Digital Vegan

Healthier technology for a happier planet

Andy Farnell

(Editor: Daniel James)

ASP Applied Scientific Press © 2021 Andrew James Farnell. All rights reserved

Published by Applied Scientific Press, London, England. Printed in England.

The right of Andrew James Farnell to be identified as the author of this work is asserted in accordance with the Copyright, Designs and Patents Act 1988. No part of this work may be reproduced or transmitted without written permission of the author.

This textbook is typeset using LTFX on Debian O GNU/Linux

ISBN-13: 978-0-9560886-1-1

First printed edition: May 2021



Dedicated to James Cowdroy

This book is dedicated to the memory of Jim Cowdroy. Whatever strange new world you are in now, I have been, and always shall be, your friend.

Acknowledgements

Thankyou to everyone who helped get *Digital Vegan* out there, especially; Daniel James for patient editing, nudging, suggestions, insight and encouragement; Nikola Richter of Mikrotext Berlin for tasteful advice and edits to the first manuscript; Richard M. Stallman for kind, patient and humorous guidance to improve the clarity of the prose and treatment of Libre software. Thanks to all proofreaders, Guy Dowsett, Chris McCormick, and others for so carefully hunting down typos and typesetting errors. I am grateful to all of my family for suffering an author "with book" under their roof yet again.

Digital Vegan

Introduction

"When the taste for physical gratifications among them has grown more rapidly than their education, the time will come when men are carried away and lose all self-restraint. It is not necessary to do violence to such a people in order to strip them of the rights they enjoy. They themselves willingly loosen their hold. They neglect their chief business which is to remain their own masters." – Alexis de Tocqueville, *Democracy in America*

This polemic takes a swipe at our hopeless dependency on technologies that harm us, and our world. While it's a lighthearted sideways jab, musing on European philosophy in the face of overwhelming nihilism, the subject matter is deadly serious. It is not the question of "Can technology save us?", but "Can we save technology?".

Apology:

Throughout this book I use the metaphor of food and consumption to talk about technology. In no way do I mean disrespect or to trivialise the serious conditions of anorexia, bulimia, avoidant eating, or obesity. Indeed, I believe that many forms of technological and material abuse share the same root causes.

Elsewhere in the book I make mention of specific national identities whose governments and corporations engage in unjust and wicked actions in the world. As historical or geopolitical commentary I do not believe they are representative of the general will of the people of great nations, and find Russophobia, Sinophobia, Anti-Americanism and other broad generalisations equally abhorrent. There are no clean hands in this problem.

Who are Digital Vegans?

TLDR; Our future.

Apparently from the lips of one Cody Brown, the 'Digital Vegan' seems to have been conjured up as a disparaging and smug term to rib his friend's wish to be more ethical with technology. Brown opines, "I'm not saying there is anything wrong with being a vegan...". And what do minority groups do with disparaging epithets? Appropriate them as banners to use with pride, of course! It's precisely this relation to *actual* Vegans, and how people generally feel about them that makes this a perfect term for those of us who want to assert digital dignity and morality.

Let's be clear, I *hate* Vegans :) They are hard to live with, annoyingly thin, active and healthy, and most of all they are;

1. Right.

2. The future.

At some point, if the economy tanks and meat prices go through the roof, or I just find the courage within myself, I'll end up a real Vegan too. But today, I think the *Digital* version is more important, and here's why;

• If I'm wrong it won't matter because I'll always have the choice to be an *actual* vegan.

• If I'm right, we're all in big trouble. Meaningful choice about *anything* will soon be an historical memory along with suits of armour and horse-drawn carriages.

My own approach is, of course, a personal invention. It's not an ideal I hold as good for everyone. I believe my choices about social media and smartphones, which I do revise from time to time, are well informed, and carefully considered. Of course they are atypical right now, but I hope that changes.

For me, the Digital Vegan should consider three components; ethics, practice and politics. In terms of ethics, put simply, Digital Vegans aim to keep technology made by corrupt companies that disrespect people and the environment out of our lives. We do that for the benefit of ourselves, friends, family and others in society at large. Just think of Big Tech offerings like Gmail, Facebook or Microsoft as heavily processed food. Politely refuse.

