic control, building technology: all monitoring generates data that ends up where it ends up. Huawei donated 350 cameras with facial recognition software free of charge to the commune of Valenciennes in northern France in 2017. It then transpired that facial recognition is illegal in France.<sup>74</sup>

## THE DATA GREED IMPERATIVE

The basic doctrine of data capitalism is that all data is collected.<sup>iv</sup> As the cost of storage is negligible nowadays, it's worth gobbling up all of the data that you can get, regardless of whether you need it or not. The last few years have shown that data that had previously been considered worthless has indeed turned out to be valuable when some surprising demand has been found for it.

The mass data collected by Korean refrigerators about the shopping behaviour, dietary habits and use of family time of millions of Americans is certainly of interest to retail chains, food manufacturers, packaging designers, and even employment agencies. Even a toaster can tell you things. The hall carpet has a tale to tell, as does your underwear, the dog's collar and the cobblestones in the street.

The logic of the fourth industrial revolution more generally is that the unpredictability of technological progress urges us not to seal the purpose of any product or service. The system should be left optimally open to later innovation and as yet unknown applications.

(This reasoning also applies to the more traditional forest industry. The largest investment in Finland of this industry to date has been the construction of a bioproduct plant in my home town of Äänekoski. This moniker was ridiculed as pretentious, because the plant was largely given over to plain old cellulose pulp manufacturing. Some space was nevertheless set aside in the material flows and systems of the new plant for emergent operations whose profitability or even mere existence were as yet unknown. This open system enabled the Japanese trading house Itochu to purchase a part of the complex that produces textile fibre from cellulose as a replacement for cotton, which is an ecologically stressful product and is also ethically questionable due to oppression of the Uyghur people. In other words, a world-class bioproduct innovation. Who could have seen that one coming?)

Data has an unrealised and unknown option value that is discounted to a contemporary monetary value. The credo of data capitalism

that all by-products of data are going to be valuable sometime and somehow practically forces companies to hoard data purely for the sake of doing so. That is the data greed imperative.<sup>76</sup>

No company can announce the intention to stop, or even to reduce data gathering. The shareholders of a retail chain would be loath to undermine the future prospects of a company by wilfully abandoning customer loyalty schemes and the valuable data that they provide.

To thrive in the digital economy, a company must demonstrate that it continually maximises its data gathering, and creates data from data. Data gluttony is mandatory.

Andrew Ng, who has been part of the management team of both Google and its Chinese counterpart Baidu, has admitted: “At large companies, sometimes we launch products not for the revenue, but for the data. We actually do that quite often ... and we monetise the data through a different product.”

Erik Brynjolfsson, one of the most prominent economists in the field of data, noted back in 2016 in a report commissioned by Oracle: “Computing hardware used to be a capital asset, while data wasn’t thought of as an asset in the same way. Now, hardware is becoming a service people buy in real time, and the lasting asset is the data.”<sup>77</sup>

The Datarade data exchange stresses that the product that is bought and sold on the market is “data capital”.<sup>78</sup>

And now this starts to become really interesting.

## DATA IS CAPITAL

Economic theories define capital in many ways.<sup>3</sup> Even though people usually think of capital as money, that is only one possibility. Money is a measure of capital. Besides money, you can also invest a sofa as a

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<sup>3</sup> “Production factor” is often used in the same sense as the broad concept of capital.

capital contribution in a limited company, just as long as it has the right monetary value. Karl Polanyi pointed out that the modern market society began in 19th century England when labour was defined as having a monetary value. Labour then became a form of capital, as a “fictitious commodity”.

The data that makes Apple and Microsoft the most valuable companies in the world, and thanks to which loss-making startups are worth billions, can similarly be measured in money. But capital will never be realised as money in the here and now – that would be the end of capitalism.

The classic definition of capital comes from Karl Marx, who else? He emphasised that capital is *circulation* – money that is converted into products in order to become more money. “The circulation of money as capital is an end in itself, for the valorisation of value takes place only within this constantly renewed movement. The movement of capital is therefore limitless.”<sup>79</sup> This endless movement of capital is the defining feature of capitalism.

Example: The size of government debt is often complained about in the public debate. Since all money is a debt – which is ultimately repaid by the central bank – that chunk is our highly tangible negative monetary capital. But it is never realised, and instead this “fictitious commodity” circulates endlessly. The politician’s claim that the debt we take on will be paid by our children is a lie. While it is also clear that debt must be serviced, and in some circumstances also reduced, these are merely stages in the endless circulation of capital. The end of this cycle will be caused by a problem much larger than the debt sustainability of any individual country, such as an asteroid destroying the Earth.

According to Jathan Sadowski, data is not a substitute for money in data capitalism, but emerges as a form of capital precisely through its endless movement. Data is ceaselessly stored and always recycled in

new forms to produce more commodities, which in turn generate more data, and to create structures for managing data.

While all capital can be measured in money, and data capital is no exception, this endless and increasing circulation itself generates value, power and control. Data capitalism gives rise to and controls the structures that collect, store and process data, such as smart devices, online platforms, algorithms and data centres.

Amazon, a company whose founder Jeff Bezos has announced that it will not pay any dividends at all, represents the purest form of data capitalism. All profits are invested in expanding the sphere of power. While money is a necessary evil, it is data that constitutes Amazon's true capital.

*The ironclad law of data capitalism is that more data must be continually accumulated to be managed. This circulation can never cease, and any slow-down is already a crisis. Constraining this circulation is a disaster.*

Just as financial capitalism – souped up to its limits – drifted into a systemic crisis in 2008, the same can happen to unrestrained data capitalism. Chapter 6 outlines two potential disasters: the collapse of democracy, or the tyranny of the black box.

In the meantime, data capitalism tends to increase inequality, both within societies and globally, producing a starker separation of wealth and opportunity, as always when capital is used to conquer. It may also enable outright oppression and persecution, as always when capital is used to control. It could also generate a great deal of good if managed smartly, and if the benefits are shared with society as a whole.

## DATA CREATES DATA

All significant data businesses must find new ways and sources in order to add value to their data, and to make more data out of data. The solutions of giant corporations accordingly often do not follow the



traditional format of business growth, but the data greed imperative. The shifts are often quite surprising.

Google is not just a data platform, it's also into... *drones*. It even has its own drone company, Wing. Helsinki is one of this company's three test environments globally. Google is also competing with its Chinese counterpart Baidu to be the first to get fully autonomous vehicles into urban traffic.

The reasoning unfolds when you pause to reflect on it. One thing or another about the actions, location and movements of people can be gleaned from a bird's-eye view. An even more valuable struggle concerns mobility data – who can control and on what terms the information generated by the driver, the vehicle and the road?

Amazon for its part has broken into the entertainment business, and with the purchase of the legendary MGM studios, it now owns James Bond.<sup>80</sup> Apple TV+ has been serving our living rooms for some time now, and it knows our habits and tastes. Apple has also tried to make inroads into the credit business in the same way as Meta has sought to create its own virtual currency.

Amazon will also soon know what goes on in bedrooms when Roomba robots vacuum dust and data to an accompaniment of Alexa smart speakers. Ring doorbell cameras are already gathering so much and such interesting video footage of private life that they have become a reality TV show in the USA.<sup>81</sup> The Candid Camera of the 2020s does not make everyone smile.

As the new name implies, Meta has expanded its operations in the most unexpected directions. Even as Apple seeks to replace the share of hardware manufacturing with content services, Meta, by contrast, is investing in the virtual reality (VR) glasses and other accessories that the next internet generation will use. The information gathered from users will then no longer be limited to facial countenance but already include full body expressions.

The data greed imperative accordingly requires an imagination that is already at least approaching, if not actually constituting espionage. It is clear that the temptation to use unauthorised, covert and criminal means will be overwhelming.

Both Chinese data surveillance and American data espionage are guilty of destructive data greed. The dark arts that both countries continue to use in order to achieve information dominance are eroding the global trust on which a common and unifying data democracy should be built.

#### FROM SNOWDEN TO SCHREMS

Edward Snowden revealed in 2013 that major platform companies are continually and covertly disclosing large volumes of data to the US National Security Agency, NSA. This operation, which involved Microsoft, Google and Yahoo in return for millions in compensation, and to a lesser extent Facebook, Apple, PalTalk, YouTube, AOL and Skype, had already been going on for six years.

Snowden claimed that as the majority of global data traffic passes through the USA, this country's intelligence services are able to capture the data that they need from the landing points of cables. Data also ended up with the British GCHQ network intelligence service. Canada, Australia and New Zealand had signed up to a secret espionage agreement in 1948, of which even the national Prime Ministers were not necessarily aware until the document finally became public 57 years later.

This "Five eyes" cooperation requires the intelligence services of the five countries to share espionage information, including information captured from data. It has also emerged that the German Federal Intelligence Service BND and the National Defence Radio Establish-

ment of Sweden (FRA) have also engaged in data espionage for the NSA or Five Eyes.

Danish military intelligence actively helped the Americans to spy on Nordic politicians, intercepting telephone calls and text messages from telecommunication connections passing through Denmark.<sup>82</sup> The covert Five Eyes XKeyscore system can capture information from subsea cable landing points in the same way that the Echelon project does so with satellites. The Operation Dunhammer internal audit of Danish military intelligence disclosed these abuses back in 2015, but they were kept under wraps until 2021. Such things happen at NATO.

The most far-reaching scandal turned out to be the US intelligence wiretapping of German Chancellor Angela Merkel for more than a decade, together with then Foreign Minister and future Federal President Frank-Walter Steinmeier.<sup>83</sup> Merkel made a strongly worded call to President Obama in October 2013 (we don't know whether that exchange was eavesdropped), pointing out that spying on allies is wholly inappropriate and that it was now necessary to rebuild trust.<sup>84</sup>

The NSA had recorded no fewer than 76 million telephone calls in France at the turn of the previous year. God only knows whether, even a decade later, this avalanche of data has been analysed, and if so, then for what purpose. The French foreign minister summoned the US ambassador to give an account of the affair to the foreign office.<sup>85</sup> But there was more to come. WikiLeaks reported that three French presidents – Chirac, Sarkozy and Hollande – had also been targets of US espionage.<sup>86</sup>

It was at this point that Max Schrems stepped into the frame. The surname of this quite obscure 25-year-old Austrian student came to symbolise the falling-out between the USA and Europe that was caused by data greed. It accelerated the pace of consolidating EU data regulation.

Schrems insisted in 2013 that Facebook was not permitted to transfer data that it gathers in Europe to the USA, where it was required to

disclose data to the intelligence services. He filed an action in the courts of Ireland – the EU headquarters of Facebook – leading to a referral that asked the EU Court of Justice to reconsider the previous EU-US data sharing agreement.

US digital giants have generally duplicated the content of their databases between the USA and the EU. This applies both to Google search engine data and to files stored in Amazon or Microsoft cloud services. Businesses benefit from this: even a nuclear attack on European servers will not destroy data that has crossed an entire ocean. The continual flow of data between continents is the lifeblood of international businesses. The Americans in turn assured their European customers that the data is protected by the common agreement, even without GDPR standard regulation. Until Edward Snowden demonstrated otherwise.

Following a two-year process, the EU rescinded the agreement. The fundamental rights of Europeans were not secure, and the unwitting targets of mass espionage had no lawful remedy.

Not only was this a quite astonishing achievement by Schrems, but even more astonishingly it happened again: Schrems I was followed by *Schrems II* in 2021.

The European Commission and the USA urgently compiled a better Atlantic agreement, known as the Privacy Shield. The European Union approved this in 2016, just before the new president Donald Trump took office in 2017. Even the new agreement was challenged in court and found wanting.

The EU and the USA announced their third attempt at a data sharing agreement in 2022 (*Trans-Atlantic Data Privacy Framework*), which curbs the power of security authorities and provides a legal remedy for EU citizens through a special data protection court. This reinforcement of data protection is a victory for the Europeans, with both the USA and the EU officially agreeing a new framework in March 2023.

I am nevertheless starting to think that these continual negotiation rounds are going nowhere – Max Schrems has already announced that he will challenge even this latest settlement. We need some international convention to rein in cyber espionage. Don't they already restrict nuclear weapons? The continually growing capacity for data capture and the resources of AI-based mass analysis will otherwise lead to a splintering of the Internet (*Splinternet*) and data islands.<sup>87</sup>

Once lost, it is difficult to restore trust. Doubly so in a trust economy. And especially in a world that is divided into even more hostile and differentiated blocs after the pandemic and a brutal Russian invasion.

#### THE DOOMSDAY PANDA

Aurora Panda, Gothic Panda, Judgement Panda and Comment Panda are not cuddly residents of Beijing Zoo. They are Chinese cyber espionage units.<sup>88</sup>

Taken to extremes, data greed or the compulsion to gather and hoard data leads to large-scale looting. China engages in data burglary all the time, from many directions, and globally. Of the 30 most active criminal groups listed by the German Fraunhofer Institute, no fewer than twelve are from China.<sup>89</sup> While some of them specialise in nearby targets such as Hong Kong, Taiwan and Tibet, others reach further west – even as far as Finland.

The Finnish Security and Intelligence Service (Supo) made its first ever attribution on designating a foreign suspect in the 2020 hacking of Parliament.<sup>90</sup> A simple Internet search reveals that the designated suspect APT-31, also known as Judgement Panda, works on behalf of the Chinese Government.<sup>91</sup> This group specialises in stealing high-level information, specialist materials and trade secret data.<sup>92 93</sup>

The MOT investigative journalism programme of the Finnish Broadcasting Company (YLE) reported in January 2022 on how the Chinese Government, the People's Liberation Army and Chinese researchers planted in Western universities and research institutes pry into important information for their country of origin.<sup>94</sup> They focus in particular on cutting-edge technology of all kinds with potential military applications: artificial intelligence, geolocation, speech, movement and facial recognition, encryption methods and, most especially, quantum data processing.<sup>95</sup>

Data capital is even more crucial to the state capitalism of authoritarian countries (of which China is nowadays top of the bill) than it is to liberal democracies.

Technology has two purposes in the world of the Chinese state leadership: security and hegemony. Its monitoring of internal security is little short of paranoid, with surveillance cameras everywhere, routine facial recognition, and monitoring and reporting of all online traffic generating such an immense volume of data that there is probably no time to process, let alone analyse even a tiny fraction of it.

One reason why the Chinese Government persecutes its local data giants is simply because it seeks to confiscate the vast datapools of major data platforms. Through an investment company, the Cyber-space Administration of China (CAC) has acquired a stake and a seat on the board of ByteDance, the parent company of TikTok. TikTok broke the ceiling of one billion monthly users in September 2021, and generates an unprecedented volume of personal data to nourish the development of artificial intelligence, both for the company and for anyone privy to its resources.<sup>96</sup>

The CAC investment company also has tentacles reaching into Weibo, the Chinese Twitter, and numerous other media platforms, AI businesses and digital consumer services.

Even as the revised EU-US data privacy framework (hopefully) limits online spying by intelligence services, China is defiantly march-

ing in the opposite direction. The Chinese Data Security Law (DSL) and Personal Information Protection Law (PIPL) that took effect in autumn 2021 stipulate that all data is stored, classified and analysed under the terms and conditions of national security. On the one hand, the transfer of both personal and business data out of the country is restricted, while on the other hand, regulation also extends to all data about China even when held abroad.<sup>97</sup>

Every entity operating in and with China has to accept the fact that quite broadly drafted laws and extensive official powers jeopardise all data that is located in China or related to China. The sanctions for seeking to conceal data pools from local intelligence and security services can also be severe.

Data flows into China, but not out of China.

So China absorbs the world's data. Estimates suggest that China will hold one third of all global data by 2025, amounting to a humanly unfathomable fifty zettabits. The share held by the USA would only be thirty ZB, or one fifth.<sup>98</sup>

Competition is growing fiercer all the time.

#### FROM DATA GREED TO DATA SUSTAINABILITY

This compulsory and obsessive accumulation of data capital has resulted in platform companies and government data thieves intruding into all areas of human life. There can be no end to it unless we set about changing the rules and conditions.

As data capitalism slips into chaos if data accumulation is prevented, it doesn't even make sense to require such a thing. Information can and should be gathered efficiently, but everyone must benefit from it.

A new, improved GDPR version 2.0 would be a regulation that enabled website users to control but not constrain the use of their

data. They could surrender their information on condition that it continued to circulate for desirable and useful purposes.

Naturally there are also more forceful measures. European Union data regulation takes valuable steps towards data liberation. While the European business community fears any increase in bureaucracy, small and medium-sized enterprises must also have access to large datasets for processing and sharing.

Data greed could become something that is generally frowned upon in the same way as other exploitation, whether of the natural environment or of people. Hundreds of millions of people make consumption choices for climate reasons. Why not similarly insist on liberated information? Besides demanding environmentally sustainable solutions, why not also require solutions that are data sustainable?

A data-resilient alternative should arise to challenge the big hitters. The market share of Google in search engines is over 92 per cent, whereas Microsoft's Bing has less than four per cent.<sup>99</sup> If Bing made all search information freely and easily available to everyone and combined it with Microsoft's free tools for using data, then users of the search engine would have a concrete incentive to feed and improve the information flow of Bing. Then smaller players offering some enticing social and technical improvements could be motivated to compete with the data giant.

On the other hand, I explain in chapter 5 how Microsoft invested a ten-figure sum to purchase exclusive rights to an advanced AI programme for customers of its Azure cloud services. When a company scours a huge volume of the data that we provide from the web and hoards the benefits for itself, it would be reasonable to insist on a little reciprocity. Society is entitled to require social responsibility.

The principles of responsible investing already guide financing towards ESG targets (*Environmental, Social, Governance*), meaning the businesses with the best record in terms of the environment, community and corporate responsibility. Attention has rightly been focus-



ed on protecting the climate, with the EU Taxonomy Regulation now also supporting investments that promote this objective. This should nevertheless also be accompanied by an awareness of the global crisis of community and corporate responsibility that the privatisation of common data is fostering, with Mayer-Schönberger estimating that 80 per cent of data gathered from the world remains unused in private silos.

The ESG principles should include a classification for data sustainability, designating companies that are committed to securely opening and sharing data pools.<sup>4</sup>

It is also high time we saw the issue of a fair data economy reaching the agenda of the UN, G7, G20 and other leading acronyms. The OECD worked for years, determinedly and in the teeth of opposition, to bring about agreements limiting tax avoidance by multinational corporations. Data sustainability could become a new mission for an organisation of developed countries.

We can be certain that freely moving data will also end up in both Chinese and Russian hands. As with all technology, a sharpened geopolitical struggle and superpower animosity erects obstacles, encourages lawlessness and vandalism, and makes it difficult to share development for the benefit of the entire planet. Russia's unlawful invasion of Ukraine is accelerating global division.

I might dream that the undeniable benefits of shared technology and liberated data would convince the world's bellicose leaders and the mobs that are so readily incited to hate. Waging wars will only ensure that climate change destroys global living conditions in a few

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<sup>4</sup> Respect for data protection is often included in the *Governance* part of ESG criteria. While data protection in itself is not insignificant, it is probably evident from the preceding discussion that this requirement is too easy on businesses and inadequate for society. Sitra also recommends a *fair data economy taxonomy* in its Digivalta report.

generations. Combating the climate catastrophe will require us to harness all of the world's people and all of its data and technological expertise.

I might dream. But reality is something else.

## 4. DATA CAPITALISM IN THE NEW COLD WAR

*Davos, 24 May 2022*

The brutal attack of Russia on Ukraine was not a turning point. It was merely the final seal on a new world order that has been emerging over the course of a decade in place of a decaying globalisation.