A difficulty is information and labelling. Unlike towns that still have an organic wholefood store, most of the independent 'computer guys' have been driven out. We have no trusted connection to the provenance of technology. Tijmen Schep proffered some good ideas on how we might be better informed [1]. However, we face fundamental problems of trust and authenticity today, where companies and governments blatantly and repeatedly lie to us, where reviewers are paid off, regulators are corrupted, and recycling or 'fair trade' labels are misleading.

Refusing products from unethical technology businesses can be hard work. Big companies are great at PR. They are skilled at hiding bad behaviours, shrugging damaging revelations, rebranding and providing 'assurances'. Clean digital living requires a good memory and an unforgiving attitude. Once a crook, always a crook. Despite their energy for 'reputation management', there's plenty you *can* find about companies, from lists of directors and funding sources. Follow the money.

So while I usually give individuals many chances for forgiveness (perhaps not the biblically-recommended 77 times), companies get exactly *one* chance to betray me. Unfortunately, in cyber-security, one chance is one too many. Therefore we need to educate each other. Unfortunately, word of mouth, informal networks of folk wisdom, of warnings and recommendations, now take place within systems owned by these same scurrilous firms.

With opportunities to fix our digital world from *within* the system vanishing, book publishing remains a bastion of open intelligence. What you hold in your hands (or have as a non-DRM file) may soon be one of the few remaining means to circulate critical opinions that would quickly be censored online.

Why I am not a vegan

TLDR; Weakness.

I am *not* a vegan. Maybe I wish I had the courage or selfdiscipline to be. I just like meat too much. It's everywhere. A vast industry exists to sell meat. It would be hard to eat with friends or my family without feeling awkward, being the special case that everyone else must make allowances for. Besides, I am weak-minded. On occasions I've tried being vegan, but quickly slipped back into meat feasting addiction, despite my body and mind having felt immeasurably better without it.

Worse, I am morally lazy. I know that the meat industry is cruel, that so many animals suffer and die in disgraceful conditions, pumped with antibiotics, anti-depressants and hormones. It is so horrible that I block it out, with denial, wilful ignorance and rationalisation.

Right now our dependency on meat farming is driving planetwide extinction. In 50 years wildlife has dropped by two-thirds. Ninety four percent of Latin American rain-forest has vanished. Meat farming accounts for the overwhelming majority of this. As more species become extinct and ecosystems collapse there is a cascade effect, extinguishing still more species that depend on them. Therefore humans are quite simply eating all animal life on Earth.

The consequences of this loss of diversity, including millions of yet undiscovered compounds and medicines, is simply unimaginable. And it's clear that economic, not just moral logic, stacks up in favour of the vegan. We could feed everyone on the planet ten times over with a fraction of the farm land and carbon production. But it's just too much effort to change, right?

So my apologies to any *actual* Vegans for jumping your train. I salute you. Like all of us, I could improve my life. I could take more care of myself. I could think about someone else. But I can't stop...

Knowing all this, why can't I stop?

For the same reasons that you cannot stop.

Ask yourself, why can't you stop looking at that phone? Why are you probably, right now, sending data to corporations whose open aim is total cybernetic domination of the Earth's population? Why don't you stop supporting child labour? Why do you contribute to mountains of e-waste, flooding the Earth with toxic compounds that cause sterility in thousands of species? Why do you buy products designed to be obsolete within a few months? Why do you defer judgement on deeply human affairs to 'artificial intelligence' which has much less sense than a nematode worm? Why can't you stop enabling oppressive regimes? Why do you tolerate mass surveillance and manipulation?

We're not so different. We each do our bit, trying to change the world. I do my bit with computers. Maybe together, by sharing intelligence and goals we can do better. I'm an ordinary professor who teaches computer science. My specialisation is in signals, systems and cybersecurity. I am not a food scientist or environmental activist or health expert - these are simply metaphors that I use.

The subject of this book is that of *Retaking Technology*, and why, for the same reasons as me, *you* can't stop. It's about why we need a mass movement that takes a different view of technology to the one forced on us by Google, Amazon, Microsoft, Apple and hundreds of other corporate near-monopolies that dominate our lives.

To understand technology as nourishing or toxic, a metaphor of dietary health might help us. Like food, we consume technology without thinking about where it comes from, and what it is doing to us. As with food, we tend to go along with the crowd. And like food, we rarely distinguish what we *think we want* from what we *actually need*, so we over-consume or waste it.

By casting our technological problems as 'Digital Rights' issues, I think we fall into a trap. People assume that *someone else* is taking care of those rights. If you knew how *few* people are active you would be disappointed. A few rag-tag organisations like the Electronic Frontier Foundation (EFF), World Summit on the Information Society (WSIS) and the UK's Open Rights Group, are all that stands against a tide of abusive ideologies operating through giant tech corporations. Bruce Schneier keeps an impressive looking list of 'technologists in the public interest' on his site. I wish it gave me more hope. But they look like a typical slice of white American academia, all of whom could be bought with loose change in Google's pocket.

Politically, we are in a rather poor situation. There is almost no intelligent public debate around technology. Mass media and social media avoid the issues, because to engage would be to question their own platform. Few, if any, politicians understand or care about the issues. Our schools and universities are decades behind. We have no credible projects for civic cybersecurity or public education on digital issues.

As democracy itself comes under threat, our problems are growing too big and fast for the current vanguard to counter. Corporate cyber-criminals escape justice while civic-minded hackers and whistle-blowers who take a lonely stand are severely punished. Public officials, including prime-ministerial advisers [2, 3], have called for the deaths of those who reveal their digital privilege and manipulations while others are exiled or imprisoned without trial. This should tell you a lot about how the powerful are invested in the project of mass technological control.

But slowly we are awakening. In 1962 marine biologist Rachel Carson woke us up to lethal pollutants in her book *Silent Spring* [4]. In 1972, systems theorist Donella Meadows blew the lid on the fundamental unsustainability of human growth in *The Limits to Growth* [5]. These scientists, and many others since, have had 50 years for their ideas to be taken into the mainstream. Environmental science reigns supreme in public focus today.

In 2013, Edward Snowden told us just how rotten our communications and computer systems really are. His book *Permanent Record* [6] is the Silent Spring or Limits to Growth of our generation. But this knowledge has not yet been processed by our culture. It has not even sunk in, let alone started to have effects. There are not yet mass movements to break up tech monopolies, dismantle over-reaching intelligence agencies, mandate interoperable standards, help people to use unbreakable encryption and protect their privacy and dignity online. There should be. We need to start somewhere.

I shall try not to be a judgemental, sanctimonious, frightened, dramatic, attention-seeking or disingenuous person. However, I want you to read the rest of this book with urgency, and I want it to change your life. Hopefully you will become a Digital Vegan too, because I believe all of our futures depend upon it.

Hatland

TLDR; People aren't wearing enough hats.

"All ran headlong for their chains in the belief that they were securing their liberty" – Rousseau (Second Discourse on Inequality 1755) [7]

One day a friend of yours is wearing a hat. It doesn't really suit her, but you make a compliment all the same. A few weeks later, another friend is wearing a similar hat. Maybe she copied her. Before long, all the hat crowd are hanging out together, and soon you notice it's happening to people everywhere in public. The hat craze, like Rubik's Cube or the Harlem Shake, is out of the bag.

You guess it will blow over, like all crazes, within a year. But it doesn't. Soon people start pressuring you, "Don't you like hats, Kate?". No. As it happens this new craze is for ugly and impractical hats. They are undignified. Soon medical evidence grows that they make your hair fall out, after which you *need* to have a hat. Some people try giving up their hats, but feel naked. They soon end up back with a hat.

Then it starts getting weird. Men in suits feel that "people aren't wearing enough hats". Millions of hats, mass produced by slaves, flood the world. The dignity of being hat free, of exercising *taste*, becomes a social stigma. One day while riding the bus, you notice everyone has a hat and they're all staring at you, murmuring. Through the window you swear you see Donald Sutherland, agape, pointing at you. Before long, they won't let you on the bus without a hat. Bars and restaurants refuse non-hat wearers. A breathless press, government stooges and even teachers at schools start to talk about how "hats are absolutely vital to our way of life now". All of this happens in just ten years, following millennia of happily hatless human civilisation.

For a while, living as a bare-headed refusenik in Hatland is still possible. You can carry on with a normal life, so long as you do not interact with others. Apartheid against the unhatted is soon open policy. The police profile people without hats. Insults and exclusion become a daily experience. Everyone knows the Ministry of Haberdashery, chaired by the Mad Hatter are rolling out mandatory hat fitting and that hat re-education camps are being built...