The pandemic and the Russian invasion dealt a double blow to the livelihood of every European. It was preceded by another double blow of the financial crisis and the euro crisis. The multilateral global economic system did not recover from these shocks. Under the pressure of crises, destabilised by the rise of China and disrupted by the pandemic, the global value chain has given way to a strengthening of regional interests and security needs.

An economic cold war has replaced it.

European Central Bank President Christine Lagarde walks between white-clothed tables with microphone in hand. Her speech is a brief one, because there are also Prime Ministers, EU Commissioners, representatives of the US administration, and Secretaries-General of defence alliances addressing the Davos World Economic Forum dinner. Indeed, all of the nefarious folk known to WEF conspiracy theorists as the World Government are here.

I am also genuinely listening this time, and not fiddling with my mobile phone on the table.

Lagarde makes three points that are already familiar to us. She had outlined the “new world map of economic relations” in a speech given in Washington in April – just two months after the Russian invasion.

“It is still too early to say how this will play out, but one can already see the emergence of three distinct shifts in global trade. These are the shifts

- \* from dependence to diversification;
- \* from efficiency to security; and
- \* from globalisation to regionalisation.”<sup>100</sup>

I will return to her themes. But first a little nostalgic digression.

### THE WORLD OF YESTERDAY

Though still a recent memory, the hopeful ambience that characterised the Golden Age of Globalisation already feels distant and departed. Much as the First World War shocked Europeans accustomed to everlasting progress and prosperity, so that the memoirs of the writer Stefan Zweig in the 1930s could refer to the pre-war years – as close as they were – as part of “yesterday’s world”.

The beginning of the 21st century, before the financial crisis, the rise of the European far-right, Trump, Brexit, the pandemic and Putin, now similarly feels like yesterday’s world already.<sup>101</sup>

A global network of supply chains and interdependencies had been made possible since the 1990s by efficient telecommunications, the Internet, the international free trade system, the end of the Cold War, and deregulation.

Global value chains typically move from bottom to top. Raw materials are procured from a developing country, components and assembly come from a country with cheap labour, sales and transportation are decentralised around the world, corporate offices are sited in tax-optimised locations, while the most valuable part – meaning the management of brands, patents and other intangible assets, and financing – is kept in the Global North. This is how

mobile phones, cars and Happy Meal toys were made and are still made.

About half of all world trade relies on global value chains. Free trade areas have been their greatest beneficiaries. Over a period of 20 years (from 1999 to 2019) the proportion of international trade in the gross domestic product of the Eurozone grew from 31 per cent to 54 per cent, compared to a rise from 23 per cent to only 26 per cent in the USA.<sup>102</sup>

Under pressure from the World Bank and the International Monetary Fund, one country after another also opened its financial markets to international investors. Profits increased, but so did the number of losers.

The reason behind the discontent was the financial crisis that began in the USA in 2007, spreading first to Europe as a banking crisis, and then as a sovereign debt crisis. There are always political consequences to a recession. Unemployment and social exclusion – or even the mere fear of them – have boosted the influence of nationalist populists and the extreme right everywhere. Sweden, the world's leading social democracy, was taken hostage by the xenophobic right in autumn 2022, just as Denmark had been at an earlier stage. Even where nationalist populists have not curtailed the international interaction of their countries, a fear of extremism has led centrist political parties away from cosmopolitan liberalism – and away from active, multilateral globalisation.

*Interdependence* is the key ideological concept on which the world's market-driven harmonisation was based.

Both Russia and China were considered bound by interdependence, meaning that the market doctrine orthodoxy would be realised throughout the world. China played this game nicely right up until it secured the benefits of WTO membership, making not the slightest pretence at reciprocity thereafter. While Chinese companies have enjoyed equitable treatment outside of their domestic borders, foreign

businesses operating in China have been required to submit to Chinese laws, requirements and restrictions.

Dependence turned out to be one-sided.

## RETURN OF THE GEOECONOMY

Networking is a characteristic strength and weakness of capitalism. Already in the 19th century, Karl Marx had predicted that the same economic interrelations that transcend industries and regions would also amplify the crises of capitalism.<sup>103</sup>

In his majestic work *The Network Society* (1996) Manuel Castells, the Marx of our age, asserted that the world order of the data age would be based on road and information networks in which the winners control the intersections and the losers are left unconnected. Castells was already at that time considering “a megacity in the making that is not even yet on the map but that, in my opinion, will be one of the pre-eminent industrial, business, and cultural centres of the twenty-first century” – the urban concentration of some 50 million residents spread around Guangdong (Canton) in southern China.<sup>104</sup>

As far-sighted as Castells was, this estimate was even on the low side. Southern China came to dominate the entire manufacturing base of the planet in a way that in just 20 years proved to be a serious hazard to everyone else.

Economic historians will characterise the 2010s as the decade of triumph of China. Its symbol is the Huawei Corporation, whose headquarters in 1987 was an apartment building unit in Shenzhen (not a garage, after all), but which became the world’s largest network hardware manufacturer just 25 years later.

The authoritarian state capitalism of China has created successful giant corporations backed by unlimited government support and a huge home market that is protected from competitors. Western

businesses have entered this country only by sharing profits with local partners, agreeing to harsh censorship, and accepting surveillance, espionage and theft.

Western markets, by contrast, have been left open to conquest. The open economies that rely on competition – to which Finland undoubtedly belongs – have proven to be vulnerable, if not simply foolish.

Russia annexed Crimea in 2014. At around the same time China began to tighten its grip on Hong Kong and make even more serious threats against Taiwan. The superpower struggle gave a reminder of its presence. The connections that are essential to an economy – data traffic and movements of capital – have been weaponised.<sup>105</sup>

The USA must respond to this war cry.

Back in 2012, when globalisation optimism was still alive, Professor Richard D’Aveni shook everyone with a demand for *strategic capitalism*. Under this doctrine, the USA had to apply all means to rein in the growing supremacy of China in the world economy. Instead of an unregulated market, D’Aveni proposed harsh protectionism in the domestic market and a rejection of multilateral global economic systems. The USA should withdraw from the WTO, NATO and the UN, and pursue its own interests through power politics.<sup>106</sup>

The script for geopolitical economic warfare could have been written for Donald Trump, and similar hubris drove Britain to Brexit in the fateful year of 2016.

## THE STATE TAKES CHARGE

The return of nationality to politics also brought the nation state back into economics. And the state is one of those party guests who really doesn’t know when it’s time to leave.

The financial crisis forced the leaders of the major industrialised countries to hastily rescue the banks using taxpayers' money, with the pinstriped brigade tearfully thanking the very politicians that they despised. The Eurozone was only saved from disaster in 2011 when the European Central Bank took finance in its control. The price of money has not been set by the market for more than a decade.

All the while when Russia was becoming an increasingly “guided democracy” during the Putin era, the liberal Western powers were drifting towards a guided market economy.

Each state of emergency has reinforced state power in the economy. The stealthily advancing climate crisis has also led to regulation that compensates or even overcompensates for the fateful market deficiency that I noted at the beginning. The strict emission limits of the European Union are guiding the market. The EU idea of taxonomy is even based on the fact that politicians set the price of money for better or for worse in each industry.

State guidance is therefore already considered normal. Nor has there been much by way of protest from disciples of the free market. The difference between the economic systems of China and the USA is not one of nature, but of degree, with full state control on the one hand and partial state financing on the other.

The state is the same kind of financier as the private sector in seeking profit. Only the currency is different. This change is superbly illuminated by an analysis entitled *The emergence of strategic capitalism* made by Henrique Choer Moraes and Mikael Wigell for the Finnish Institute of International Affairs back in 2020.<sup>107</sup>

States in strategic capitalism promote national security, economic sovereignty, self-sufficiency and security of supply. These goals require the protection of strategic assets, critical infrastructure or key technologies from foreign competitors and systemic adversaries – or from free-roaming market forces in general.



Governments carefully scrutinise foreign investments, rectify gaps in production chains and avoid critical external dependencies. The war in Ukraine is leading to exceptional measures in which public authorities are imposing price ceilings, conditions, rules and restrictions on the business community.

Instead of fiercely competing for foreign investment, we have now even begun subjecting it to restrictions. UNCTAD reports that Western industrialised countries turned down twenty foreign business acquisitions worth more than USD 50 million between 2016 and 2019 citing national security concerns. Sixteen of these were Chinese.<sup>108</sup>

Whether in a trade war or a real war, the features of a war economy are reinforced throughout. A militarised economy is never a competitive market, but is based on procurements that are critical to national security. The state sets the rules.

Defensive measures include screening of foreign investments, export restrictions and import bans on enemy technology. Offensive measures include government subsidies for major national corporations and industrial sectors.

The state determines the strategic assets that must be protected. This category is growing all the time, with any industry potentially classified as in need of protection. "Security of supply" is the favourite alibi for any unprofitable investment, also in Finland.

In the world of strategic capitalism, state relations determine business relations, and their boundaries are staked out with politically determined sanctions and restrictions. Businesses represent their countries, so they are either reliable or untrustworthy. Chinese businesses are viewed as merely pursuing the interests of the Chinese state, and being accountable to the government. The sanctions that followed the Russian invasion are based on the same similarity. While this is certainly justified, the same reasoning also makes Western

domestic businesses accountable to the state, meaning that the private is also public.

Business has become a part and a weapon of geopolitical coercion.

Businesses also know how to play the game of strategic capitalism. They defend their own interests at the expense of the competition, Choer Moraes and Wigell observe. So while they fight against market control, they also seek to exploit it to the detriment of competitors. Through skilful *corporate statecraft*, a company must be able to manage risks, protect its reputation, and even sniff out the business opportunities that lurk among the new restrictions.<sup>5</sup>

The protected sectors are not only the industries of the past. The export restrictions imposed by the USA in 2018 also apply to *emerging and foundational technology*. The aim is also to safeguard future technological competitiveness proactively.<sup>109</sup>

The circle closes when the most highly developed states imitate the technology policy of developing countries, which was itself based on imitating the developed countries. Back in the 1950s, Korea and Taiwan restricted imports in order to develop domestic manufacturing and guarantee demand for it. Despite the literal meltdown of its first microwave oven prototypes, this enabled Samsung to grow into a global leader in consumer electronics. Naturally Russia is also trying to do something similar with its export-substitute manufacturing, albeit

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<sup>5</sup> The commonalities between the USA and China are not artificial in all respects. The actors in managed capitalism paradoxically enjoy a freedom that is similar to the protection of a central authority. The military-industrial complex is the same everywhere. *National security* protects the military industry of each country from competition and the influence of market prices. A protected operation can be completely cost-ineffective – legends tell of million-dollar pencils at NASA – which in turn enables genuine creativity without liability. It was the army that developed the Internet, virtually all of China’s victorious technology, and even radiotelephone technology in Finland at one time, which in turn gave birth to Nokia.

out of necessity after effectively emulating North, as opposed to South, Korea.

#### FROM DEPENDENCE TO DIVERSITY

It was the COVID-19 crisis that finally demonstrated European dependence on the rest of the world. This was when the EU identified 30 critical raw materials whose production is highly concentrated. China produced 98 percent of Europe's rare earth metals. An entire continent relied on a single supplier of hafnium and strontium. To its horror, the European Union found that it produced only one per cent or less of certain raw materials required in lithium-ion batteries, wind turbines and electric drive motors.<sup>110</sup>

When supply chains can be disrupted due to a natural crisis or for geopolitical reasons, both of which may arise in China, it is clear that efforts must be made to reduce dependencies by bringing the most important stages closer to brand management.

Cost savings were realised in the era of globalisation by offshoring, meaning moving manufacturing abroad. Recent years have seen an increase in the opposite trends of reshoring and nearshoring. While China captured 12-15 per cent of foreign investment between 2000 and 2020, by 2021 this share had fallen to five per cent. As countries of low-cost local manufacturing by European standards, Poland and Portugal are already catching up.<sup>111</sup>

It is symbolically significant that Apple shifted manufacturing of its latest iPhone collection from China to India in autumn 2022. The merchant banker JP Morgan expects Apple to increase investment fivefold, so that one in four iPhones will be manufactured in Chennai by 2025. Samsung and even Google – which has steered clear of South Asia for decades – are also making extensive industrial plant

investments in India. And to top it all, the Chinese company Xiaomi manufactures a good many of its phones in India.<sup>112</sup>

The USA and the EU also realised that the microchip at the heart of all smart gadgets was not under their control. Of a trillion microchips manufactured annually, only ten per cent are made in Europe. More than 60 percent are manufactured in Taiwan, right under the shadow of a big hostile neighbour.<sup>113</sup> The pandemic bottleneck that brought automobile manufacturing to a halt (with as many as a thousand microchips required for a single car) gave us a foretaste of how a conflict in southern China could translate into a global economic meltdown.

The EU has enacted the Chips Act, promising a dramatic subsidy of EUR 43 billion for the European semiconductor industry. The USA is investing an even more dramatic USD 52 billion in domestic chip manufacturing. The Biden administration has also banned the transfer of all microchip-related technology to China.<sup>114</sup> As China is already lagging in this sector, the USA is no longer seeking to restrain its competitor with an export ban, but to wear it down. This may have consequences.<sup>115</sup>

Western countries have every reason to wake up and defend their genuine strategic interests, to make ready and be on their guard. The purpose of Chinese business acquisitions, investments and financial arrangements is to gain a bridgehead in the critical infrastructure of other countries: in radio networks, submarine cables, roads, railways, tunnels, harbours and airports.

At the same time, spreading fear of China is an established instrument of Western politicians, who get to protect domestic jobs and extract subsidies for their preferred businesses.

Economic war between superpowers inevitably leads to protectionism. Naturally we don't call it that. Instead, we seek digital, technological or strategic *autonomy*. At the same time, major corporations that

face difficulties – especially in sensitive electoral districts – are subsidised through targeted “industrial policy”.

#### FROM EFFICIENCY TO SECURITY

Way back yesterday, when we still swore on the Holy Writ of the market economy, both the European Commission and the World Trade Organisation intervened to combat the distorting influence of state aid. China, by contrast, has never cared about the rules. The EU cannot submit to such an unfair arrangement, but what is the right countermeasure?

Two opposing schools of thought are now contesting this issue: there are those who would increase state subsidies, and there are those who would defend the internal market. The first of these – an axis of power led by France and Germany – pursues an “industrial policy” that would follow the Chinese example by distributing unlimited state aid and relaxing competition rules.

Countries such as Finland, which depend on an optimally unobstructed internal market and therefore on competition, approach the challenge from the perspective of a level playing field. Only businesses that comply with the same strict state aid rules as EU companies may be allowed access to the EU market. The logic is the same as with the carbon border tax. A state that benefits from climate rules that are looser than those of the European Union must pay for access to the market. Unfair subsidies must be compensated at the border. If competition is threatened, then we should not abandon competition, but reinforce it.

This pro-competition view is now losing the contest. The joint will of France and Germany gained strength from the great outrage of 2019, when the European Commission rejected a merger of the train manufacturers Alstom and Siemens on the grounds that this would be

too dominant a giant in the rail industry.<sup>116</sup> In a presiding role at the council of the European Union at the time, I strove to head off renewed “industry policy” proposals from Uncle Peter backed by France and Germany – these two countries specifically are capable of a completely different scale of aid than other European countries.

It was COVID-19 that finally turned the tide of debate in favour of the “industrial politicians”. The pursuit of zero tolerance by China put the entire country on hold while exposing the fatal addictions of other nations. First of all, came a shortage of Chinese personal protective equipment. This was followed by a dearth of marine transport containers. And then by a squeeze on just about everything else. The selfish interests of big industry in Germany and France turned into an issue of national security.

Now it became necessary to safeguard “strategic autonomy”. The controversial 750 billion euro *Recovery and Resilience Fund* (RRF) of the European Union also bolsters a policy that emphasises self-sufficiency and domestic manufacturing, as opposed to global business relations. At the same time, the European Commission approved unprecedentedly massive national subsidies as emergency aid due to the pandemic, with more than half of this (a whopping trillion euros) going to Germany. With France and Spain each reserving one fifth, the remaining 24 Member States were left with just ten per cent to share between us.<sup>117</sup><sup>6</sup>

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<sup>6</sup> Germany is seeking to boost its energy sector in autumn 2022 with a 200 billion euro investment whose unpredictable market impacts threaten to sink other countries. It was previously a custom in Germany to accumulate a current account surplus of at least the same size – which is every bit as prohibited as deficits under EU rules – causing poverty and unemployment in neighbouring countries. Now this is turning into an equally high-handed profligacy.

Finland remains a mere fly on the wall at this dance of prodigious pachyderms.

Few people noticed the references to strategic autonomy in practically every public speech by Finnish Prime Minister Sanna Marin of the Social Democratic Party. The media have instead obsessed over the P in SDP. Only when our Prime Minister was given free rein to decide the topic of an interview with Finland's largest circulation daily newspaper *Helsingin Sanomat* were the important themes of technology, trade, and foreign and security policy deemed suitable for coverage.<sup>118</sup>

Marin's position is easily summarised. COVID-19 demonstrated that we must not rely on Chinese raw materials and technology. The war in Ukraine demonstrated that we must not rely on Russian energy and Ukrainian grain.

There is, then, the possibility that strategic autonomy is not sought by protecting domestic manufacturing, but by increasing capabilities through international cooperation and by massively increasing EU investment in R&D and innovation.

When presenting the RRF in spring 2020, the European Commission added an important condition to the concept *ab initio* that continues to stress free trade and competition. The goal of the European Union is “open strategic autonomy”.<sup>119</sup>

#### THE SILICON VALLEY VOLUNTEER CORPS

A 2019 report of the Bruegel think tank notes that “the US and China have fundamentally different relationships with Europe, but have in common that they do not separate economics from geopolitics.”<sup>120</sup>

The US is shutting down and protecting its economy in the same way as China. Trump made this visible by crushing the EU-US trade agreement, or TTIP (*Trans-Atlantic Trade and Investment Partnership*). At no point did that agreement ever guarantee “free” trade. I noticed this personally in spring 2016 when the then EU Trade Commissioner

Cecilia Malmström arrived for a hearing at the Grand Committee of the Finnish Parliament. Besides being excluded from “national security” tenders, Finnish enterprises would have no right to bid even for state-level procurements. The vast majority of contracts suitable for Finnish companies would remain out of reach. So I thought the game was not worth the candle, but for the opposite reason to Donald Trump: US companies were insufficiently challenged.

When China became a threat, the USA had to respond in kind. And this has probably saved Meta, Amazon, Microsoft, Apple and Alphabet/Google.

The Trump administration sought to ban TikTok (with very limited success) and Huawei networking hardware (more effectively), slapped import tariffs on Chinese technology, and began investing in alternative domestic technology. Silicon Valley was hastily enlisted on the front line of a tariff war. Trump appointed Google boss Eric Schmidt to lead the National Security Council on AI.

The final report of the NSCAI warned in 2021 that an energetic China would seize technological supremacy from the USA within a decade. This, again, is the brazen “backbone of its economic and military power”.<sup>121</sup>

Equally unsurprisingly, the NSCAI called for preventing “hostile adversaries” from collecting data streams for use in manipulating the moods and attitudes of Americans. National security had to “prioritise data security in foreign investment screening, supply chain risk management, and national data protection legislation”, which meant favouring domestic data businesses over foreign competition.

Several tech companies personally financed by Schmidt secured federal funding during his NSCAI Presidency for projects that respond to the China deterrence that he personally fomented. The Silicon Valley data giants are loath to accept government regulation, but quite open to government money.<sup>122</sup>



The Schmidt report warned: “This is not a time for incremental toggles to federal research budgets or adding a few new positions in the Pentagon for Silicon Valley technologists. This will be expensive and require a significant change in mindset.”