When I woke

TLDR; Blessed are the sleepy ones: for they shall soon nod off.

The first time I saw a mobile phone, it was fitted in a car. Its owner, 'Carphone Chris' was, to use the correct English parlance, a bit of a nob. Like many of the early adopters whose main preoccupation was being *seen* using their gadgets, it was pretty hard to miss Chris in his silver BMW holding something the size of a shoebox to his head and shouting like a nutter. 'Mobile Matt', another legendary figure of techno-cool from my teenage years, would sit at cafes having loud, imaginary self-aggrandising conversations with himself. Once I busted him, perilously close to some admiring women, by pointing out that the battery had fallen out of his phone. I suffered the 1989 version of being 'unfriended' for that.

I decided somewhere around that time that mobile phones were for pricks, and that they clearly brought out the worst in people. As far as futurological powers go, Ray Kurzweil had nothing on me in those days. Then in '96 I succumbed, and bought my first Nokia. Its inferior replacement in 2006 lasted only 7 years instead of 10. During that time I'd been involved with building three internet companies. Then I skipped two or three years while I wrote a book and didn't go out, so no need for a mobile.

In 2010 I found myself back in London on the Shoreditch start-up scene in a highly creative capacity. Some of our experiments pioneered software that created small industries. Our 'Silicon Roundabout' was the Bell Labs of smartphone interactive application innovation. Everyone had two or three phones. Apple gave us iPhones by the box-full. We took them apart, rooted them, messed with the basebands, reverse engineered drivers and soldered in new chips. But unlike many of the devs, when work was over I left the technology in the lab. Phones were what I *did*, but not something I *used* – other than my ten quid Nokia. As the drug-dealers' saying goes, never use the product.

Have you read Oliver Sacks' 1973 book *Awakenings* [8]? It's his best in my judgement, as it resonates with me. It all started about 30 years after Carphone Chris's comedy shoebox, when a friend remarked that, "you seem real woke about tech"... *but*, he continued, "to be honest Andy, the no phone thing... it scares me a little". I sympathised. What deeply troubled him was that I was "probably right".

As if in the mirror world of Pinter's *Alaska* [9], fallen through three decades as humanity slept, I awoke. Hair greyed, eyesight a little less keen. They are all still 18 years old and I have become this old fool.

The past ten years, watching people use smartphones I've seen so many people half-asleep, in a fractured and scattered state of nervous distraction, flitting between half-thoughts in a sort of waking REM. Dopamine is administered in small electronic doses from handheld dispensers.

At 50, I happily concede the pinball table may be tilted a bit, and not all the lights come on when the bell rings. But even my inner curmudgeon knows it's no rose-tinted claim that in the 1970's and 1980's people were, fundamentally, neurologically different. They made plans and stuck to them. They had coherent ambitions, relatively stable groups of real friends, and could speak for more than three and a half seconds without saying 'like'. Basic collision avoidance of lamp-posts and dog-poo was considerably better than a Roomba robot vacuum cleaner is today. Technology has changed *society* and it has changed *us*.

London 2021: People bimble along grinning, literally dribbling into their phones like patients on strong anti-psychotic medication. They're lost, without any situational awareness. Is there anything more anti-social than publicly abdicating all responsibility for your own well-being to others, so you can amuse yourself while walking?

Or worse – driving. I challenge anyone to watch Werner Herzog's 2013 *From one moment to the next* [10] and not weep at the tragedy of *everyone* concerned. Each year there are one and a half million accidents on roads resulting from phone use. As if in some Grimm fairy tale, a great slumber has come over our land.

Your brain on tech

TLDR; Hiding your light.

No doubt persists that smartphones and social media are rewiring our brains, causing serious negative effects. The structure and neurological composition of our brains is changing [11]. It is affecting our personal relationships [12], causing depression [13], loneliness [14], and impacting social relations across society [15]. Parallels have been drawn to tobacco, alcoholism and gambling, leading to demands for regulation [16].