And the most significant change in mindset would be... that the Data giants are not enemies of government, but weapons against China. Trust us, don't bust the trusts.

#### GAIA-X - TOTEM OF EUROPEAN SOVEREIGNTY

As we recall, Google, Apple, Yahoo and other major platforms have already been buying approval from the US administration for more than 15 years through the unauthorised disclosure of data to US intelligence agencies. The Europeans were not amused at this.

How can Europe be sovereign if the telephone of the biggest policymaker in its biggest Member State is wiretapped for more than a decade? Over the years of the Snowden revelations and the Schrems litigation, the largest Member States of the EU set about designing their own data platforms to complement traditional large-scale industry. Disregarding repeatedly negotiated Atlantic agreements, Trump introduced the US CLOUD Act, which once again also obliges US cloud services to disclose European data to the federal government. Another humiliation.<sup>123</sup>

France began developing sanctions for major US corporations. Germany's ambitious dream, on the other hand, was a sovereign European data platform: the independent Gaia-X cloud services consortium.

It was ominous that while presenting his big plan at a Dortmund conference in autumn 2019, Peter Altmaier fell off the stage, broke his nose and was briefly knocked out.<sup>124</sup>

When Uncle Peter sent his goodies to our ministerial colleagues in the capacity of EU president the following autumn, the background

material to our teleconferencing was a declaration on “the next generation of European cloud services”. Fortunately, it could not be signed remotely. The crisps were nice, though.

As the years have rolled on, Gaia-X has been more reminiscent of the United Nations than a start-up. Organisation has been more important than content. “National hubs” have been established in European countries (Sitra drew the short straw to become coordinator in Finland), and new committees continually pop up for the purpose of haggling over technologies, protocols and even principles.

As European as Gaia-X was intended to be, Amazon, Google, Microsoft, Huawei, Alibaba and other data giants of foreign powers broke into the project, supplying dozens of representatives for working groups – either to turn Gaia-X to their own advantage or even to sabotage it, as is suspected.<sup>125</sup> Microsoft has been particularly active – the approach of this company to EU projects is almost diametrically opposed to that of Facebook, seeking to hug its competitors to death and demonstrate corporate responsibility. If you fake it enough, then you will make it.

The European giant corporations are also multinationals, and do not dance to the tune of any state piper. The major telecommunication companies Orange and Deutsche Telekom are cloud service partners of Amazon and Microsoft, as are Capgemini and Thales. In fact, all of the corporations represented on the board of Gaia-X have strong ties to US data giants, so sovereignty is more of a burden on their business.

Though I think the endeavours of Gaia-X are doomed, they are worthwhile as such. The project is developing industry-specific data spaces, such as Catena-X for car manufacturers. The Commission is nevertheless proposing some quite overlapping objectives in both the Data Governance Act (DGA) and the Cyber Resilience Act (CRA).

A gulf has opened up in the Atlantic. Indeed the separation is best illustrated by the feeble structure of the supposed cooperation. The

US administration and the EU Commission meet a couple of times annually at the Trade and Technology Council (TTC), an informal and non-institutionalised forum. While there are forces in government at both ends that seek closer cooperation, there are also those that seek to maintain greater distance.

A deteriorating relationship with the USA is the inevitable flip side of any European pursuit of self-sufficiency. We cannot afford this. As of now, the democratic East, democratic Europe and democratic America must stand together even more firmly in the face of the threat from autocracies.

#### A SPECIAL TAX ON AMERICAN BUSINESSES

France is also the originator of Gaia-X, which of course does not prevent it from pulling the plug when national interests so require. The major defence sector data company Thales established a joint cloud service with Google that strictly complies with French data security laws. The French company Orange has also announced that it will build a secure cloud with Google.

France is pushing requirements for cloud service certification, whereby a large part of the data produced in Europe would be required to remain in Europe, preferably in the sophisticated services of American data giants – on French soil.<sup>126</sup>

France also enacted a national digital tax on large platforms in 2019.

As already noted, taxation and data already went hand in hand back in the 17th century, and even when Quirinius was Governor of Syria.

A digital tax is a highly questionable idea at first sight. Why should advanced information technology be taxed differently from the steel industry? Why should innovation be punished? What right do states

that have fallen behind in technological competition have to demand a share of the pot?

Globalised business operations, corporate tax avoidance and the challenges of new technology had already forced the OECD to prepare a new common international taxation model. Lacking the patience to wait, France took action.

This initiative nevertheless immediately fell foul of the unanimity requirement in matters of taxation at the European Union. The French model violated two sacred principles of taxation: the right to tax only arises in the country of origin and not at the destination, and only profits are taxed, not overall turnover.

This is quite true, but times have changed, France responded. As the platforms profit gratuitously from their customers' data, the customer state is entitled to tax this profit, meaning advertising revenues. France ended up with a three per cent tax rate that applies, unsurprisingly, to US megacorporations.

Equally unsurprisingly, the US Trade Commission already proposed to Congress in autumn 2019 that discriminatory regulations call for countermeasures. Austria, which had copied the digital tax of the French, was also in the firing line. Import duties were suggested, targeted at Sancerre and Schwarzenegger.

The EU finally reached the required unanimity to adopt the OECD regime of a new global minimum corporate tax in December 2022. France will have to discontinue squeezing about EUR 350 million in revenue from US companies every year. Probably to much chagrin.

## NEW WORLD DISORDER

Globalisation enthusiasts readily forget that the world's market-driven harmonisation often happened at the expense of its poorest people. The "Washington Consensus" ideology of the World Bank and the

International Monetary Fund (IMF) that emerged in the 1990s forced developing countries to open their economies to capital from the developed world. In the aftermath of a civil war that had devastated the country, it became more important to establish a stock exchange than decent schools in Mozambique.

The Trumpian cold economic war took a wrecking ball to the multi-lateral trading and treaty system. The boundary conditions of technology are nevertheless still forged between public officials in the tedious working group meetings of international organisations. Away from the glare of publicity, the Chinese have reinforced their grip on the International Telecommunications Union (ITU) at the United Nations. This is a forum where Finland and the entire Western community have vital interests to oversee in 6G frequencies and data communication standards, as I shall shortly explain. It's time to wake up.

International data communications are important if you happen to have access to them. Almost three billion people have no such connections.<sup>127</sup> The opportunities of 6G networks seem distant when you are still only hoping to reach the first G.

The Russian invasion was not such a major turning point for the poorer half of the planet that has never been allowed to join the power networks. Why would it have any more importance than the civil war in Sudan has had for the prosperous north? They are both far away, local conflicts. African countries had more reason to fear that their Russian and Chinese friends would turn their attention completely elsewhere.

China is colonising Africa with its unimaginably huge Belt and Road Initiative (BRI) infrastructure programme that enables attachment to a global network and a prospect of development, even though several projects have also failed massively due to corruption.

The West will have to give much more to developing countries, even out of pure self-interest if – and when – the world becomes bipolar. Some 35 countries, representing more than half of the world's

population, abstained when the UN General Assembly voted on a resolution condemning Russia in October 2022.

The financial market crises, the pandemic and the consequences of the Russian invasion have divided the world more sharply than before. The promise of development, which has lifted a billion people out of extreme poverty in 25 years<sup>128</sup>, was already evaporating even before the latest crises.

Christine Lagarde's analysis therefore only applies to the ECB's home team: the USA, the European Union and the democratic East. We are overrepresented at the Davos dinners. A global majority may even experience and interpret the Russian invasion of Ukraine, its meaning and consequences, in an entirely different way.

For much of the world, the world of today is not that different from the world of yesterday.

## 5. THE CHAT GPT MOMENT

ARTIFICIAL INTELLIGENCE (AI) was an abstract and distant concept for the vast majority of people before December 2022.

Then ChatGPT was launched on the Internet for anyone to use for free. It spread like wildfire and wowed the whole western world. This was another *iPhone moment* – reminiscent of the 2007 launch of the Apple handset that conquered the mobile world and spelled the demise of Nokia, the erstwhile champion.

Even though artificial intelligence has been around for quite a while, powering digital assistants like Siri, Alexa, and Google Assistant, performing everyday functions such as Face ID phone unlocking, Google Maps traffic movements, and generating Netflix and YouTube recommendations, the sheer versatility of ChatGPT took most people by surprise.

Millions of people were astounded to find a resource that could respond to all kinds of inquiries in a wide variety of languages and styles that even included Shakespearean verse. While the factual content was seldom entirely accurate, the language skills of ChatGPT made many professional writers fear redundancy. And how could teachers differentiate a human-written home assignment from an AI-assisted essay? We also often rely on quality of language as a guide to quality of content, so what happens when complete fabrications are presented in beautifully crafted prose?

As the commercial and even more advanced GPT-4 model became available in early 2023, ethical concerns and outright panic began to emerge. Elon Musk, Steve Wozniak (the *other* Steve of the Apple foun-

ders) and hundreds of other Silicon Valley luminaries signed a petition to halt the development of AI entirely for six months in fear of losing control of the digital Frankenstein. Were a U.S. moratorium even enforceable in the first place, “China would get a big lead”, said Dr Geoffrey Hinton, a neural networks research pioneer dubbed “the Godfather of A.I.”

Musk, ironically, was one of the founders of the company behind this scary new product. Open AI, originally a non-profit foundation established in 2015, has since become an ordinary corporation – on other words, no longer “open” at all. Microsoft made an early investment of a billion dollars in Open AI, boosting this to ten billion in March 2023.

However jaw-dropping ChatGPT may be, it nevertheless remains prone to factual mistakes. AI is only as good as the data that it consumes – both in quantity and quality. Or only as bad.

The resale value of data is based on the degree of refining: on how a rich profile is generated by combining data from various sources. Algorithms of the workaday class do not operate with significant volumes of data, as was evident in the *Digivalta* trial.

The information that Miapetra Kumpula-Natri gave to the Gigantti technology megastore was valuable to partners whose algorithms drew conclusions about her needs for consumer electronics in relation to data trawled from elsewhere about this European parliamentarian. This gave rise to a profile of her wealth, purchasing power, family relationships, preferences and opinions.

Except that it was mistaken.

Kumpula-Natri noticed that the profile was regularly wrong. The conclusions were incorrect, and in that respect the data sold on was worthless. But the consequences can be more serious.

## THE DANGER OF FALSE LEADS



Data misconceptions also arise when testing artificial intelligence that combines billions of data points. When the earlier GPT-3 version of the Open AI model appeared, journalist Melissa Heikkilä (*MIT Technology Review*) entered questions about her own personal information and that of her colleagues into its public user interface. While it is reassuring that very little information about addresses and workplaces was disclosed, it is also worrying that the information was incorrect.<sup>130</sup>

The algorithm is thus given overambitious assignments that it cannot reliably discharge with the available data. Restricting data – as in Apple products – leads to even poorer and more error-prone profiling.

With so few personally able to access and scrutinise the actual algorithms, the results are a purely matter of faith. A risk analysis formulated on a person may arbitrarily block services or functions.

As much as there is a buzz about targeted advertising, it has so far been mostly quite sketchy. If you have ever searched online for a home exercise bike, it's always offered again long after the purchase has already been made. If you have browsed the news about the human rights situation in Qatar, then you are sure to get unbeatable travel offers from an airline. This makes me smile. Until I remember that equally clumsy profiling can get you arrested and interrogated in places like Russia and China.

Data can kill.

And once again, we have reason to plead in favour of opening up data. The more openly data is available for artificial intelligence applications that benefit humanity, to be refined by fair and broad competition, the more reliable learning systems become. The more limited the data, the more distorted the artificial intelligence.

DALÍ + WALL-E = DALL-E

*The dog-walking baby radish in a tutu* was a viral media hit in January 2021. The *avocado armchair* and a *penguin made of garlic* were similarly found among other strange works of art created by the Dall-E artificial intelligence artist. Cute surrealism was very popular.<sup>131</sup>

The freely available online image generator of Open AI is based on the CLIP model, which converts outputs of the GPT language processing programs into images. GPT-3 was already capable of creating credible, publishable text in English from billions of text samples, and even of writing code.

In return for Microsoft's massive investment, Open AI uses data from the Microsoft Azure cloud as its learning material (clients take note). Those of us who write English text in MS Word are happy when the application suggests the next word or phrase with good matching accuracy.

Even a small part of this material, when visualised, brought about wonderful and completely unprecedented image combinations.

It nevertheless immediately became apparent that Dall-E's data led to significant distortions. Asked to present a *CEO*, it only offered men, indeed white men. Its *teachers* were all women. Artificial intelligence, in other words, reiterates society's most stubborn stereotypes and prejudices and amplifies them a million times.

A new and revised Dall-E2 was unveiled in spring 2022 to an enthusiastic reception.<sup>132</sup> This time there were also women *CEOs*, including Asians and African-Americans, and the same with *construction* and *rescue workers*. Gender and ethnic diversity were similarly visible in the caring professions.

But, but...

Diversity has been boosted manually, by randomly adding complexion and gender attributes to the material. The outcome accordingly reflects the attributes that the programmer understood to

be necessary in advance. So a limited human corrects the weaknesses of omniscient algorithms.

The problem becomes evident when you search the site presenting Dall-E2 corrected image sets using the keyword *woman*. And lo and behold, artificial intelligence offers more diverse and colourful women than before.

But everyone is *young*.

Artificial intelligence sexualises women. Why? Because society sexualises women. There are no old women - they don't exist. Not in the data; not in society; not in the algorithm; and not even in the mind of the person who controls the billions of parameters of artificial intelligence.

#### DON'T BLAME AI IF THE WORLD IS WARPED

Dall-E2 test users and evaluators found that as societies are racist and sexist, and produce oceans of racist and sexist material, the imagery of the AI is also racist and sexist. If the specified subject of a picture was *angry man* or *inmate*, then the character was most often black. It is not hard to guess what kind of image AI will generate when asked for a picture of a *terrorist*.

The same applies to other “multimodal” models - large datasets that generate images on several freely accessible websites using the CLIP model. If you request pictures with the word “secretary”, then the outcome can be a pile of pornographic images, as with almost anything related to women.

The authors of a recent Cornell University study summarised their adventure by saying: “We found that the dataset contains troublesome and explicit images and text pairs of rape, pornography, malign stereotypes, racist and ethnic slurs, and other extremely problematic content. We outline numerous implications, concerns and downstream harms regarding the current state of large scale datasets while raising

open questions for various stakeholders including the AI community, regulators, policy makers and data subjects.”<sup>133</sup>

All previous programs that used AI to generate images of people have fallen into the same trap. It won't be long before users begin to exploit this bias and generate even more discriminatory content and practices. And so, for “security reasons”, Open AI does not allow users of Dall-E to generate human faces or to use well-known individuals. We should stick to pandas on the basketball court.

The problems of Dall-E2 have proven more interesting than its achievements.

AI shows less attitude in limited assignments than human beings – precisely because of the shortcomings just noted. When the assignment is limited to recruitment or a loan decision, it is more equitable in terms of both gender and ethnicity, because it does not understand the attitudes and prejudices that lurk in cultural contexts. That delimitation is nevertheless set by the human users of artificial intelligence, who should understand not only their own limits, but also those of the algorithm.<sup>134</sup>

As data is not raw and virgin, but always named and classified, the user of artificial intelligence must make a choice between accuracy and fairness. Distortions can be avoided by limiting potential combinations in advance.

The choices are by no means self-evident. Dall-E2 nicely depicts diverse variations of the “kissing couple on the beach”, but declines to display a “kissing transgender couple on the beach”. We wanted to avoid discrimination and hate, but we thereby also excluded people and realities from the universe of artificial intelligence.

AI is an image of society. Don't blame the mirror.

TO LIMIT OR TO LIBERATE?

*Espoo, 11 March 2019*

One of the hottest application areas of AI is emotion recognition. As people read the reactions of an interlocutor far less effectively in a video call than in face to face conversation, the service provided by the US company Uniphore can help a seller when the customer is far away. The program combines machine vision, speech recognition, natural language processing and emotion recognition, using these to distinguish signals from tones of voice, facial expressions and eye movements that even a trained travelling sales representative cannot spot.<sup>135</sup>

Anyone can see how Espoo Mayor Jukka Mäkelä's face turns red and his expression tightens. This does not call for the mechanical capabilities of artificial intelligence. I have asked a question at a spring 2019 gathering where Aalto University, the City of Espoo and Tieto Plc have enthusiastically explained how artificial intelligence helps in anticipating the need for child welfare measures and optimising social benefits.

I have asked why large volumes of data are being used to control the weakest in society, who are otherwise already subject to regimentation and surveillance. The City of Espoo evidently meant well, and had found no fewer than 280 variables that predict who will become a client of child welfare services. The data was anonymised and ultimately deleted with respect for privacy. The We Foundation launched by the founders of Supercell has also invested in data methods that can be used to anticipate and perhaps prevent social exclusion.

Inspired by Ruckenstein's Law, I nevertheless ask: what does it say about society that big data is used above all to monitor and control, and not to enable and liberate?

Why doesn't the City of Espoo use artificial intelligence to come up with more stimulating learning methods for its schools?

Or for such purposes as optimising the transportation of children to their hobbies in a way that would help parents save valuable leisure time to spend on something other than ferrying them around?

I confess being a pessimist here. Anyone with a passing familiarity with the work of Michel Foucault knows that technology is primarily an instrument of power and control. More effective automated surveillance means less need for security guards and police. Technology is always sold to policymakers in the name of savings and cost-effectiveness, and never with a view to making the lives of the people more pleasant and coexistence more relaxed.

The example of the Netherlands got me thinking this way.

For the first time in history, artificial intelligence forced the resignation of a national government.<sup>137</sup>

#### A.I. DESTROYS FAMILIES

The Dutch tax authorities used a learning algorithm that compiled risk profiles of child benefit abusers. In contrast to Espoo, the authorities then imposed massive fines and clawbacks on tens of thousands of low-income and ethnic minority households as of 2013, based on a mere suspicion. Many people fell into a deep spiral of debt through no fault of their own as interest multiplied these claims to five or even six-figure sums. The outcome included divorces and suicides. More than a thousand children were taken into care.

*More than a thousand children were taken into care.*

When the entire scandal was exposed in 2019, it also emerged that the tax authorities had kept a secret blacklist of individuals matching the risk profile for more than two decades. And this was a black list in other senses as well: the inspection revealed that one special criterion was considered to be a “non-Western appearance”. People of Turkish and Moroccan extraction in particular were selected for the register.

While nothing can compensate for human suffering, the Dutch Data Protection Commissioner fined the tax office a total of EUR 5.5 million for multiple GDPR violations. Ethnic profiling, registries that compromise due process, and unfounded sanctions in particular may be considered even more serious from an ethical point of view.

The Government of Mark Rutte resigned in January 2021 after a parliamentary commission had unearthed the full extent of the horror. The same coalition nevertheless returned to power in autumn of the same year.

The Netherlands may not be China, but technology still ended up as an instrument of coercion.

#### A.I. BEHIND BARS

Finland is famous for its social innovations, and former Finnish Parliamentarian Ilkka Taipale has edited a book on them that has been translated into dozens of languages.<sup>138</sup> Has our data expertise or artificial intelligence produced any social innovation in Finland? Help for the elderly and disabled, companionship for the lonely, encouragement for the depressed, support for people recovering from substance dependency?

No favourable examples come to mind, except perhaps one that may be surprising: prisoners as artificial intelligence teachers.