One symptom is anti-social behaviour, manifest as passive or overt aggression towards even temporary disconnection. People absorbed by technology are not merely oblivious to others, some measure of entitlement rides along with it. Dare I say, a whiff of active malice? I've seen that look, an almost 'willing everyone else not to exist'. It is in the corner of the amused passive aggressive smirk a smartphone zombie displays on encountering his mortal enemy – mild inconvenience.

When reality dares to intrude, if for example, needing to step an inch to the side of an oncoming car or pedestrian, the 'smombie' is indignant. Inhabiting a private fantasy world, like a four year old, is not a 'wakeful' or 'connected' state. Researchers have even coined the term *nomophobia* to describe anxious aggression, moodiness and outbursts caused by separation, or a fear of separation, from smartphones [17].

So, to the extent that we are more 'connected', an ironic reversal of the word occurs. It really means half-asleep. Zombified.

Hypnotised by the narcotic anodyne of what, in his 1993 book *Technopoly*, on our surrender of culture to technology, Neil Postman [18] called electronically altered brain states. Unlike the short-lived effects of television, continuous connection to social media exerts a persistent spell over its victims. It overlays an alternative reality on the mundane daily world, one that occupies your attention, thoughts and feelings, even after the phone is switched off.

Some years ago, one of my master's degree students researched the use of mobile tech in public. She was actually investigating hearing loss. In our tutorial we discussed some interesting, unexpected findings, specifically that women admitted to wearing headphones and staring into smartphones as a barrier – especially in places like the Tube (London's subway train) to send a 'not approachable' signal to potential pests. One of the interviewees said that it was like "wearing a mask or hat".

To me, this was a whiff of gunpowder or a speck of blood at a murder scene. It was a clue to the psycho-philosophical puzzle I've been assembling for 30 years, that there's more to technology then we think – more than the official narrative of 'convenient connectedness'. Recently, as I walked past a lad throwing litter into the street, we had a strange interaction. He saw that I saw what he did, and immediately reached into his pocket, pulled out a phone, and hid in it. His shame, fear and avoidance could not have been more obvious if he had run off and hidden behind a nearby tree.

Technology, in this sense, is a way of *disconnecting*, of putting up barriers, excluding everything that cannot be brought under the infantile control of a finger swipe. Therefore, like 'progress' and other unqualified abstract nouns, the ideas of 'connectedness' and 'awareness' need re-examining. We must ask; Aware of what? Connected to what? What, in *actual reality*, rather than as a vague allusion? A failure in our digital age is poor discrimination amongst data, noise, information, useful information, understanding and wisdom. We are still in such awe and culture shock from the past 30 years that we have not sincerely asked, what is all this connection *for*?

The circus of death

TLDR: The greatest show on Earth.

"The circus of death is approaching. Its pathway is painted in red. Before it the frightened and helpless. Behind it a trail of the dead" – The Human League 1978 [19].

While powerfully evocative of Ray Bradbury's *Something Wicked This Way Comes* [20], to me, this Human League song was always about either drugs or communism. Today, the lyrics seem more a fit for the phenomenon of soft technological control. It resonates with the clownishness of digital bread and circus, the gaudy distractions of Google's alphabet rainbow. Grinning clowns are creepy and tragic. Not only Joker, but Ronald McDonald.

Finding an umbrella term for the multiple phenomena of unwelcome technological intrusion, mass surveillance and manipulation isn't easy. *Technofascism* is a word I like, but, while it fits the reality, it's got hard edges that rub some people up the wrong way. There is a tragi-comic aspect to the distance between how people think of their smartphones, social media and Big Tech, and the sinister reality, like how 'doctors' used to promote cigarettes as giving 'health benefits'.

Indeed, a 'band of jugglers and jesters' describes the tech industry well. Computer scientist and magician Tristan Harris speaks eloquently on the razzle-dazzle and magic behind consumer manipulation, in his 2016 *How Technology is Hijacking Your Mind* [21]. Mind control, influence, hypnotism, distraction, enchantment and entertainment have always occupied the same approximate space. Street entertainers would often partner up with pickpockets.

A factoid for Monty Python fans – the original Flying Circus was a German World War One fighter squad led by Manfred von Richthofen (The Red Baron). In the days when air combat was a gentlemanly sport and spectacle, military planes were often painted in garish colours to add a little more theatre to warfare. Likewise, the Circus of Tech is a marvellous show. We gasp and applaud the high drama and high stakes.