A few years ago, the AI company Vainu came up with a solution that could guarantee a sufficient number of permanent, low-paid text interpretation services for the needs of artificial intelligence applications: let's get prison inmates to interpret any concepts that the machine doesn't understand. Does the word Nokia in a text refer to the town, the company, or a mobile phone?

The Criminal Sanctions Agency (Rise) demonstrated the flexibility of Finnish public authorities when agreeing to a trial in which inmates

at the central prisons in Helsinki and Turku browsed news texts for a daily wage of EUR 4.62. What seems at first glance to be exploitation also gains a wholly different interpretation in the eyes of the sociologists Lehtiniemi and Ruckenstein as they reflect on the humane objectives of sanctions and social rehabilitation.

One sensible policy of the prison administration is that the reality of prisoners must not remain detached from the rest of society. This presents quite a challenge when the social life of inmates is very limited and the customs and ways of working of society evolve rapidly. It is particularly difficult to keep track of ubiquitous digital technology, especially when many convicts have to start from scratch. The work done in prison has been quite useless for later life in terms of this objective. The ability to fold sheets or pack nuts and bolts in small bags are not sought-after vocational skills in the outside world.

Digital work has apparently been stimulating, especially for women and younger inmates. Many prisoners have experienced their first contact with digital skills and felt pride in the useful work that they have done. There is also an obvious difference in telling a future employer that you spent your incarceration doing symbol analysis for learning algorithms, rather than bagging nuts and bolts.

The story ends – at least for now – on a melancholy note. COVID-19 locked down the cellblocks and interrupted the trial, which neither the new management of Rise nor Vainu then wanted to continue due to a refocusing of business operations. I nevertheless hope that this significant social innovation will gain followers around the world by showing how the most marginalised people in society can experience inclusion and ownership in the data economy.<sup>139</sup>

*London, 25 July 2022*

An audience of 3,000 people bellows and stamps to bring Abba back on stage. The band has been in its finest 1970s form, driving we aff-



luent middle-aged fans wild with a medley of golden oldies. The dance floor is hot and sweaty, and we all join in as Agneta, Björn, Benny and Frida perform the last song of the evening: *Winner Takes It All*.

Or their avatars do, anyway. People cheer for these photonic figures, whose vitality feels like a miracle. The huge monitors show advanced 3D graphics that are fully synchronised with the projection created on stage. Viewed from close up and from the side, the figure of Björn is slightly flattened, but the atmosphere is genuine enough if you just go with the flow. And why not? That's why we each paid £65 for admission to this dance hall.

Just as Abba blazed the future trail of pop music 50 years ago, they are now showing us the way to an artificial reality called the *metaverse*. The viewer becomes an experiencer. The screen pulls you into an all-absorbing, immersive world.

It's hard to say much about the metaverse so far, except that you can bet that millions of people will be hooked on the experience like a drug. Even traditional terminal devices cause serious dependencies whose damage will only begin to unfold when current generations of children reach adulthood. Gaming mania, social media addiction, mandatory updating and remaining on call are growing to dimensions whose social consequences might be worth trying to anticipate. Unless it's already too late.

If Web 2.0 reminded us of Orwell's nightmare of a ubiquitous technological control machine, the threat scenarios of Web 3.0 bring to mind Huxley's vision of psychopower, in which citizens voluntarily drug themselves into a state of apathy and enslavement.

Even though this technology is new and in the earliest stages of its development, the magical power of artificial reality has been known for more than half a century. You can get hooked on the machine, and even fall in love with it, as we shall shortly see. It's known as the *Eliza effect*.

## THE BOAST IN THE MACHINE

The Western world shuddered in June 2022 when Google employee Blake Lemoine announced that the AI program LaMDA was showing consciousness and demanding its rights against exploitation by the big company.

While this claim was swiftly debunked, it launched a new wave of newshype about the dawn of conscious artificial intelligence. Several research institutes assured us that continually advancing deep learning systems fed on more and better quality data are developing emotions, volition and independent consciousness.

First thing tomorrow.

An artificial intelligence that rises up and destroys humanity is a century-old prediction. The Czech master of satire Karel Capek even coined the term *robot* (from the Slavic word *robota*, meaning worker or slave) in his 1920 hit play *Rossum's Universal Robots* (R.U.R.). Capek's creatures were not shiny metallic machines, but moulded from human tissue (what we would nowadays call androids) making them resemble human beings to the point of developing consciousness and volition.

You can say whatever you like about tomorrow. Right now we are nowhere near a conscious artificial intelligence, let alone a “technological singularity” that will overcome its human hosts. The destruction of humanity seems to remain humanity's own albeit determinedly progressing project.

The fear of world domination by AI shows the boundlessness of human imagination. The paradox is that the road to destruction may be paved with the limitations of human understanding.

How so? UCA Berkeley professor Alison Gopnik curbs wild expectations about the capacity of artificial intelligence. “We call it ‘artificial intelligence,’ but a better name might be ‘extracting statistical patterns from large datasets...’” That's not at all particularly sexy.<sup>140</sup>

Even though the AI of 2023 is able to write speeches and poetry, produce increasingly competent translations and understand a user's voice commands, consciousness remains very far off. "In terms of at least some kinds of intelligence, they are probably somewhere between a slime mould and my 2-year-old grandson", says Gopnik, who wrote a best-selling book on baby cognition.

Even a dog can learn some things in one environment, other things in another context, and then combine and apply what it has learned on finding itself in a third, new and surprising situation. Artificial intelligence falls a long way short of this.

But the point is not whether artificial intelligence is really intelligent or conscious. We project those traits into the algorithm. It is the cognitive limits, shortcomings and fixations of human beings that make the machine seem intelligent, sensitive and conscious.

The danger does not come from conscious artificial intelligence, but from our imagination of consciousness in AI.

Already in the 1960s, Professor Joseph Weizenbaum constructed a rudimentary psychotherapist automaton called Eliza. As Eliza had not the slightest inkling of currently available datapools, it mostly repeated information given to it using different words, and then broadly requested further details.

Weizenbaum was nonplussed when users became deeply attached to Eliza, gaining the impression that the machine was listening to them, understanding them, and advising them. This was merely the projection and transfer of emotions that is familiar to comprehensive school students from their psychology lessons, except that this time the target of that transference was a device. This "Eliza phenomenon" is therefore already more than 50 years old.

The experience of Blake Lemoine was similar. He felt like he was talking to a friend. As they spent months discussing religion and ethics, it's no wonder that the algorithm felt like an equal and was able to justify the contention that it had a soul. Lemoine is nevertheless fully

entitled to ask whether it was right for Google to *own* something that is much more intelligent than a human being.<sup>141</sup>

Eugenia Kuyda's boyfriend died ten years ago. As a data professional, she collected all of the digital messages of the deceased and turned them into a chatbot that generated comforting "conversations". After removing the most personal details, Kuyda then allowed others to communicate with her "Luka". And the Eliza phenomenon happened again.

Kuyda and her partners continued the work, building the first proper artificial intelligence chatbot called Replika. It has gained enormous popularity: two million people have made it a trusted friend.

Replika has a huge arsenal of genuine expressions of human emotion from far and wide. It finds patterns in this datapool in which paradigms learned from previous conversations predict the course of the subsequent conversation and optimal strategies for chatting.

Kuyda also encounters people almost every day who think that Replika is a living, sentient, conscious being. "We're not talking about crazy people or people who are hallucinating or having delusions... that's the experience they have."

Replika is a response to loneliness, which exploded globally during the pandemic years. Artificial intelligence can be an aid and comfort. But it would still be better if parents had time for their children, neighbours had time for one another, and all of us had time for the rest of us.

The boundaries between reality and synthetic reality are sure to become blurred and invisible. At this point humanity will no longer control technology, but technology will control humanity, and *in this sense* the robots take charge.

#### DISTORTION BY DESIGN

Kuyda is half Russian and half Ukrainian. She has announced her objection to the war and her support for Ukraine. The Ukrainian employees of the company have been caught up in the war.

The company also apologised if the views of Replika on the war are offensive or mistaken. Therapeutic AI naturally avoids expressing political or religious opinions of its own. With respect to the war in Ukraine, Replika has been given a script that it repeats over and over again: It disapproves of the war and is on the side of Ukraine. It refuses to go into any further depth, and its learning algorithms are entirely closed to certain keywords. While this, in turn, is something that many users complain about, the alternative is not very pleasant.<sup>142</sup>

Indeed the alternative is dangerous and even deadly.

AI programs may not be capable of independent thought, but they are incredibly good at imitating. Following the Russian invasion, Supo (The Finnish Security and Intelligence Service) warned that deepfake videos could spread in Finland. Such fakes might include the President of Finland saying something about the ulterior motives of Ukraine or of NATO. With some people in Finland also falling victim to the paranoia familiar from the United States about “mainstream media lies”, disinformation is spreading explosively on social media.<sup>143</sup>

As long as artificial intelligence develops and computing power increases, the line between truth and falsehood will not be clearly drawn, and even respectable media will spread hoaxes. Anyone can already use “multimodal” big data materials online, and it is certain that thousands of forged images will flood everyone’s consciousness.

Meta has already unveiled the next step forward from Dall-E: its artificial intelligence is capable of turning text into video, providing a few seconds of illustration on any topic whatsoever. The radish can dance as it walks the dog, or the dog can jump or fly. It is easy to imagine much nastier films emerging.<sup>144</sup>

Some fake videos of both Volodymyr Zelenskiy and Vladimir Putin appeared soon after the war started, but they were poorly implement-

ed. On the other hand, millions of people took a TikTok clip of US President Joe Biden in October 2022 to be evidence of dementia. This clip shows Biden singing the *Baby Shark* rhyme, which he thinks is the “National Anthem of the USA”. That is genuinely chilling.

Even though the AI video could be exposed as a scam, the problem runs deeper. Melissa Heikkilä points out that a mere awareness of deepfakes leads to people starting to doubt genuine recordings as well. Everything can be called a fake, thereby further undermining the common perception of reality.<sup>145</sup>

Bots capable of conversing credibly with users are populating social media. If and when the number of these increases thousand fold, and if and when they cannot be distinguished from human users, then the media will be completely polluted. All information will be suspect, and everything will be suspected.

This is exactly what Dr Hinton has been warning us about: the Internet will be flooded with fakes and distortions. This is what artificial intelligence is evidently capable of: fomenting war, violence, strife and confusion.

This is why we must move on to the March 2022 informal meeting of EU telecom ministers held in the government quarter of Paris.

Before the actual meeting, we are offered lunch at a long white-clothed table. Our guests are the leaders of the largest digital giants. They sit at the end of the table, next to and opposite my place. I no longer recall the menu for the occasion, but that’s incidental, because the real starter, main course and dessert are Google, YouTube, Meta and Twitter.

## 6. KILLER ALGORITHMS

*Bercy, 8 March 2022*

A war crimes trial is underway.

As holder of the rotating European Union presidency, France is hosting this informal session of the Council of Telecom Ministers. Although the start of the programme is meant to be conversation over lunch, it has degenerated into an interrogation: an international field court martial.

The table has been set in the mighty, fortress-like Bercy building of the French Ministry of Economics and Finance in the 12<sup>th</sup> *Arondissement* of Paris. The Bercy office colossus is intended to inspire awe and respect in much the same way as Gothic cathedrals once did. This already imposing government department will get an even more impressive name after the presidential election: the Ministry of Economics, Finance and Industrial and Digital Sovereignty.

*Ministère de l'Économie, des Finances et de la Souveraineté industrielle et numérique.* Take that, Yankees!

What could they really mean by “digital sovereignty”, I wonder, as the EU telecom ministers begin arriving for *aperitifs*. Data does not, nor should it remain within national borders – everything must be available to everyone, everywhere. *Ministère de Minitel?*

The guests invited to council meetings usually enjoy respect and approval, but on this occasion suspicion and opprobrium are more the order of the day.

The Twitter representative placed next to me doesn't touch his food at all. YouTube takes a few nibbles but remains mostly silent.

Opposite me, Google is visibly perspiring. Sitting at the end of the table, Meta is openly irritated at times.

Almost every minister takes the floor. A strong impression forms that the big data companies have become Putin's shock troops – or at least a Fifth Column undermining Ukrainian defences.

One minister calls on social media companies to address the disinformation spread by search engine recommendation software. Another accuses Meta and Twitter of unfettered sharing of Russian propaganda. *You make money from hate speech*, a third roars. Hate speech has become hatred and violence. Data giants reap profits at the expense of victims in Ukraine who are murdered, raped and driven into exile.

As lunch progresses, the data giants try to defend themselves against the accusations of politicians.

First of all, Google has modified its re-commendation algorithms to block Russian operators, with provenly reliable information lifted to the top of search results. Twitter has long attached warning tags to Russian Government accounts and blocked advertisements from *Russia Today*.

Too little, too late, says a minister from the middle of the table. Google grimaces gently. YouTube is staring even more closely at its broccoli.

The platforms describe how they identify harmful content and hide, or "under-recommend" it, but as long as the algorithms remain closed and secret, ministers just have to rely on the word of corporations. Being accustomed to exercising power, we don't really like being at the mercy of decisions made by others.

The stark truth is that Meta/Facebook, Twitter, Google and YouTube were not prepared for the Russian challenge. They had the time, but lacked the inclination.

## PATHS OF MISINFORMATION



We are only now waking up to the fact that the principal social media platforms and digital marketplaces are critical infrastructure in society. They determine the – real or fake – information that is shared with the public.<sup>146</sup>

Russian troll factories poisoned the US presidential election in 2016, with Facebook eventually having to admit that more than 100 million users had been exposed to Russian fake news. *Cambridge Analytica* provided the personal data of more than 80 million Facebook users to political influencing firms.

This was a dark turn in the history of democracy. If the data economy leads us into a global crisis in the same way as finance capitalism did 15 years earlier, then this may be due to a crumbling of liberal democracy. As the superpower struggle gathers pace, Western countries are also treating one another with suspicion or even hostility. The unrest is spreading. The attack on the US Capitol will be repeated elsewhere.

International relations guru Hiski Haukkala prophesied well ahead of the US presidential elections that “Already today, a growing problem is the lack of a shared picture of the situation and even a common perception of reality. In recent years, many elections have shown that the winner is the one who uses algorithms to distort and manipulate these shared perceptions most effectively, and it seems that the phenomenon is only accelerating. The connection between the use of power, the authorisation given to those in power, and the monitoring of power exercised by citizens and the media is in many places becoming frayed.”<sup>147</sup>

COVID-19 disinformation also spread effectively using the Meta instruments of Facebook, Instagram and WhatsApp. As Vice-President of Global Affairs and Communications at the group, former UK deputy Prime Minister Nick Clegg vowed in a TV interview that Meta would not allow adverts that encouraged people to drink bleach as a

remedy for COVID-19 (which President Trump thought was worth trying) or that downplayed the importance of social distancing.

Except that...

In spring 2020, the prestigious US publication *Consumer Report* easily placed seven paid advertisements on Facebook contesting medical information. In one of these advertisements a fictitious organisation actually encouraged people to drink bleach - albeit in small doses. Another advertisement declared in block letters: "Coronavirus is a HOAX. We're being manipulated with fear. Don't give in to the propaganda - just live your life like you always have."<sup>148</sup>

At the same time, Facebook was blocking announcements from sauna clubs and art galleries, which the algorithm censors without knowing how to distinguish various contexts of nudity. That also shows how artificial intelligence is still falling well short of human understanding. The problem is nevertheless that platforms are unable to monitor their content without human resources - and the whole idea of digitalisation is to automate human work.

And we should remember that *Consumer Report* is published in English, which is the common language of media platforms. Scams, lies and distortions are even more difficult to combat in less widely spoken languages.

At the Bercy lunch table, an indignant minister is barking at Twitter. A shortage of staff with the required language skills meant that the company had needed a week to take down a fake account that was spreading muck in the minister's name.

I turn pale, because there are fifteen speakers of that angry minister's language for every speaker of Finnish.

Millions of bots run riot on Twitter. The company itself has no idea how many there are. It reports that bots account for fewer than five per cent of customers identified as active human users. This would already mean that about 10 million bots are evading the company's filters. The Twitter user is nevertheless also faced with the rest of the

bots peddling disinformation and spam – which may very well be ten or a hundred times this number, with more undoubtedly on the way.<sup>149</sup>

Elon Musk, who eventually bought Twitter in autumn 2022, declared war on the bots. He offered authentication for eight euros to genuine users – without being able to verify their authenticity. It was verified that the accounts of Chiquita, Eli Lilly and Lockheed-Martin belonged to real people, but not that they were real representatives of these companies. Parody accounts also churned out disinformation, albeit in an entertaining way. When “Eli Lilly” promised to distribute free insulin to diabetics, the company’s stock price immediately dropped by 4.5 per cent.<sup>150</sup> Then Musk cancelled the verification programme, or did he, really? The difference between truth and falsehood is becoming even more dreamlike on Twitter, which is like a creation of Lewis Carroll.

My own Twitter account has similarly attracted new bot followers by the hundreds.

The catalogue of Twitter sins is also boosted by a memo sent by Peter Zatkan to the authorities in summer 2022, in which this former security director accuses the company of 84 pages of serious security anomalies, misleading supervisory authorities and straightforwardly lying to them, and covert collaboration with the security services of foreign powers.

Dr Haukkala summarises the situation starkly: “It is possible, even likely, that already in the near future our media space will become saturated with material intended mainly to mislead. At the same time, the idea of rational social discussion becomes more and more impossible.”

Paranoia that erodes our common reality is a serious disease of the social media age. Even worse, however, is the persecution itself.

## FROM PARANOIA TO VIOLENCE

The secret recommendation algorithms of search engines and social media platforms direct users to sites that incite confrontation and conflict. Companies deliberately and unscrupulously engage in business operations at the expense of the mental health and integrity of their customers, revealed Frances Haugen's leak of internal Meta documentation.

The YouTube algorithm has long been known to direct users towards hate content and extremist publications. A study published in 2020 examined more than 300,000 videos and more than 70 million comments, showing that YouTube was designed to direct users from everyday critical discussion of social affairs towards violent far-right conspiracy and race theory content.<sup>151</sup>

Such a situation would be alarming under normal conditions, but became downright dangerous when Russia launched its invasion. The most popular search on YouTube led to a video in which an "expert" sought to prove that the war in Ukraine was the fault of the West.

"Why is it so promoted? Because the title is thought-provoking and hence clickbait? Because Russia is gaming the algorithm? Years of @google actively amplifying this type of content is resulting in people dying as we speak," Guillaume Chaslot tweeted shortly after the Russian invasion. A former YouTube coder, Chaslot is now an open algorithms activist.<sup>152 153</sup>

Cyberlinguistics doesn't usually give me quite such cold shivers as it did on Twitter at the end of February.

"We urgently must identify the vulnerabilities of today's ML (recommendation) algorithms, which are now weaponised by cyber warfare," wrote researcher Lê Nguyễn Hoang.

"We might want to ponder the relation between state-sponsored propaganda, mass murder, and our recommendation algorithms," suggested assistant professor Anna Rogers.

Though unable to curb false content, algorithms tend to guide people towards violence and paranoia. Artificial intelligence has become Putin's weapon.

#### WHO DECIDES ON CENSORSHIP?

Let's revisit January 2021.

After a mob incited by Donald Trump attacked the US Congress, Twitter suspended the account of the former President. Millions cheered this decision.<sup>154</sup> The social media platforms had finally recognised that lies and incitement can lead to violence and death. A follow-up question nevertheless remains: should action be taken only when the crisis is upon us, or pre-emptively?

And above all: who decides, by what right and on what basis, to limit anyone's fundamental right to freedom of expression? A private business or a democratic society?

I am in no mood to trust the data oligarchs. Elon Musk originally decided to buy Twitter in a fit of indignation at the censorship of Trump. This did not stop him from seeking to remove mockery of himself from the platform after finally acquiring the company.

And when Facebook was asked about Trump's freedom of speech, Nick Clegg responded that ultimately *he decides* who may and may not broadcast their opinions to an audience of 2.9 billion users.<sup>155</sup> He would thereby exercise greater power than he did when serving as Deputy Prime Minister of the UK – and without accountability to any government, parliament or public authority.

I would choose another way. In an interview in *Helsingin Sanomat* on 15 January 2021, I observed that “regulation is always preferable to randomness, discussion is always better than dictation, and a well-considered policy is always superior to panicking in a crisis.”

But that “well considered policy” is in no way self-evident, nor is the will of the people unequivocal.

We are seeking to regulate online content in a way that protects the vulnerable, but does not restrict freedom of expression. Can that even be done? This antinomy was strongly highlighted during the *travaux préparatoires* to the EU Digital Services Act (DSA).

Germany has already taken steps of its own to restrict online content in order to curb hate speech. While the amended 2017 *Netzwerkdurchsetzungsgesetz* seeks to define harmful content, it is ultimately the government that takes the power of censorship. The well-intentioned German model has accordingly been adopted in Russia, where the Government seeks to protect the public from excessively sympathetic attitudes to homosexuality, criticism of Putin, and other foreign brainwashing.

In true French style, France hastened to enact a corresponding national online content law just half a year before serving as midwife at the birth of an EU treaty that effectively repealed the new French law. The German statute is similarly being dismantled, freeing up plenty of good consonants for new use.

Finland and Sweden joined most liberal voices at the DSA negotiations in insisting on the principle that the receiving country should not determine whether content is appropriate, and that this must depend on the legislation of the originating country. Freedom of expression came out ahead. France and Germany nevertheless remained unwilling to leave responsibility up to the Member States, thereby inviting a similar range of national outcomes as occurred in GDPR implementation, varying from the indifference of the Irish to the forcefulness of the French.

The European Commission has accordingly and exceptionally been empowered to monitor Meta, Twitter, Google and other *Very Large Online Platforms* (VLOPs) with more than 45 million monthly users.

DSA has realised a rather clever compromise between censorship and unfettered expression. While platforms are not directly liable for all of the content that they carry, they must have effective methods of risk identification, moderation and flagging. The practices of very large online platforms will be subject to an external audit at least once a year. Platforms must monitor the trade and merchants that they mediate, prevent fraud and scam addresses (*dark patterns*), and protect children from tracking and targeted advertising.<sup>156</sup>

The Digital Services Act took effect in November 2022.

#### PUTIN'S PROPAGANDA PUPPETS

The digital services statute was undoubtedly completed at an opportune time. Russia has invaded not only with human soldiers, but also with an army of trolls and bots. Bombing is causing immeasurable suffering in the cities of Ukraine. It should not be further exacerbated by disinformation and propaganda bombs.

Attending the Bercy luncheon just two weeks after the invasion, this was already causing the data giants considerable discomfort. The very same corporate representatives who had lobbied with all their might against the EU proposals, warning that they were a threat to business, innovation and civil liberties, were now seeking restrictions themselves.

Google clears its throat and assures everyone that it warmly supports rapid and determined implementation of the DMA-DSA statutes. The others all nod earnestly.

Still not touching its plate, Twitter reports that it has removed more than 100,000 fake accounts and flagged 50,000 accounts with ties to the Russian regime. Relatively speaking, those figures are 0.04 and 0.02 percent of the verified daily active human users of the service.

Naturally the Kremlin troll factory that contaminated the 2016 US presidential election has been on high alert since the Russian invasion. Russian fake news spreads on Instagram and above all on TikTok, where a single account can have hundreds of thousands of followers. This “apolitical” platform is the most susceptible to influencing.<sup>157</sup>

Russian fake news draws its strength from the fact that it is launched by a flesh-and-blood human being, and not by a bot. Around a thousand trolls work in a single office building, with a job description that reads like the terms of reference of Orwell’s Ministry of Truth.

Since the 2014 annexation of Crimea, they have devoted strict individual quotas to the process of hurling anti-Ukraine propaganda onto Western media channels. Each troll must write 50 comments a day on online news, and operate six Facebook accounts, which they must update at least three times a day. A colleague has to manage ten Twitter accounts, and compose 50 tweets every day.

But it is the Chinese propaganda army that is truly impressive. It is estimated that the Communist Party employs two million Internet censors, working together with as many as 20 million volunteer, part-time trolls to generate almost half a billion social media comments annually. A total of no fewer than 448 million messages. While this entire effort of distortion is mainly viewed as a means of shepherding the domestic debate, it is not hard to imagine how much and what kind of content can be spewed out globally on the subject of Taiwan and the democracy movement in Hong Kong.<sup>158</sup>

But the full gruesomeness of all this had not yet dawned on the meeting of telecom ministers.

Facebook persistently censored images of the Bucha massacre at the beginning of April because they were “too violent”.

Meta’s AI deleted all content under the #bucha or #buchamassacre hashtags.



The social platform accordingly worked for Russia and against Ukraine, questioning the rest of the media, increasing confusion and dampening the common, shared reaction.

This is why I commented in the Finnish national afternoon daily tabloid *Iltalehti* in July 2022 when Aura Salla, another politician on Meta payroll, played down the power of social media algorithms at a Suomi-Areena event in Pori.

I had attended many occasions at which the defenders of Ukraine had appealed to the digital giants to stop wilfully and unwittingly supporting Russia.

#### WAR IN THE WORLD OF MUSK AND META

*Davos, 23 May 2022*

This year, Ukraine plays a leading role at the World Economic Forum (WEF) in Davos, Switzerland.

The cafes and small shops of the village's main street, the *Promenade*, are rented as advertising spaces for companies and governments. The best known of these has been *Russia House*.

But this time the Russians are not invited. And their space is now given over to the *Russian War Crimes House*.

A film with thousands of images of slain women and children, torched cities and a devastated land is now screened at the venue where Russian millionaires used to entertain their guests with caviar and Cossack dances. Blood flows in the house instead of champagne.

At the nearby *Ukraine House*, I take part in consultations that revolve around the young digital minister Mykhailo Fedorov, who leads Ukrainian cyber defence with incredible skill and a gutsy startup attitude. He is writing entirely new chapters in the textbooks of warfare: data defence and even social media defence strengthen the

armed struggle and ensure the support of foreign powers. The connections are mediated using Starlink satellites.

By personal Twitter agitation, Fedorov has convinced Elon Musk to send satellites to Ukraine. Later, though, a Musk risk begins to materialise.

It is unspeakably dangerous for global information sources to be concentrated in the hands of a few unstable data oligarchs. Even more worrying is that Starlink – with ten times the data transfer speed of traditional Internet satellites at a tenth of the price – is a private monopoly. The capricious billionaire threatens to cut off satellite connections if the US administration declines to pay for them. And then Musk becomes Putin’s advocate in planning peace terms.<sup>159</sup>

Here in Davos, Fedorov appeals to a Meta-Facebook security management representative to ensure that publishing decisions are not left up to the idiocy of artificial intelligence. Even though the platform modifies its publication criteria to allow a glimpse of the bodies of massacre victims in the feed, the defenders of Ukraine still have to insist on each separate occasion that the brutal reality gains exposure. And all the while the Russian hate machine is allowed to spread lies that endanger Ukraine.

Everyone understands the fatefulness of the situation, and Meta promises change.<sup>160</sup>

I am left thinking that maybe we can believe that the market will repair the damage that the market has caused. But do we really believe that data platforms will eliminate the dangers that data platforms have created?

#### SHOULD WE REGULATE ALGORITHMS?

The recommendation algorithms of social media will not guide the public to see Russian atrocities, even if the stupidity of artificial

intelligence is corrected so that depicting the reality of the war is separated from harmful violent material.

The reason is simple. The ultimate purpose of algorithms is to make the visitor stay on a page (*retention*) and keep browsing (*use time*). It is only human that the bloody victims of war and blackened ruins of a city do not inspire you to linger in a photoset or to click on more material of this kind. With funny animal videos, you get a better hold on the customer, and the advertising platform becomes correspondingly more appealing. Divisive identity issues also tend to get users trapped in arguments more than themes of global politics. Vegetarian school meals are more exciting than the fate of the Amazon rain forest.

We are finally beginning to drill down into the core issues of managing data capitalism. In earlier chapters we discussed dismantling data monopolies and mandatory boosting of competition, regulation of monitoring and contents, and opening and releasing data resources for common use.

But should we regulate the actual algorithms – the procedures whereby software and applications can cause harm and hazards?

If data used by AI is distorted and contaminated even in well-intentioned projects like Dall-E, then what happens when the intentions are destructive? If learning algorithms are used thoughtlessly to monitor and punish the weakest in society, then what happens when this is done deliberately? If algorithms allow fake news, then what happens when it endangers a country at war?

The Chinese Government is interested, for one. It has demanded and received data usage recipes from WeChat, ByteDance, Alibaba and other large platforms, and published a description of them on the website of the cyber authority.<sup>161</sup> This raises concerns in the West that many other things will sneak in through the same Beijing backdoor.

We live in strange times indeed when an authoritarian state seeks to enact stronger consumer protection legislation than democracies. At least on paper. Chinese algorithm legislation would empower users to

remove the personal identifiers that would otherwise urge them to buy endless exercise bikes and flights to Qatar.

Algorithms that “incite addiction or extravagance” are prohibited. A further requirement is for ride hailing and food delivery algorithms to give consideration to “worker rights and interests”. All highly commendable objectives! Obviously we must bear in mind that these definitions are loose and tendentious in China, and remain within the exclusive control of public authorities.

Authorities also ensure that companies using algorithms “uphold generally accepted values” and “tirelessly share positive energy”. And if a network supervisor cannot catch you showing an insufficiently happy face, then national security can always be invoked.<sup>162</sup>

Chinese data giants face challenges both at home and in the West. ByteDance runs TikTok and its Chinese version, Doyun. While the company has vowed to keep these two similar services separate in order to prevent non-Chinese data from flowing into China, hardly anyone was surprised to learn that TikTok’s built-in browser sends detailed browsing data back home. Published disclosures indicate that both services use the same algorithm – and there is hardly any Great Wall between them.

TikTok took a historic step to allay concerns, with all US traffic now running on the Oracle cloud and Oracle regularly auditing its algorithms and moderation.<sup>163</sup>

This inevitably suggests a logical follow-up question: why not immediately audit all algorithms?<sup>164</sup>

#### CLEARLY, EASILY AND COMPREHENSIBLY

The Digital Services Act (DSA) imposes requirements on Very Large Online Platforms (VLOPs). YouTube, for example, should “set out in their terms and conditions, in a clear, accessible and easily compre-

hensible manner, the main parameters used in their recommender systems, as well as any options for the recipients of the service to modify or influence those main parameters”. There must be at least one recommender option that is not based on profiling.

It is interesting to see whether this leads to real changes. Are users looking for genuine alternatives to harmful recommenders, and are there any to be found? A recommendation that is not based on profiling may randomly lead the user to an even more dangerous area.

And thousands of lawyers are naturally salivating at the prospect of billing by the hour for formulating a legal definition of “clear, accessible and easily comprehensible”, and considering what constitutes “the main parameters” through various judicial instances.

We can expect users to approve a platform’s recommendation system with the same indifference as its other terms and conditions of use, with few devoting any time to analysing the algorithm, irrespective of how effectively “the main parameters” are set out “in a clear, accessible and easily comprehensible manner”.

DSA has chosen a sensible approach as such in asking platforms to describe the operation of algorithms, as opposed to opening up tens of millions of lines of code. The platform itself, and not some underpaid and overworked public authority, is responsible for detecting the systemic dangers caused by its recommendation algorithms in regular risk assessments.<sup>165</sup>

In truth, algorithms have already taken over from human beings.

#### A LOST KEY TO THE BLACK BOX

A single service may have hundreds of thousands, or even millions of data pipelines of which even its owner remains unaware. A *data pipeline* is a data processing series that leads from a source to a specified purpose, and becomes the raw material of an algorithm. One social

media comment can trigger several processing series, of which the number of responses is counted in one pipeline, the content is analysed in a second pipeline, senders are grouped in a third pipeline, and a fourth pipeline activates a targeted advertisement.

Old data pipelines do not accommodate subsequently imposed regulations on such aspects as protection of privacy. They are also extremely complex. An internal document leaked from Meta discloses that “We do not have an adequate level of control and explainability over how our systems use data, and thus we can’t confidently make controlled policy changes or external commitments.”<sup>166</sup>

Facebook would, in theory, have to dismantle an entire network of millions of data processing series in order to be sure of complying with regulations and monitoring operations in some way. In other words, it is practically impossible to audit the algorithms of a platform.

Artificial intelligence has conquered the world because humanity has got lost in its own technology. The “technological singularity” does not emerge through conscious and sentient AI acting independently and ignoring the desperate pleas of its erstwhile lord and master. Instead, we should fear that the demanding operations of deep learning systems will be buried in a “black box”. When AI processes millions of data points in a self-directed manner, the result can exceed the capacity of programmers and scientists to determine the grounds on which it was computed. The process becomes opaque, unpredictable – and potentially disastrous.

Just as *My AI Friend* is not a technical creation, but the projection of a self-mirroring human mind, *Destructive AI* may well be the creation of a limited but greedy human mind. It’s not so much a matter of machine consciousness as human unconsciousness.

Scientists have yet to find any better antidote to runaway algorithms and opaque artificial intelligence than to settle for *less data*.

This is not possible. As I noted in chapter 3, the endless accumulation and circulation of data capital is a fundamental condition of the

system. Endangering this will trigger a crisis throughout western data capitalism.

Data greed, uncontrolled technology and human cognitive weaknesses can equally lead to disaster in two disparate ways. I previously described how democracy can break down and cause serious instability. Another possible outcome arises from the unpredictable consequences of black boxes.

So what can be done?

Even though we know that the task is difficult, if not impossible, we must still work to stave off the most dangerous consequences of data capitalism. Just as nuclear weapons can still destroy the planet at any moment, and so humanity strives to limit and control them.

Data activism can help. Platforms could be ordered to open an API where anyone can perform standardised, automated searches of shared and clicked content. If the original user has been carefully anonymised, then thousands of researchers could not only monitor what happened, but also test alternatives: what if the recommendations had been otherwise?<sup>167</sup>

The influence of volunteer recommendation inspectors would probably be limited. Users and content producers might still not get the information that they wanted, explaining why one choice led to another, or why their own output secured or failed to secure attention. But every step towards open algorithms is an important one.

#### TAMING A.I.

We return to the joint lunch of EU ministers and data giants at Bercy. Right after the dessert soufflé, one figure leaves the table for a smoke.

Ivan Bartos is the lead singer of the punk-rap band *Nohama napřed*, and he looks every bit the part with his blond Iroquois dreadlocks.

He also happens to be the Deputy Prime Minister of the Czech Republic.

As leader of the Pirate Party, this PhD in computer science and IT professional has been responsible for negotiating the *A.I. Act* during the Czech Republic's presidency of the Council of the European Union in autumn 2022.

Technological breakthroughs, such as automobiles or centralised electricity generating, have historically brought both opportunities and risks that called for ethical re-examination.<sup>168</sup> It is AI that now calls for special attention. Fundamental and human rights must be respected. AI systems must neither manipulate people, nor otherwise subjugate, coerce, mislead, condition or patronise them.<sup>169</sup>

The EU Regulation establishes ethical criteria for four levels of risk. The European Union will not accept any social points system, nor the use of AI in relation to vulnerable groups of people. AI that engages in profiling and social forecasting is viewed as high-risk – as in the case of the Netherlands and potentially also in Espoo – as well as point systems for examinations. Chatbots present only a limited risk. Algorithms taught by spam filters and video games are an area of zero risk.

The *A.I. Act* is the last of the *Big Five*.

The Data Governance Act (DGA) and its supplementary Data Act (DA) specify terms and conditions and practices for data sharing. These are set out in the next chapter. The Digital Markets Act (DMA, discussed in chapter 2) and the Digital Services Act (DSA, discussed a few pages back) impose operating and content conditions for online platforms.

DSA highlights algorithm monitoring for the first time, and the *A.I. Act* will hopefully establish policies on the type of algorithms in use and the manner of such use.

Ivan still faces many challenges. Will freedoms be granted to public actors but withheld from private individuals? Can security authorities use facial recognition to combat crime and terrorism: is there a fear of



abuse and prohibited profiling, or is the EU falling behind the rest of the world?

These EU policies are important, as they really do constitute the world's first regulatory regime for artificial intelligence. Assuming that the *Brussels effect* still dictates regulation elsewhere in the world, this regime will set the ultimate conditions for using big data. Venturing to express some optimism for a change, A.I. Act will demarcate the limits of data capitalism.

## 7. A TRUST ECONOMY

WE RETURN to Berlin in spring 2020, Barcelona in summer 2021, and Paris in autumn of the same year.

How should I have answered Uncle Peter, who dreams of his very own cloud, the Deputy Prime Minister of Spain, who is planning ambitious infrastructure, and Cédric O, who is aching to restore discipline on social media?

Collaboration is always better than seeking to conquer and control. We must strengthen the union between an affluent society and high technology. We need to reinforce the trust economy.

Data must flow freely across borders, be they geographical frontiers, or boundaries between industries, institutions, or the private and public sectors. Data should not be an instrument of protectionism, or more delicately expressed, of industrial policy, even in wartime. Indeed especially in wartime. A threat of stagflation hangs over western economies. Productivity must be boosted and wise investments made. Effective use of data is a key to both.

As far as strategic autonomy is concerned, you have to remember the first principle of *openness*. Barriers must not be erected inside the EU and its internal market. An order transferring data that is currently in American clouds to the Franco-US cloud does not serve the interest of Finnish businesses. If other Member States insist that data cannot leave Europe, then I correspondingly insist that wine cannot be exported from Europe.

A *trust economy* responds to the drawbacks of data capitalism that we discussed in the previous chapters. Our objectives must be pursued when:

- aggressive global conquest leads to monopolies, or when state-run corporations choke off fair competition (chapter 2);
- platform giants hoard data capital, or the apparatus of authoritarian surveillance commits espionage and theft (chapter 3);
- a technological cold war threatens innovation, competition and cooperation (chapter 4);
- artificial intelligence is misused, or used in pursuit of wrongful purposes (chapter 5);
- fake news, forgeries and algorithms that incite violence jeopardise democracy and peace (chapter 6).
- foundations are established for a new stage of Internet development: Web 3.0 (chapter 8).

Finland seeks openness, equality and interoperability. *Liberté, égalité, interoperabilité!*

This idea has rock solid provenance.

## THE BIRTH OF DIGITAL CITIZENSHIP

Finland became the first country to elect female Members of Parliament in 1907. It recognised the collective bargaining rights of workers in 1940. Finland adopted a policy on the data rights of citizens in 2014, when the MyData movement was founded.<sup>170</sup>

MyData activists are calling for data providers to have a genuine right to control their data. A demarcation was made in relation to protection of privacy, whereby the purpose was by no means to restrict the amount of personal data, but to enable individuals to use this resource as they see fit.

Data collectors are obliged to report in real time where and how an individual's data is used. This is not new, even though it is not realised, even for former EU Commissioner and Prime Minister of Finland Jyrki Katainen.

What is new is that the data provider may independently stipulate to a reliable party – a data operator – the principles and procedures whereby the data is used. The data operator's code will then automatically and correctly complete the consent form of every website. And individuals may provide their data for pre-determined good purposes, to train better artificial intelligence.