Just as warfare sustains the arms industry and removes surplus male population, the *cybernetic circus* – a chimera of scientific management and amusement – creates something else 'economically' valuable. It generates an activity that looks and feels a lot like 'work'. Only it's a kind of *soft work* – as when parents give overactive kids some chores to 'help with'. It's an ingenious engine of time consumption and distraction that deflects from coordinated thought, planning and action.

In a society that is automating intellectual labour, restiveness, as Alexis de Tocqueville explored in the 1835 travelogue *Democracy in America* [22], leads to civic organisation and community building. That will not do for cybernetic monopoly capitalism reliant on the absence of horizontal social organisation. The recourse is to create moral labour and distraction.

Aerobatic shows often involved coloured smoke. The origin of this lies in smoke used tactically in early air combat, to blind enemy pilots. In modern electronic warfare (EWF) we use all kinds of radio signals, flares, beacons and jammers to achieve the same effect.

In the digital domain, *signals countermeasures* and *information warfare* is directed against civilians daily. Hooked into the surveillance machinery, a 'cultural early warning system' triggers algorithms to keep you amused or worried by so-called 'issues' (as distinct from verifiable *events*) thrown into circulation via social media and news feeds. They tickle your brain with a permanent unscratchable itch that makes *real* things happening right here and now, in your *actual* life, disappear. Given the urgency of so

many real issues, we are, as Postman quipped, "Amusing ourselves to death" [23].

Conspiracy 'theories' which are unfalsifiable, unresolvable by discussion, can be crafted and nurtured to distract from *actual* commonplace conspiracies, mundane and vulgar acts of corruption, monopoly and failing leadership. Internet celebrity remarks about gender or race are designed to create outrage, to jam and discombobulate serious discourse about things that really matter.

Wouldn't a truly *active* person see right through this, get off social media, dump their smartphone in the trash and refuse to be a tool of distraction and division any longer? But it's not so simple, is it? People suffer a visceral horror of being disconnected from the hive mind, a mortifying fear of missing out (FOMO). The impact of this is discussed by psychotherapist Adam Phillips in *Missing Out* [24] and Sarah Buglass in her research on online FOMO [25]. This along with explicit peer pressure, the effort of finding confidence to think for oneself, prevents our jolt into wakeful reality.

None of this is new, of course. It existed in the 1930's with large circulation newspapers, advertising and political manipulation following from Edward Bernays' 1928 classic *Propaganda* [26], and Walter Lippman's equally influential *Public Opinion* [27], both of which effectively defined the modern meanings of their respective titles. Digital technology, like television before it, simply continues the process. We are part of the show, and the show must go on.

How secure is my technology?

TLDR; It Isn't.

Many of us are now waking up to the privacy and security problems of our personal data. It's worth saying that all of us who used a cordless phone, or even analogue telephone during the past 50 years, had no real *technical* expectation of privacy. In *practice* though, we had good privacy. Three important things changed. Firstly, we enjoyed better protections under the law. Secondly, privacy violations were rare. And thirdly, surveillance was difficult and costly. Today it is easy, profitable, commonplace, and ignored by a now complacent and impotent legal system.

Interviewed as an expert for a documentary, I was asked to "Briefly summarise the state of smartphone security today". My reply was – "As bad as it could possibly be". When a device is compromised at the point of manufacture, in undetectable ways, and an entire industry and legal system exists to stop you investigating, mitigating, or speaking about it, that's about as bad as it gets.

For complex reasons the US embargo on Huawei, while looking like a trade dispute, more or less proves this. Simply; western phones have backdoors and remote controls for western governments. Chinese phones have backdoors for Communist Party intelligence apparatus. Each spies on their own citizens and everybody is happy (except the citizens that end up in camps). It's the presence of the other's spyware within the respective borders/markets that is the problem, do you see?

So when these powers fell out, or failed to reach agreement on data sharing, this escalated into an issue with clear symmetry. We see that products by Apple, Google or Amazon are to be trusted no more than Huawei handsets. Indeed, the safest phone for a Chinese citizen is probably an Apple iPhone, whereas the safest phone for a western civilian¹ would be a Huawei, because historically, people are most risk from their *own* government's domestic surveillance than a foreign government's international surveillance.