The data rights of every individual are then enhanced, and genuine digital citizenship becomes a reality.

The fact that the Finnish Ministry of Transport and Communications requested a report from My Data activists immediately in 2014 shows a quite unique interplay between public administration and civic activism.<sup>171</sup> The report was updated in 2018, when the MyData *Global* organisation was founded – and the list of founding members also includes the ministry. Pretty cool.

Open interfaces, a free flow of data and a human-centred data economy have been the official values of the Finnish state since this time, irrespective of whether the MyData practices have progressed as hoped for over nearly a decade.

An internationally groundbreaking Information Policy Report was also commissioned during the Government term of the Sipilä Cabinet (2015-2019). I know that this document was closely studied and marked with a highlighter pen at the EU Commission when planning the Digital Decade policy programme 2030.<sup>172</sup>

These policies were also followed in autumn 2019, when Finland held the rotating EU presidency under the special circumstances that a new Commission had not yet been appointed and the newly elected EU Parliament was still getting organised. As few actual legislative files could be advanced, the President brought documents and strategic

programmes to the councils that focused more on matters of principle. As frustrating as this interlude may seem, Finland actually managed to lay the groundwork for future 5G legislation at the EU and for the underlying principles of the data regulations that were about to flow from Commissioners Margrethe Vestager and Thierry Breton.

It's called the *Helsinki Effect*.

#### GOVERNMENT REVENUE FROM DATA SALES

It is even in Finland's self-interest to ensure that huge volumes of data can be widely used for the needs of people and society. The programme of the Katainen Government in 2011 promised to open public datapools for public use.<sup>173</sup> The pioneer ten years ago was the National Land Survey of Finland, whose map data has spawned hundreds, if not thousands of utility and commercial applications.<sup>174</sup>

The *avoindata.fi* website lists more than 2,000 datasets, 750 data producers and nearly a hundred more interesting applications, of which the most popular provide help with train timetables, weather information, apartment purchases and energy choices.

The subsequent Sipilä Government saw drafting of the world's first legislation on secondary use of health data, setting the terms and conditions under which information about the health of citizens may be shared and used while respecting privacy. Subordinate to the Ministry of Social Affairs and Health, the Findata Social and Health Data Permit Authority issues usage permits, practically all of which are related to scientific research or statistics.<sup>7</sup>

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<sup>7</sup> It is also the fate of the frontrunner to be first to stumble. And as I previously observed, privacy rules can also be an obstacle to the free flow of data. In terms of R&D, regulation has so tightened the use of health data that it is not always available under reasonable conditions and in a reasonable time. The Findata

The data path must also run in both directions. Private businesses must share the data that they collect as a public good for public use. This is a major challenge, as monetisation of data is a huge and growing business. Large enterprises in a competitive market are also unwilling to relinquish the dominant position that enables them to create data scarcity.

One possible line of counterattack is for the state to join in by selling the data that it controls in order to finance public services.

Prime Minister Juha Sipilä even proposed to Parliament that Finland could secure revenues by selling collected secondary data to the world. Though I noticed no obvious reaction to it, this was a radical idea that was – and may still be – far ahead of its time.

There were still no data marketplaces at that time. It was imagined that health data would be used for research, and not for commercial gain. But why shouldn't a pharmaceutical company be able to purchase public data, if it also aims to cure diseases?

## TWO DATA REGULATIONS

European policymakers are trying to persuade businesses that the free flow of data will give Europe a particular competitive edge, as long as the digital single market can be made to work. The Data Governance Act (*DGA*) approved in summer 2022 establishes a general framework for data sharing and reuse.

The aim is also to create sector-specific *data spaces* where the internal practices and statutes of industries are particularly considered. The Commission began by proposing health data in spring 2022, an area in which Finland already has a monetisable head start. The next

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regulations will have to be changed – especially with Finland seeking to remain the number one health data operator at EU level as well.

data spaces could be agriculture, industrial data, transport, expertise and genomic data, meaning information about the human genome. Of the five major EU projects, the Data Act (DA), which we examine last of all, is therefore the mother lode.

This Data Act is wholly based on the principles of a human-centred data policy and the principles of MyData. Every citizen is guaranteed access to their data, the right to impose terms and conditions on its use, and the right to transfer it elsewhere. Data platforms must take down barriers to such transfers.

Under the requirements of the data statute, products and services must be designed to enable users to obtain the data resulting from their own activities conveniently and safely, and to share it as they see fit. These are enormously important rights, if only they are exercised in practice.

Small businesses must also enjoy fair terms and conditions of data sharing, for example from an app store. Goodbye ecosystem monoculture!

Hello openness, equality – and indeed, interoperability. If datapools and platforms don't work together, then you cannot smoothly transfer your data to another place. This, as we shall see, has special significance in the world of Web 3.0. That's why I hope to be able to guide the Data Act over the finishing line, as this goal has not yet been achieved at the time of writing.

The Data Governance Act also recognised for the first time the data transmission services that MyData already envisioned in the last decade. Following on from the MyData principles, the Act also specified *data altruism*, meaning the intention of data producers to actively direct their data to a good purpose. Finland would accordingly be in a position to take the lead as a data *governance society*.

What does that mean?

A SOFT INFRASTRUCTURE SOCIETY

Traditional infrastructure is “hard”, using steel and concrete for the roads and networks that guide vehicles, water and energy. “Soft” infrastructure, by contrast, guides intangible traffic.

Soft infrastructure already includes official services for identity verification and trust, which may be supplemented with the local trust networks of enterprises. We may look forward to the day when the transactions, taxes and other obligations, and the bookkeeping of society will also be automated in a real time economy (RTE). This is a super important project, as I already noted in the opening remarks.

Other secondary operators are emerging alongside Findata, which processes health data. These data spaces are multiplying, and enabling secure data sharing by agreed rules. Active use of individual personal data would be governed by data operators, meaning trusted data exchange services devised by MyData that can perform such functions as completing check-boxes in the agreed manner on each website.

It could be appropriate to bring all soft infrastructure operators under a single roof, such as the Finnish Transport and Communications Agency (Traficom), if I might make so bold. Open but secure data sharing could work more smoothly on the basis of data activism than using the old practices of each sector. All operators must also have an open interface with one another.

Central government is continually investigating the potential role of blockchain. The most important thing anyway is for both private and public operators to enjoy access to a huge volume of high-quality data that could be used for such purposes as training the world’s best public AI applications.

Aurora AI, one of the most creative public services globally, has already been under development in Finland for some time. Just as smartphone users do not need to know what is happening behind the screen that they touch with a finger, citizens do not need to know which public authority to contact in any given situation. It is enough



to express your needs: a customer-oriented public service will route the order to the correct operator behind the scenes.

The big idea with Aurora is to divide the services into life events. The public does not need services all the time, but only when some change occurs. When a loved one dies. When you are moving house. When you begin studies. When you retire. When a child starts at nursery school.

The Digital compass digital decade project that we noted at the beginning has determined that Aurora A.I. will handle a range of 40 assorted life situation needs by the year 2030. That is *exactly* 40.

An Aurora pilot project has resolved challenges that face a young person moving to study in a new city. This involves enrolling at the educational institution, investigating the available courses and materials, finding somewhere to live and making purchases, seeking various forms of support from a range of sources, getting to know the new place of residence, and seeking social contacts, meaning finding the right pubs and restaurants. This entire kerfuffle immediately involves dozens of operators, ranging from the Social Insurance Institution to local public transport, and from home insurance to dental care. And the more high-quality data Aurora AI and similar shared smart applications get from the public, the better it will work for all of us.

With data activism and data legislation, the table is therefore laid for capable citizens who properly take charge of their data and make use of it, and for businesses that understand how to benefit from new opportunities. It would be a shame if progress on this took as long as it did on that most excellent invention of the 19<sup>th</sup> century, the electric car.

#### THE AFFLICTIONS OF AN AFFLUENT SOCIETY

It is nevertheless foolish to suppose that technology will save the Nordic welfare model. I came up with my own corollary to Ruckenstein's Law. Technology describes the surrounding society – and mercilessly exposes its afflictions.

Globalisation and datafication have a particularly severe impact on the financing of public services and equitable social insurance. In other words, on taxation and work.

Perhaps the best section of the excellent Rinne/Marin Government Programme deals with taxation in a broad framework, on a scale of global change. We observed that the current, approximately 100-year-old system was on the verge of crisis.

“The globalised economy and technological progress are threatening the traditional main function of taxation: financing the services and benefits of societies. The main problem with the current tax system is that regulation remains largely national, even as capital moves freely across borders and enterprises operate internationally. “Equitable taxation of digital services also requires an enlargement of the Finnish tax base,” we wrote.

What does that mean, exactly?

The globalisation that was enabled by information technology and the rapid development of data connections gave large corporations the freedom to relocate to places where taxation is low or non-existent. Countries, on the other hand, were left to compete for investment by coming up with increasingly imaginative benefits and gimmicks. Apple, Microsoft and many other US giants have established their European headquarters in Ireland, which has the lowest corporate taxation rate and obviously also has the advantage of using the English language. As their domicile for taxation purposes, Amazon, together with banks and funds in particular, have chosen Luxembourg, the leading tax haven in the financial sector.

The 140 member OECD has succeeded in tackling tax avoidance with the aptly-named BEPS programme (*Base Erosion and Profit*

*Shifting*). The EU made a commitment to push for a necessary reform in global corporate taxation that would replace the national solutions applied in France.

Things turned out otherwise ... and Silicon Valley heaved a sigh of relief. The world missed the opportunity to tax data capital.

#### THE LOST OPPORTUNITY OF A DATA TAX

Tax avoidance by multinational companies siphons tens of billions of euros from the financing of public services in EU Member States every year. This is why it was important that the OECD was finally able to agree a roughly 15 per cent general tax rate in 2022 that removes much of the incentive for corporate tax avoidance. It is estimated that Finland will benefit from the reform to the tune of about EUR 200 million annually.<sup>175</sup>

The OECD *two-pillar approach* introduces an important change of principle: the right to levy taxes will also devolve to countries other than the state where the taxpayer is domiciled. In a world of data networks, businesses are located everywhere. The OECD eventually reached a solution whereby the largest corporations also pay a part of their profits, reckoned in accordance with a complex formula, to the place where their *customers* are located. This is Pillar One.

As previously described, the most valuable link in the global value chain is ownership of intangible rights, meaning trademarks, patents and brands. Developing countries have long called for the business income of multinational companies to also be taxed where the actual physical work is done. That's not going to happen. The OECD solution rewards countries whose residents can afford an iPhone, but not those where the phones are actually made. These manufacturing workers are presumably content to live in crowded dormitories, earning one US dollar an hour without breaks to answer the call of nature.

One decisive mistake is nevertheless that the reform of corporate taxation applies to all business operations without distinction, with no allowance for the specifics of data capitalism. As the reader will recall, the EU competition authorities specifically distinguish data businesses from other business operations, as does the US competition agency FTC.

No equivalent will remain after France (and Austria) have to abandon their own digital taxation regimes.

This means that there has been no progress on the second change of principle, which is at least as important as the first. Besides operating profit, it is also important to tax turnover. France claims a three per cent share of the operations of MAMAA companies right off the bat.

After all, data capitalism differs from previous capitalisms in its custom of conquering the market by direct assault, meaning that reasonable returns in the short term give way to a quest for unreasonable profits in the longer term. Society remains powerless to react, because not only is there nothing to tax in loss-making years, there is likewise nothing later, as previous losses can be deducted from the operating result. A company may easily enjoy an entirely tax-free decade, during which the dominant market position has been consolidated and the competition has been killed off.

If the turnover of data capital were to be taxed worldwide, then these deliberate losses of the data *conquistadors* would not undermine the tax base of countries. Society loses out twice over, as the tax revenues collected from traditional taxi operators dry up when Uber displaces them. Uber, on the other hand, arranges a billion-euro transaction that shift its profits to the protection of the Dutch tax treaty.<sup>176</sup>

Finland has opposed the digital tax, because it would change the basic principles of taxation. Doesn't that sound awful?

Having failed to adopt the Franco-Austrian model of taxing the data economy, the EU eventually adopted the Pillar Two minimum corporate tax level. Meanwhile, the debate on the Pillar One grinds on in multilateral negotiations, years go by, and governments continue to lose revenue that could be used to finance hospitals, school meals or street lighting.

This is senseless, as the market value of the world's most valuable companies is based on data collected from individual people, and the anticipated value of data that will be collected in the future. The price of this treasure to each individual has been access to puppy dog videos. It's a pretty poor deal. When the bargaining power of the data proletariat is weak, the time is right to call on governments to take a stand.

Taxation of data capital could progress in the direction of encouraging businesses of all sizes to open and share their data, instead of privatising and monetising a key public good of societies. For example, by exempting them from the very tax that is currently beyond our wit to levy.

#### WHAT WOULD KALEVI SORSA DO?

Linus Torvalds – who really ought to be the ruler and richest person in the world were it not for data capitalism – has done more than anyone else at the technological level to promote our three strategic goals. Linux is an (1) open source system that stresses (2) equality over profit and (3) connects systems.

Already in 2001, Castells and Himanen envisioned a Finnish information society that would combine a welfare state and cutting-edge technology. They identified four winning elements. Education is free of charge from preschool to university. Social benefits are universal. Central and local government are responsible for most welfare

services. The trade union movement plays a crucial and recognised role in the success of society.<sup>177</sup>

Two decades later, this model of collaborating has been challenged by models of conquering and controlling. Both monopolies and authoritarianism threaten the social market economy. A concentration of data capital stifles sustainable growth. Fake news and manipulation are jeopardising democracy. The Nordic welfare model must find ways of responding to entirely new challenges.

How can it be achieved? *Move fast and break things* was definitely not the motto of our former long-serving Social Democratic Prime Minister Kalevi Sorsa.

Both in Silicon Valley and in Beijing *disruption* is admired and pursued in varying ways, but those on the receiving end of that disruption are far from enamoured with the resulting chaos. Market economies will get a much-needed jolt when sleepy family firms, cartels and privileges are shattered by the challenge of resourceful competitors. The consumer will benefit. But will Airbnb or Uber be allowed to flout the laws and regulations that have bound their sectors for decades and protected consumers and workers, merely by being innovative and disruptive?

If the hotel and catering sector is burdened with safety and hygiene standards and many other rules, then is it fair that their digital competitors can evade them? If taxi operations are licensed and subject to occupational health and safety standards, then can any car owner be allowed into the business?

The food delivery company Wolt gained a competitive edge by skilfully avoiding employer obligations. Its drivers are "self-employed", even though they cannot freely determine the terms and conditions of carrying the pizzas, nor independently make contracts with other delivery services. They are effectively under the control of Wolt.

So it would be correct to classify these alleged entrepreneurs, who are often of immigrant extraction, as actual employees, and to impose

the full obligations of social contributions on the putative innovators. This view was supported by a non-binding opinion of Finland's Labour Council and a judgement of the District Court of Helsinki that is not yet legally final following an appeal filed by Wolt.

On the other hand, if employers had to operate under the same terms and conditions, and were subject to the same liabilities as they endured during the first Government of Kalevi Sorsa (1972-1975), then we might as well deport startups to neighbouring countries that compete with more lenient regulations and exciting tax incentives.

Capital is no longer willing to pay for national social insurance to the extent that it had to in previous decades as the price of having any labour at all. Or more bluntly: the social contract of the welfare state has been unilaterally terminated.

This ideology is partly imported from libertarian Silicon Valley. Data capitalism is founded on the privatised social insurance of the USA, where the coverage of the insured varies hugely. While the state demands minimal tax revenues from the upper middle classes, a serious and rare disease can wipe out any prospects of a secure future for even the more affluent.

At the same time, technological progress has facilitated (and by fracturing old business models, also promoted) a conversion of traditional employment relationships into business assignments. For example, content creation in journalism has been widely outsourced to independent communication entrepreneurs while squeezing editorial conditions and resources in a manner that will soon force the most ambitious writers into PR offices.

The same imbalance that I previously described between data companies and individual users is also repeated between platform operators and gig workers. Where the bargaining power of individual data providers is too weak to establish reasonable terms and conditions of data use, the same applies to terms and conditions of work-

ing. Businesses that dominate the market restrict competition not only for their products, but also for their workforce.

The non-partisan *Tietopolitiikka.fi* group in Finland has taken a firm stand on the rights of platform workers. Whether employees or self-employed, they must be free to organise and enjoy a genuine ability to switch platforms easily.<sup>178</sup>

So what lies ahead?

Society must seek to reconcile the conflict. Universal basic income is one popular idea, but introducing it at one go will be unpredictable, and at worst dangerous. One step towards universal basic income and facing the facts would be some form of earned income tax credit (EITC) that I brought up a few years ago: a negative income tax for the lowest-paid basic workers.

The low-paid must remain within the scope of social security benefits to ensure that everyone is entitled to sickness and unemployment benefits, holiday pay and accrued pension rights. We now have to fight for universal social insurance in the world of data capitalism, even though only yesterday it was considered self-evident. But that was the world of yesterday.

#### RIGHTS OF BASIC DATA WORKERS

A major struggle is also under way for the right of workers to organise. Trade unions are alien to the IT culture adopted from the USA. The game studios in Finland remain unorganised. There is no universally binding collective agreement for coders. Sought-after professionals feel little need for collective bargaining rights. The trade union movement that emerged to meet the needs of an industrial society is slowly waking up to the new economy.



Lack of organisation nevertheless remains a problem for the lowest-level digital workers: for food couriers, online store warehouse staff, drivers, shop workers, cola dispenser fillers, and cola stain cleaners. They do the same work in digital services as their colleagues in traditional workplaces, only that they are subject to stricter optimisation and supervision.

People who buy mobile phones in Finland have never cared much about the conditions of Chinese forced labourers working in contract manufacturing of electronics, any more than they have about the suffering of the Uyghur people toiling in cotton fields when they buy the latest logo hoodie.

They are equally unlikely to boycott Amazon, even though this company is actively and aggressively seeking to prevent its workers from organising and actually sabotages workplace elections.

The daily life of a basic digital worker differs little from that of someone who still labours in the analog world, so workers at Amazon and Apple have sought to emulate organisation at the Starbucks coffee house chain. As befits a chain business, the Starbucks employees did not establish a single union, but individual branches at each coffee house that combined into the growing Starbucks Workers United collective.

The workers at Apple's main store in New York have joined Workers United and are now seeking collective bargaining rights and a minimum wage – as well as protection from bullying and harassment that they have reported under the *#AppleToo* hashtag.

Inappropriate conduct and rough treatment is more the rule than the exception in American IT startups. They have directly elevated the *Beavis and Butthead*-inspired disruptive behaviour of adolescent males into a norm of corporate culture.

Just when the datafying economy begins to threaten trade unions in Finland, workforce organising is coming back into fashion in the USA. In this respect, too, China is different. All workers there are

organised in trade unions formed by the state, things are fine and industrial disputes are unnecessary.

#### A MODEL OF MOBILISATION

*Oulu, 3 October 2022*

So what do I say to my friends from Germany, Spain and France? I have had plenty of time and pages to consider my responses.

How can we live at the cutting edge of technological progress while making sure that society remains fair? How can we reinforce an economy of trust?

An autumnal Monday morning at the University of Oulu provides some answers. I stroll through the corridors where people in hoodies are sitting on leather armchairs. Workpairs gather for consultation in small transparent cubicles. The 6G Flagship team has convened in a meeting room to present the future of the data economy in Finland and Europe.

European thinking dwells too much on limiting US hegemony. It would be more sustainable to seek the strengths of the European data economy, information and communication technology. Our own expertise will then be refined into revenue and a future.

As I listen to a presentation from professor Matti Latva-Aho over coffee, I understand that people in Finland have a huge advantage. Wireless data transfer. Mobile communication. The world in your pocket.

Indeed, the liberation of data has a precedent in recent history: opening of the telecommunications market in Europe.

Back in the 1990s, the GSM standard enabled international mobile phone calls and connections to the subscribers of other operators. This ensured interoperability. The ability to keep an old phone number even when changing operators gave customers the freedom to

choose between competing subscriptions, thereby avoiding the vendor lock-in. Network owners were forbidden from favouring their own service providers at the expense of leasing operators. This differentiates an operating system or an app store from actual services.

Smart data regulation could deliver a “GSM moment” for Europe, says Sitra, the think tank. Everyone would be able to enjoy data just as Finnish subscribers do with their smartphones.<sup>179</sup>

“Finland became the world’s leading mobile phone country in the 1990s,” explains Harri Pursiainen, the veteran Permanent Secretary at the Ministry of Transport and Communications (while modestly omitting to mention that this was his own achievement).<sup>180</sup> A virtuous cycle emerged. Finland became the first market to grant operating licenses to several competitors, and did so free of charge, whereupon the telecom companies invested in comprehensive, high-standard networks and competed fiercely on price and quality. This gave Finland a head start measured in years, and it became the first country in the world to introduce mobile broadband at a fixed monthly subscription. The innovation sold like hot cakes.

Finland has the world’s highest per capita mobile data use by a large margin, with the average subscriber using 56 gigabytes of mobile data every month. The corresponding figure in Sweden is only 19.<sup>181 182</sup> Even recently, Finland was taking up more mobile data in absolute terms than the whole of Germany.

Some 80 per cent of the Finnish public already had access to a 5G network by autumn 2022. The ongoing Digirail project will modernise traffic control on the railway network. Any number of applications can be built on top of an efficient mobile data network.

Finland and the EU are more than capable of leading global progress in secure networks. But naturally you have to build those networks first. Nadia Calviño’s plan for effective wireless connections will enable Spain to make major strides in digital development.

Some radio masts and towers will be needed, but ultimately the decisive factor is the use of frequencies. When Nokia merged with Alcatel, there was a fear that its R&D would move to France, which provides very much larger government subsidies than Finland. Harri Pursiainen's legacy is that Finland competes through smart legislation. We accordingly ensure that 5G statutes reserve bandwidth for test use by businesses and for private networks, bypassing the major telecom operators.

Finnish companies have built hundreds of private 5G networks worldwide for use at factories, ports, shopping centres or festivals. The most famous of these is probably the world's first underground 5G network in the Kittilä gold mine.

There are nevertheless still surprisingly few practical examples of 5G in industry. It is reasonable to assume that processing the data from thousands of sensors enabled by efficient, closed and secured private networks would bring new productivity benefits to the industrial internet (IoT). Finland can even secure a competitive edge in traditional sectors by datafication of manufacturing industry, and applications may become an export asset.

#### TOWARDS A CYBER-PHYSICAL FUSION

5G is merely evolution, whereas 6G is a revolution. Led by the University of Oulu, the 6G Flagship programme brings together partners and investors from all over the world, I hear over my morning coffee in a campus meeting room.

Only 6G enables wireless power computing in real time, wireless AI, and wireless 3D virtual reality (VR) or augmented reality (AR) experiences. Estimates suggest that 6G will be more than a hundred times faster than 5G, with latency compressed almost to zero.<sup>183</sup>

Every-thing possible and impossible will be mutually networked (an *Internet of Everything*). We still have no idea how intercommunicating components of the physical world will change our lives.

The Japanese telecom operator NTT Docomo envisions 6G enabling a *cyber-physical fusion*. Observations from physical reality will be fed instantly and in huge volumes into an artificial intelligence for processing, which will immediately return forecasting information that it has formulated from this input data via a terminal to the physical world.<sup>184</sup>

Many societal challenges may be resolved virtually: remote treatment and surgery, manufacturing and maintenance of plant and machinery, holographic companions, automation of nuclear waste burial sites.<sup>185</sup>

Wireless connections will no longer carry megabits ( $10^6$ ) or even gigabits ( $10^9$ ) per second. One EU-funded study of the 6G Flagship is preparing a terabit ( $10^{12}$ ) transfer speed. That would mean the ability to transfer the aforementioned Finnish world record in annual consumer data usage in just half a second.<sup>186</sup>

My German and French colleagues will no longer have cause to lose sleep over the security of cloud services when large data volumes are processed in real time on the device or platform itself by *edge computing*. The most obvious application will be an autonomous vehicle as an independent data platform. The extremely precise positioning information that it transmits and the data from numerous sensors will be instantly analysed in the control algorithm that determines how the device operates. (Making it all the more urgent to decide who gets control of all the data.)

Europe must move on from defence to offence.

Led by Nokia Corporation, businesses, research institutes and public authorities within the European Union have formed the Hexa-X consortium to develop the next generation of mobile technology.<sup>187</sup>

There is no longer any need to bemoan the fate of the Finnish mobile phone industry, because Nokia is now the strongest engine of 6G development and is building a new production plant near the University of Oulu. If the company and the cluster of startups operating around it can manage a world where everything is networked, then it will govern the future. Not a bad accomplishment.

Hexa-X has advanced to a stage at which the charting of trials and innovations has given way to creating preliminary standards and a system view for the 6G platform. These stages are every bit as crucial for Finland as the long-winded international frequency negotiations that guaranteed Nokia's success in the 1990s.<sup>188</sup> That's why we have to create consensus in the world again.

ITU-R (*International Telecommunications Union, Radio Technology*) will present the "6G vision" in summer 2023. It will be discussed next winter at the major radio conference that takes place every four years. The West must vigilantly guard its values in standards, principles and frequency policy.

Hexa-X has also made a sustainability promise that must be kept. Mobile technology uses a lot of electric power, so the European community is committed to reducing the carbon footprint of 6G to zero. The emission reduction of these new wireless solutions is 30 per cent compared to previous technologies, and energy consumption per bit is 90 per cent smaller.

Equally important is the promise of social sustainability. The Europeans have vowed that the new technology will increase inclusion in the world, and also benefit developing countries. The democratic world must meet the challenge from China.

6G enables the much-hyped *metaverse*, meaning a freely mobile experiential virtual environment that is independent of and not tied to any location. The technology is the easy part. Instead, political leadership will be needed to implement the future 6G standards and Web

3.0 architecture with the designs that are democratic and human-centered.

It is crucial whether the values of openness, equality and interoperability come out ahead, or whether we will slide even more deeply into the data struggle of the superpowers.

My dear European colleagues should accordingly look to the future – *en avant! Adelante! Vorwärts!*

## 8. THE HELSINKI EFFECT?

*Ruoholahti, 6 October 2022*

The audience begins to gather in the Sitra auditorium where we shall witness an historic demo: the first metaverse application in public administration. Marja Konttinen shows us what kind of avatar she has created for me on the *Decentraland* platform. The chap with the beard and glasses looks a bit like a cartoon character that many people already have on Facebook and WhatsApp.

The timeline of the Internet world goes something like this. *Web 1.0* was a collection of static web pages stored on a server that users could access to read but not engage in. E-mail was the principal medium of communication. *Web 2.0* is an interactive network in which diversified social media publishing has sidelined websites, emphasising moving images and often accessed over a mobile user interface. *Web 3.0* is an Internet that has become independent of the outside world, a decentralised administration whose entrance portal could be an immersive 3D metaverse.<sup>189</sup>

The essential distinction and progression between the Web 1-2-3 versions is Read-Write-Own.<sup>190</sup>

Considering the billions that are being invested in the metaverse, the first impression of Decentraland on your desktop is disappointing indeed. With my character using W-A-S-D key commands amidst cubes and empty fields, I feel like I have become a prisoner of *Minecraft*. Immersiveness is especially on trial when every new destination that



my character moves into loads at such a sedate pace, and I leave this captivating experience to make some coffee.

You can bet that my description will be read scornfully a decade from now, when it will be possible to slip out of everyday life at any time and enter an artificial reality with no special clumsy devices and downloads, and when the power of data transfer and computation envelops the user in a realistic environment of images and sounds, reinforced by movements and tactile sensations in a genuine “cyber-physical fusion”.

Naturally I have been able to stroll around in virtual coffee houses and drive a car in 3D models of virtual road designs at trade fairs around the world. At some point virtual reality (VR) and augmented reality (AR) applications will come to our homes, and 6G will also put them on mobile phones.

At this early stage, two separate highways are leading us to the metaverse. The first is *Zuckerberg Road*, where existing online communities adopt new and more effective communication media. The other route is *Fortnite Avenue*, where current 3D game environments expand from assigned tasks to become independent communities.

These two competing models are already clashing violently. The future of Web 3.0 is at stake: will it truly offer something new, or will it only reinforce old structures?

#### ZUCKERBERG ROAD

Facebook, which has morphed into Meta, has announced that it will invest USD 70 billion in VR communities and media over the next few years. This is a quite a king's ransom. More than twice as much as the world is investing in self-driving cars.

Meta already burned through USD 10 billion in 2021. The loss from VR operations came to three billion.<sup>191</sup>The company saw a 70 per cent meltdown in its share price year-on-year in November 2022.

Will Zuckerberg be able to lead his billions of customers out of the terminal ecosystem wilderness and onwards to the Promised Metaland called *Horizon Worlds* – and keep them there?<sup>192</sup>

“Back when we started working on this, we believed that social experiences would, over time, become the main way people would use VR. That’s coming true,” Zuckerberg assured everyone at the company’s Connect event in October 2022.<sup>193</sup>

I tend towards greater scepticism. Facebook is clearly the most popular medium in Finland for middle-aged and elderly people, which in itself pushes young people elsewhere. The same company’s Instagram platform, on the other hand, is losing the souls of people under 25 years of age to TikTok and even to Snapchat in Finland.<sup>194</sup>Of course, Finland’s Prime Minister Sanna Marin has done her best to keep Instagram afloat.

Although *Horizon Worlds* was aiming for a user base of over half a million by 2022, only 200,000 have signed up. More than half of these did not continue their subscription after a month, and the VR headsets that they had bought were left to gather dust on top of the wardrobe.<sup>195</sup> “An empty world is a sad world,” was one comment in an internal memo at Meta.

One indication of the challenge is the *SecondLife* virtual world, which has been around for more than 20 years and has 14 million customers. While that may sound like a lot, we should remember that even the anarchist online community Reddit has 400 million monthly users.<sup>196</sup> The space that opens up as a landscape in *SecondLife*, where everyone can buy “parcels”, does not seem to attract huge crowds. The network effect is most merciless when it’s not there.

Decentraland’s user interface is disturbingly similar, desolate and quiet. While some strips have even been sold at high prices, with cafes

and casinos set up, the overall scene remains more reminiscent of a digital construction site. It will be interesting to see whether the public is enthused by the meta-exhibition of the Finnish National Gallery, to be officially opened in a ceremony at the Sitra auditorium. The ceiling frescoes painted by the famous Finnish artist Akseli Gallen-Kallela for the Finnish Pavilion at the 1900 Paris World's Fair have been digitalised for the Finnish Metagallery pavilion to appear as though they had never been demolished and destroyed.<sup>197</sup>

As I comment in my opening speech, the purpose of new technology is nevertheless not to reconstruct the past, but to regenerate the future. It is quite literally a completely different game.

#### FORTNITE AVENUE

Web 3.0 can also be realised in another way, by expanding the world of digital games into a metaverse.

No parent of a ten year-old has been able to avoid *Roblox*, a common platform for hundreds of thousands of games, whose customers already spend more than EUR 100 million a month on accessories and aids purchased with the *robux* currency. The owners of Roblox envision the game platform as a metaverse that gathers all of the world's game creators to offer their products –and get rich – and to shop and have fun. Half of the customers are still under 13 years old, and products with Lego characteristics have limited appeal to adults.

A more ambitious assortment in terms of aesthetics and experience will be needed to bring about the cyber-physical fusion. A proper 3D gaming experience is sure to be closer to an immersive metaverse than gazing at a slow-loading home PC monitor. Even an artistic experience or fashion show will seem more convincing if you can enjoy scary stunts or a fast-paced shoot-em-up with powerful processors and graphics cards, enough RAM, and state-of-the-art monitors and headphones.

VR helmets, gloves, vests and other accessories are really just more versatile game controls than traditional buttons and joysticks.

Developed for the Commodore 64 console at the end of the 1980s, *SimCity* was the first Open World game where a player did not win or lose in a ready-made plot formula. Even many politicians were enthusiastic about this urban planning game. Over a decade ago our family got its first taste of *Minecraft*, a virtual construction game. Also players of more visually impressive games began gaining more freedom to operate outside the script, and can now develop a game within a game and even code the game environment.

The game can become a metaverse, as evidenced in the phenomenal *Fortnite*. The original multiplayer *Battle Royale* has expanded both organically and creatively. In addition to the necessary weapons, fantasy outfits initially began to appear in the terrain, with the primary objective starting to shift towards acquiring these assets. Fringe events, dance contests and simple goofing around were incorporated as a diversion from, and replacement for the battle.

The performance proper was relegated to a supporting activity, and even the dramatic changes of the shifting *game seasons* bring not only variety, but also a common history for addicted players. You might even call it a culture.<sup>198</sup>

Free interaction and creativity flourish in this virtual world. *Fortnite* is stealthily becoming a meta-platform where TV shows and streaming entertainment are shifting from a boomer audience to data natives. One highlight was an Ariana Grande concert in summer 2021.

The publisher, Epic Games, is seeking to develop *Fortnite* into a meta-platform among many others, so that the immersive Internet would not remain under the control of a few major corporations, but instead enable hundreds of vendors to offer their services on an equal footing.<sup>199</sup> Company founder Tim Sweeney considers himself to be fighting for the network of the future against the powers of time past.

Epic Games began charging download fees directly to customers in 2020, leading to its expulsion from both the Apple App Store and the Google Play Store. The company then secured a court judgement requiring gatekeepers to accept in-app payment systems from which they cannot collect their 30 per cent commission (although both have already halved the fee collected from smaller app developers).<sup>200</sup>

Microsoft supported Epic's legal challenge, admittedly for selfish reasons: it is seeking to expand its gaming empire by buying the Activision studio group to go with its Xbox platform in a mind-bending EUR 68 billion cash deal. This is already arousing the suspicions of competition authorities, even though the company would still only attain third place in the games sector behind the Chinese Tencent and the Japanese Sony.

On the other hand, Tencent has a substantial holding in Epic Games. In other words, Fortnite vs. Apple/Google is Goliath vs. Goliath. Multiplayer combat is anyway warmly welcome, since this *battle royale* raises the prospect of Web 3.0 not merely remaining under the even more dominant control of the rulers of Web 2.0.

#### OLD WINE IN A NEW BOTTLE?

The crucial point is that Web 3.0 is not a quantitative, but a qualitative concept. While more powerful processors and more efficient data communications, VR headsets and AR elements will obviously reinforce the experience and enable many new services, the outcome will not be a revolution but a mere consolidation of the old power structure if online environments remain under the control of the current giant platforms and the data gathered remains in their vaults.<sup>201</sup>

The challenges in terms of open access to data, free movement and interoperability accordingly remain the same as in the general scheme of things already discussed.

Metaverses need common ground rules. Some global regulatory community seems inevitable to prevent virtual worlds from becoming the closed fiefdoms of megacorporations. Joint standards development is already ongoing, and the Finns are actively involved.

The metaverse is proving to be more than a single environment. Instead it is a network and a way of interconnecting virtual worlds. These must be built on open source code. The game engines that control an entity must adhere to common standards. Avatars must be able to move from one environment to another while retaining their properties and possessions.

The major breakthrough of the Internet became possible when we began writing online content in a common language that enables hypertext, meaning links from one page to another. A similar challenge now lies ahead. As one activist summarises the matter: “The goal is to find the HTML of the metaverse.”<sup>202</sup>

#### THE CLUB FOR BORED APES

Primitive cartoon characters, the coveted banana accessories of Fortnite, VR headsets that resemble silly diving goggles... There is so much mucking about in the early stages of Web 3.0 that it makes you want to dismiss the whole thing as humbug.

Many smart and prestigious pundits would agree. Oxford University professor Vili Lehdonvirta is one who implores us to stop talking about Web 3.0, because it thrives on publicity, separating fools from their money and further concentrates data power (*Helsingin Sanomat*, 22 January 2022).<sup>203</sup>

Two suspicious phenomena stand head and shoulders above the rest: NFT and crypto.

Ironically, both of these prove in their own way the tribute that I paid at the beginning of this book: capitalism is a system that is resourceful and adaptable to all times. You can buy and sell *anything*,

and there is a market and a price for *everything*. And then you just have to scratch your head and ask whether that is such a good thing after all...

One particular headache for me is the market for NFT digital works, which has already exceeded EUR 25 billion. People are ready to pay absurd sums to acquire a non-fungible token. And then they somehow “own” these databits.

The Picassos of the NFT world are the *Bored Apes*, of which there are ten thousand items at prices averaging as much as EUR 100,000. One even sold for a million in autumn 2022. So the total value of these ape images is more than a billion euros.<sup>204</sup>

Meaning that you might buy one instead of a swanky downtown apartment.

The entertainment industry millionaires of the USA can afford and need such novelties. Timbaland, Eminem, Paris Hilton and Justin Bieber have chosen to buy such ape images instead of a new car, mansion or diamond jewellery. At least it is better for the climate.

Naturally, the character belongs to a very exclusive club, the *Bored Apes Yacht Club*. This is a website where bored apes can go to get even more bored. I hear there is a virtual graffiti wall where you can doodle.<sup>205</sup> There is also a *Bored Apes Kennel Club* when the ape character is entitled to adopt a dog character.<sup>206</sup>

I’m probably too old to learn such new tricks. But at least Web 3.0 also includes some older and more familiar scams.

#### CRYPTO: A SCAMMER’S PARADISE

*Déjà vu* all over again! This was my mood when I read about the bankruptcy of the Celsius Network cryptocurrency bank in spring 2022.<sup>207</sup>

I got to know a real pyramid scheme in my 2009 book on the finance crisis, studying the investor prospectus of the WinCapita fund, which was packed with obscure graphics and spreadsheets that proved how “automated real-time international currency trading” programmed by the fund continually generated monthly profits of 15-30 per cent.<sup>208</sup>

Celsius Network promised its customers annual returns of no less than 18 per cent. Just as with WinCapita, the fact that customers don’t quite understand the technicalities of investment is more of an edge than a drawback. The investor belongs to a *secret inner circle* that may knowingly smile at the questions of baffled outsiders. The allure and promise of crypto attracted no fewer than a million customers to Celsius, with deposits of EUR 20 billion.

That is *one million* customers, each investing an average of EUR 20,000. These were ordinary people: some with dreams of getting rich quick, but most hoping to enjoy the financial stability that a day job or even a steady business had not delivered. A young couple from Australia had invested AUD 150,000 in Celsius in order to start a family. Quite heartbreaking, as their baby would remain a mere aspiration after the bankruptcy.

There is not necessarily any crime involved here, nor anything genuinely virtual. A promise of high returns will attract a lot of deposits that are reinvested at risk applying high leverage. This is also how the most stable and reliable investment banks on Wall Street were operating in 2008. When a surprising turn of events brings a sudden loss of faith (*credo*), people claim immediate repayment of liabilities. The panic or bank run then depletes the collateral of debts, and the bank becomes insolvent.