Since Edward Snowden explained it, we know that all smartphones are tracking devices, remote microphones and cameras, and that the NSA has spent billions infiltrating our networks. Most people have no idea about the many other sensors, telemetry gathering and tracking options available through accelerometers, touchscreens, thermometers, gyroscopes, atmospheric pressure sensors, sonar, lidar and vibration sensing in smartphones.

Corporate cell towers and ISPs intercept *all* our communications and feed them directly to central storage facilities where they are kept permanently for later analysis. Proliferation of spy-tech into local police forces and even some US schools means 'IMSI catchers' corrupt the phones of innocent passersby and children. Once expensive and highly illegal devices are now made cheaply and sold in the brochures of any number of 'security companies'. Digital voice assistants, home automation and camera-capable doorbells extend this surveillance network which has the potential to feed into local police operations.

The idea of *malware* in the age of *vendor malware* (euphemistically called 'telemetry') is quaint. Manufacturers who installed spyware like Carrier IQ were never prosecuted, and we can only assume they got better at hiding their malware. Even if the hardware were secure, people really only have a choice of two mobile operating systems, iOS and Android. In the West, this duopoly of choices is the entire market for anyone without technical skills. Both are fully compromised, by which I mean

¹But not anyone in service or doing sensitive work.

they are opaque, remotely-updated proprietary systems operated by ruthless companies that have shown they will always put profit before human values.

We now live in a surveillance society facilitated by the corporations that build our devices, write the programs that run on them, and supply our internet access. The law prohibits governments from conducting warrentless mass surveillance. By privatising the work, and allowing it to be profitable, governments can surreptitiously conduct mass surveillance by proxy. Companies that do not cooperate are strong-armed by threats of regulation and taxation.

In 2021 there is no such thing as a secure smartphone, in any way shape or form. The same is true of IoT devices, your smart TV, your car, your kids' XBox and school computers. Computer security experts are quick to label security 'mistakes' as "too stupid to believe". Axiomatically, nothing in cyber-security is too stupid to believe. But I think the prominent experts are dishonest by omission. We need to come right out and say that cybersecurity is a failed project. But for many writers, that would be burning the platform they stand on, so I understand why they do not. However, I think people should know the truth. A great many of these 'mistakes' are deliberate.

It's not that suppliers, service providers and governments do not care about your digital security. They don't. But it's worse. While actively profiting from your insecurity, their legitimacy rests on deceptively claiming the opposite. Given the means and opportunity they will not just actively sabotage your security but lie to you. It is a tragic combination of the worst possible motives, and that is why we are in this mess.

In theoretical cyber-security we have a fancy name for this, It is the *Dolev-Yeo* or *Zero Trust* model. I feel bad that people pay me money to hear that simple truth repeated to them *ad nauseum*, until either the penny drops or they grumpily admit they don't really care, and actually expected cyber-security consultancy would make them 'feel better'. I give them a special lucky unicorn charm that keeps away tigers and the NSA.

Internet of trash

TLDR; Talk to your toaster.

To understand the 'Internet of Things' (IoT), imagine inviting a guest into your home. Good guests show respect. They know when to leave. IoT is a thief disguised as a guest. He insinuates himself like a smooth salesman, gets ensconced in your home, drinks all the beers, helps himself to food, opens the back door and invites in a bunch of mates who make off with the silverware.

IoT is the gratuitous embedding of internet connected computers, often hidden, into objects that have no need for that. As imagined by their designers, these 'smart' objects enable glorious efficiencies and conveniences. At best it is a tragedy of a manufacturing industry with no value left to add to products. At worst it's stealth mass surveillance. The absurd conclusion of IoT is anticipated in Philip K. Dick's 1969 fictional world of *Ubiq* [28], whose protagonist Joe Chip is held hostage by his apartment door because he owes it money. Darker versions of this trope appear in Donald Cammell's 1977 film *Demon Seed* [29] and Sam Esmail's *Mr Robot* (season 2) [30], where automated homes go berserk and torment their occupants.

For some reason, even in 2021, talking fridges seem to exert an attractive lure on supposedly adult minds. If you want to control or monitor your home, gain the knowledge to safely do this yourself. Many IoT products are defective by design. Almost all have truly appalling security and quickly become e-waste. They are designed to invade your privacy by sending personal usage data back to manufacturers, who sell it to marketing companies. Devices will stop working if they cannot snitch to a corporate computer.