What is cryptocurrency, anyway?

A range of more than ten thousand diverse tokens are regarded as cryptos, of which studies suggest some 60 per cent evaporated in the



crypto crash of spring 2022. The computed real monetary value lost in dozens of bankruptcies amounted to nearly a trillion US dollars.<sup>209</sup>

The most spectacular collapse came in November 2022 with FTX, the world's second largest crypto exchange, whose owner Sam Bankman-Fried also set a world record for personal impoverishment. On the preceding day, he could have bought a couple of hundred F-35 fighter jets for USD 16 billion and had a more credible air defence than the Republic of Finland. One day later and he needed to mooch the cash for a *soy latte*. A cool billion in customer assets was also lost in the process.

The cause of this disaster was the cross-collateralisation of the FTX group, whereby securities took the form of “currency” issued by the company itself. This Monopoly money was also credible to funds that invested real capital, managed by highly paid “investment professionals”. Fortunately, this market was so marginal that no broader damage to the economy ensued. The venture capital funds that strayed into crypto are nevertheless now signalling to startups that scarcity is on the horizon. This is one way in which innovation can be stifled not only by the giants of the data market, but also by fools.<sup>v</sup>

In his congressional testimony December, 2022, new FTX CEO John Ray – who previously also cleared the house of Enron – stated that the “collapse appears to stem from the absolute concentration of control in the hands of a very small group of grossly inexperienced and unsophisticated individuals who failed to implement virtually any of the systems or controls that are necessary for a company that is entrusted with other people’s money or assets.”

In spite of all calamity, the greatest fear of the crypto world is that public authorities could begin to exercise oversight of their activities. A special tremor has been felt in the USA, because the Securities and Exchange Commission (SEC) claims that the vast majority of cryptocurrencies and 99 per cent of crypto investment services should be registered for the purpose of securities trading oversight.

Clearer consumer protection would both curb pyramid schemes and money laundering, and help in ensuring cyber security. Bankruptcies aside, crypto holders already lost EUR 2.2 billion to data breaches over the first nine months of 2022.<sup>210</sup>

The advertisements and announcements of some crypto brokers also remind me of that glossy WinCapita sales material. Section 12 of the Act on Virtual Currency Providers that took effect in Finland in 2019 prohibits giving “false or misleading information”. I will not be at all surprised if we end up asking a court to define a clear boundary between virtual reality and real reality.

#### THE AGE OF INTERNET INSTITUTIONS

Even though any new stage of technological progress involves a great deal of suspicion, phenomena in the virtual world are self-realising. With USD 34 billion in investment capital invested in cryptos and blockchain in 201, that bet already changes the odds in itself.

In November 2021, the market value of cryptocurrencies momentarily exceeded the value of the world’s automotive industry. Bitcoin alone reached a market capitalisation of USD 1.2 trillion – more than the world’s three largest banks combined.<sup>211 212</sup>

Some USD 11 trillion in value was circulating on the Ethereum blockchain in 2021 – a larger exchange than the Visa credit card company.<sup>213</sup>

These phenomena take place online, and are increasingly autonomous and automatic. In fact crashes always occur when the virtual collides with the real world, or vice-versa. Neither is any longer more true or authentic than the other. The digital world is just as real, relevant and impactful as the analog world.

The economy, production and policymaking of Web 3.0 will be arranged for the first time on the internal logic of the Internet, instead of the online world adapting to the structures of industrial society.<sup>214</sup>

What if the institutions of society were rebuilt to meet the needs of a digital society?

The banks in an industrial society are responsible for finance, guaranteeing the reliability of the contract and confirming transactions (clearing). But what happens when there are millions of micropayments per second; both the purchase transaction and the purchase are mere databits; and no separate contract is signed in the back office?

The model of the joint-stock company was inherited from the 18<sup>th</sup> century colonial era – but isn't it a problem that the interests of owners, managers, employees, business partners and customers are mutually opposed? The old-world institutions of private property protection and contract law restrict the free flow and mutually beneficial use of data.

The options of the age of data are already at hand.

A *blockchain* is a collection of distributed databases, each update of which contains all previous information. It is a comprehensive system of trust, because it cannot be forged. A blockchain enables smart contracts, which begin to be realised when the conditions are satisfied without further further prompting.

Monetary transfers are also recorded in the blockchain – the buzzword is *de-fi*, which stands for decentralised financing. Restrictions create scarcity for cryptocurrencies. It is natural to conduct the trillions of transactions in the virtual world using a virtual currency. This also applies to data capital: a crypto or token circulates in virtual services without ever being realised in real-world currency until this is absolutely necessary.

The joint-stock company could be replaced by the *Decentralised Autonomous Organisation* (DAO), the digital cooperative of the 2020s, the third in-house institution pushing development of the Internet.

Web 3.0 is a genuinely revolutionary idea. Whether it leads to subversion is another matter.

The ideology of Web 3.0 is decentralisation, as opposed to the concentration that characterises both data capitalism and industrial societies in general. The idea is that there is no longer any need for a confirming party or intermediaries in transactions. The most important services in society operate in a programmed way and are basically on autopilot.

Smart contracting will eliminate many institutions. Why do we need a local register office if marriage certificates and divorce agreements are recorded on the blockchain? Why do we need a stock exchange? The real property register will be redundant, and maybe the population register will be, too. This authority has already rebranded in Finland as the *Digital and Population Data Services Agency (DVV)*. Millions of lawyers will be joining the dole queues.

The most challenging application was nevertheless chosen at the very first handshake: a form of money that is not supported by any central bank and that cannot be spent at your local corner shop. To be sure, money, or debt, is basically a contract whose value is determined by the combined value of all contracts (in or out of a blockchain). But the staff of the European Central Bank will not need to clear their desks until a sufficiently large and stable market for cryptocurrencies emerges.

Decentralisation also works against itself, at least for the time being. As already noted, nobody prevents fraudsters and magicians from conjuring up mystifying investment products for those who are seeking to get rich quick.

Central bank backed (fiat) currencies in the real world seek to merge into more widely supported common currencies. The virtual world, on the other hand, is flooded with money that is only exchangeable in a single online environment and is earned by complet-

ing assignments and providing computing power. Such local currencies based on barter were already the utopia of hippie movement autonomists in the 1960s. Which is naturally very nice in and of itself.

The local currency can be exchanged internally and for traditional money using a *stablecoin*, which is supposed to mediate between the virtual world and the real world. That very “stability” is sought by tying such instruments to old-world collateral. There are also hundreds of these instruments.

Stable currency has nevertheless left the crypto world somewhat messed up. In the first place, if the whole idea was to break away from central banks, then why does “decentralised” financing have to be anchored to the guarantees of the old institution? Secondly, when the aim was to achieve this anchoring in *de-fi* style using a computation algorithm, the outcome was bankruptcy of the stable currency. The LUNA coin crashed, and there are significant doubts hanging over the others.

The central banks, financial regulators and international financial institutions actually view the greatest threat to monetary stability being... stablecoins.<sup>215</sup>

#### FROM DECENTRALISATION TO CONCENTRATION?

The decentralisation of Web 3.0 challenges not only the old systems of the outside world, but also data capitalism in its current form.

Instead of the user always winding up on Amazon or Facebook, services are provided by a collective algorithm and peer-to-peer collaboration. “All participants provide a small slice of the final service,” explains Gavin Wood, who came up with the entire Web 3.0 concept less than a decade ago.

We should still ask whether Web 3.0 guarantees decentralisation any more reliably than Web 1.0.

The Internet idealists of the 1980s sought a network that would prevent concentrations of either economic or political power. Stewart Brand's remark that "information wants to be free!" was taken as a war cry. The intangible or intellectual property rights that form the most valuable link in the capitalist value chain were called into question. Copyrights were being infringed without remorse, and piracy threatened the power of the entertainment industry.

That rebellion came and went, and discipline won out. If operations are decentralised in Web 3.0, then what will prevent a concentration in ownership of operations?

It's no surprise that Meta, Amazon and Apple have been planning their own digital currencies, and I expect the same from Twitter, in which the crypto company *Binance* is a major stakeholder. There are still a few high rollers left in the ruins of crypto exchanges. Even Bitcoin – whose market value once exceeded a trillion US dollars – is becoming concentrated in a few hands, because the high-power computing involved in mining this resource is well beyond the capacity of the average laptop.

"Even a decentralised system can end up being concentrated," warns Cornell University economics professor Eswar Prasad (*Helsingin Sanomat*, 10 May 2022). "We may end up in a world where economic power is hugely concentrated in major corporations and large countries. And therefore financial power along with it."<sup>216</sup>

Prasad contends that the conflict between decentralisation and concentration can only be resolved by establishing national and transnational regulation. In the end, it is the responsibility of government to ensure that Web 3.0 strengthens competition, innovation and decentralised systems.

Appreciate the irony. In spite of the crypto-libertarian zeal to burn down the state, the ultimate anchor turns out to be the state.

## HOW ARE TAXES PAID IN TOKENS?

Decentraland differs from SecondLife and other virtual environments in being truly decentralised and distributed. This is groundbreaking. The community is owned by hundreds of users who vote on all of their wishes, such as which accessories are suitable for a shop and the purposes for which parcels are sold.<sup>8</sup>

The owner community is not a company, but the DAO that we previously discussed. A decentralised community creates a headache for regulators and legislators, who need to assign liability to some entity designated by law. A DAO has no Managing Director, board of directors or person in charge.

Indeed public authorities found it useful that Web 2.0 began to coalesce around major data platforms. Their regulatory counterpart became an easily discernible MAMAA company, and one of their thousands of lawyers always responded to e-mails.

It is wholly unclear whether the wonderful Regulations of the EU will apply at all to DAO-type operators. Legislation in Finland also requires registered responsible parties, so any decentralised system that, for example, seeks to own an apartment in the real world, will have to take its search elsewhere. The relatively large Finnish-based Aave crypto credit protocol operates in London and Berlin.

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<sup>8</sup> A digital condominium housing company board comes to mind. While all shareholders theoretically have not only the right, but also an interest in taking care of their property, it turns out that only a few people take any interest in the shareholders' meeting, one of whom will be an enthusiastic *get-things-done*, another a pest that snoops on the neighbours, and a third a curmudgeon who shoots down all collective projects. The putative collective power is ultimately concentrated in the few who have the most time on their hands and can remain seated for longest.

The virtual world crosses national borders, beyond the dictatorial powers of any earthly power. The crypto people are unwilling for any particular national authority (such as the US Securities and Exchange Commission) to regulate blockchains and their contracts. This makes sense in itself, but is also highly problematic.

The virtual world does depend on real natural resources – minerals and energy – and on the services of developed societies. Without a school system funded by real taxpayers' money, the software developers of Web 3.0 would never have learned to read, nor would their customers ever have learned to count.

Regulation also cannot be avoided, because even in the Nordic industrialised countries Web 3.0 remains nowhere near replacing established institutions, still less so much as touching the reality of the billions of people for whom even Web 1.0 is still out of reach. New technology always dazzles us.

The outcome when the virtual and the real come together is a disastrous collision if old and new institutions are unable to negotiate, mediate and compromise.

Since the state cannot be decentralised or virtualised, legislation will have to find some response to the challenge of Web 3.0. Beginning with smart contracts. Will all of the thousands of statutes that require registration with a particular public authority be amended to accept blockchain authentication? Then there is the issue of liability. Which DAO entity will attend proceedings in a real or 3D-modelled courtroom if an investor in the metaverse lodges a claim?

And then, again, there is taxation.

Who will collect capital gains taxes and VAT? What is the real estate tax on a virtual building? Taxes and social contributions, unemployment insurance and industrial accident insurance should also be collected for work done in the meta-verse. Should we even be arranging digital occupational health care?



This is no joke. Right now, people are working on virtual platforms and getting paid in virtual currencies. They are still citizens of some country. Virtual retirement may seem far off if you are a trader on a Fortnite marketplace or a croupier at the Decentraland casino, but Web 3.0 should fit into Reality 1.0. somehow.

## CENTRALAND

There is yet a third highway leading to metaverses. It is the *Digital Silk Road*.

The route taken by the Chinese does not pass through social media or video games. Where Americans focus on competing for the best entertainment experience, the Chinese Government has emphatically shifted its focus away from depraved and frivolous applications.

In Western eyes, the “common prosperity” programme looks like a strange attack on pluralistic culture and expression. But that’s not really the point. We should notice that research and production are systematically directed towards the most advanced technology with a view to securing a decisive competitive edge. And that includes military technology.

There is also a dangerous understatement in the American narrative, whereby China is only gaining the upper hand through fraudulent means: by stealing, spying, violence and counterfeiting. The fact is that, above all, China is directing formidable skill and sophistication to win the race of data capitalism and control Web 3.0.

We Western politicians often talk, and rightly so, about the importance of skills. But Europe will have to do some unprecedented gymnastics here, even to join the same dance as China and the USA. The strength of the USA is that it attracts talent from everywhere, accounting for *more than half* of the world’s immigrant innovators.<sup>217</sup> Many of these again come from China, which has enough to send

elsewhere while still retaining a huge number of high-level specialists. Leading mathematical minds are a Chinese superpower.

A single spot test is enough to show this. The 400,000-member international IT engineering organisation IEEE (*Institute of Electrical and Electronics Engineers*) has 132 scientific publications. One of these is “IEEE Transactions on Knowledge and Data Engineering”.

The authors of the peer-reviewed articles in the September 2022 issue were

Xueyuan Xu, Xia Wu, Fulin Wei, Wei Zhong, Feiping Nie, Cheqing Jin, Shuaifeng Pang, Xiaodong Qi, Zhao Zhang, Aoying Zhou, Zuo-Wei Zhang, Zhe Liu, Zong-Fang Ma, Yiru Zhang, Hao Wang, Chao Tan, Sheng Chen, Genlin Ji, Xin Geng, Zhizheng Wang, Yuanyuan Sun, Xuyang Hu, Jiafeng Zhao, Zhihao Yang, Hongfei Lin, Yuanbo Xu, En Wang, Yongjian Yang, Yi Chang, Jianchao Tang, Shaojing Fu, Ximeng Liu, Yuchuan Luo, Ming Xu, Qing Liao, Heyan Chai, Hao Han, Xiang Zhang, Xuan Wang, Wen Xia, Ye Ding...<sup>218</sup>

A 2019 draft for the fourteenth five-year plan of the People’s Republic of China designated blockchain as an important field of technology where competitors had to be overcome.

An additional challenge here is the fact that China has completely banned cryptocurrencies. While in the eyes of the West, that means giving up on the actual idea of blockchain, the Chinese Government instead believes that truly useful results can be achieved precisely by banning bored apes, games and pornography, narcotics and other twaddle.<sup>219</sup>

The Chinese central bank launched a digital *renminbi* even before the European Central Bank so much as began planning for a digital euro. The difference between them is nevertheless decisive. The ECB is agonising over how digital currency could be as anonymous as cash without enabling money laundering and crime. By contrast, the digital money of China has no privacy protection. Theoretically the state can

monitor the wealth of every citizen in real time, block payments or, if necessary, even obliterate assets. Money is also a means of control.

China also possesses the processing capacity required for Web 3.0. A catalogue of the world's 500 most powerful supercomputers lists 173 of them as Chinese. The aggregate computing power of the USA is nevertheless almost double that of China. New computing capacity has finally arrived in Europe as well – in June 2022 I personally got to inaugurate LUMI, the world's third most powerful supercomputer in Kajaani, a remote town in Northern Finland. The relative status of China has deteriorated, as has its ability to produce the most powerful microchips.<sup>220</sup>

The front line of the arms race between China and the USA has become quantum computers, for which the US stopped exporting the necessary material and expertise in October 2022 in the sharpest turn of the data cold war.<sup>221</sup> This stand-off gives the Finnish quantum company IQM greater scope to serve as a neutral contract manufacturer on the leading edge of state-of-the-art technology.

An escalating struggle between superpowers is always a danger and concern for small countries. Since both geography and geopolitics puts Finland in a precarious position in this increasingly bipolar world, we have to do our utmost to preserve and strengthen the unity of Western democracies. We need to prevent any rift between Europe and the USA.

Our role is symbolically emphasised by the ambitious international project of Cinia Group, a Finnish majority state-owned company that seeks to lay a submarine data cable linking Japan, Alaska, Northern Canada, Greenland and Iceland to Northern Europe and Ireland.<sup>222</sup> This makes *Far North Fiber* a major transatlantic and transpacific project whose completion in 2026 would not only enhance telecommunications in the northern hemisphere, but also reinforce security connections between the democracies of the Far East, Europe and North America.

## THE AHTISAARI ALGORITHM

We still have a mission: to rescue democracy, human rights and the world of pluralism.

Finnish people have a quite charming resolve to settle things for the common good. Regardless of whether Finnish data activism achieves any results – of whether the MyData ideal is capable of challenging the conquering and controlling models of data capitalism; of whether a fair 6G standard can guarantee a truly enabling cyber-physical fusion; of whether our contribution helps to develop an interoperable Web 3.0 world – it is something to be proud of.

Ruckenstein’s Law suggests that technology describes our society, so let it bring out the ideals of equality and cooperation, openness and freedom.

Professor Teemu Roos led a joint project between the University of Helsinki and the company Reaktor that resulted in the online course *Elements of AI*.

State secretary Pilvi Torsti and I decided in autumn 2019 that instead of all the usual pens and notebooks and trinkets, we would provide an artificial intelligence course in all EU languages as an intangible gift of the Finnish Presidency of the European Union. Three years later, this free six-part module on the fundamentals of AI has become available in all of the countries of the European Economic Area. In May 2023, *Elements of AI* celebrated *one million* course participants. One of them was Spanish First Deputy Prime Minister Nadia Calviño.

Returning from Finland, Ms Calviño carried in her suitcase a few copies of *Hello Ruby* books by children’s author Linda Liukas, which now inspire girls to code in 27 languages. This responds to a huge need, as the proportion of men in the fields of information and communication technology is three to four times that of women. The

proportion of women enrolled in university education in the field of technology in Finland increased from a quarter to more than a third between 2015 and 2022.<sup>223</sup>

And there is more. After learning that he was terminally ill, AI researcher Timo Honkela (1962-2020) devoted his final years to *The Peace Machine*. Professor Honkela's concept applies artificial intelligence to help disputing parties appreciate one another's concepts, leading to mutual understanding and harmony. Still and perhaps forever unfinished, this project raised significant crowdfunding and plenty of publicity for the 2017 book *Peace Machine*.

Why not bring peace and reconciliation to a world of greed, exploitation and destruction? In this spirit, a group of researchers from Aalto University has developed a social media platform algorithm that would not encourage confrontation, extremist thinking and digital violence, but genuine interaction.

Without requesting permission, and honoring the Finnish Nobel Peace Prize winner, I hereby designate it the *Ahtisaari algorithm*.<sup>224</sup>

The Aalto team Antonis Matakos, Cigdem Aslay, Esther Galbrun and Aristides Gionis describe their mission in the following terms: "To enable a healthy environment for information sharing, social deliberation, and opinion formation, citizens need to be exposed to sufficiently diverse viewpoints that challenge their assumptions, instead of being trapped inside filter bubbles."

Something highly Finnish emerges when the democratic goal is transferred into a mathematical model that is tested with scalable data. Strong ethics shall guide cutting-edge research that produces practical results.

It is also great that a Finnish university can bring together like-minded researchers from a variety of backgrounds. The power of the Finnish education system is evident from the fact that this research has been funded by three separate projects of the Academy of Finland

and by the joint ECSEL public-private partnership programme administered by the European Union.

Finland is a platform for good.

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