The more computers there are on a network the less secure it is. If any *one* is compromised it can become a base to attack the others, or attack any other computer in the world. Compromised computers are used to send spam, or conduct phishing and denial of service attacks. To make them "easy to configure", IoT devices have weak default passwords, backdoors, and revert to insecure settings if reset. Intruders can get into your internet enabled doorbell camera or garage door opener with ease. I would argue that your home is significantly *less* secure with these devices than without them.

Permitting a computer under remote control into your home network requires that you trust the manufacturer. The manufacturer, even if a known brand, will source components from obscure Chinese manufacturers. At any time these embedded processors can call home, update their function, and exfiltrate data from your home or other computers on your network. Back-doors enable remote activation of microphones, cameras or sensors that you may not know the device has installed. In short, there is no reasonable basis for trusting this kind of technology.

Right now IoT is an unregulated market and a frightening number of products are unsafe. Think carefully whether you really want or need IoT. Is it worth the safety and privacy risks? Avoid Smart TVs that watch you, fridges that snitch on what you eat, toasters that phone home, light bulbs that report energy usage, toilets with bottom-cams operated by the Office of Bottom Inspection (OBI) [31]², or other such madness. In truth, internet connectivity adds no value to most products. Buy a simpler, more reliable product. Use your own brain to take responsibility for life. If nothing else it may help you stave off dementia.

²These don't actually exist, yet.

Finding the words

TLDR; Silence please.

Students I know, in their twenties, who should be at the peak of neurological acuity, are sometimes barely able to speak. Since Taylor Mali wrote "Speaking with Conviction", that wonderful poem on "The most aggressively inarticulate generation to come along since... You know, a long, long time ago!", things got worse [32].

Mali implied that our youth are gagged by a pervading sense of relative worth, a fear of peer judgement like Tall Poppy Syndrome or Jante law. He urged us to "Speak with confidence". Confidence is not the issue. We've had two US presidents whose confident speech is indistinguishable, in content, from a drunk. The function of speech has changed. Unintelligibility became a virtue. Dumbing-down speech to a non-threatening, cute, folksy fuddle is now fashionable for populist leaders. Tony Blair tried to play the, like y'know, guitar strumming student dude. Today, speech is not used for its *content qua words*, to construct arguments or engage in dialogical reason, but to send meta-verbal signals. British statesman Disraeli spoke from a different age when he said, "Men govern with words.". Mastery of clear language, once considered a core leadership skill [33], when deployed by one with such forthright character as environmentalist Greta Thunberg, is mocked by senior statesmen who pout and preen on the world stage.

A mistake would be to imagine that Bush, Trump, Blair or any of the scriptwriters, psychologists and researchers that create them, are *stupid*. Every word is chosen carefully. That should be terrifying, because it tells us that every word is perfectly tuned to the tone, and comprehension level of the average person. Alarmingly, inarticulate, fumbling and scattered speech clearly correlates with mobile digital technology use, and with the distracted, anxious and poorly-socialised state of mind it creates. Aside from some neurological conditions, brain injuries, strokes, and stammering, which break the flow of speech, our thought processes are closely linked to speech. When speech falters in otherwise healthy people, it is usually a sign that inner thought is failing.

So it's no surprise that tech-giant billionaires forbid their children from using social media, and send them to schools without technology. What is behind this? Do they know something we don't? Paul Lewis, writing in the Guardian thinks so, describing the 'tech insiders who fear a smartphone dystopia' [34]. Or does the transition from a reading culture to an iconic visual culture reduce intelligence? Is it the brevity of Twitter? Is it the distancing effect? Is it the echo chambers? Whatever the cause, I notice an ever-widening intelligence gulf between those who are free of social media and smartphones, and those who are users.

Of course, people vary in relative capacity for focus. What the philosopher Heidegger called *Sorge* while discussing 'The question of technology' [35], refers to one's goal, care, plan or major concern in life. The Japanse call it *Ikigai*, and in French *Raison d'être*. The word 'calling' is sometimes used, but in western life the concept is feeble or absent for many of us swept along by a stream of digital distractions. Similarly, Nietzsche, in his *Will to Power*, regarded an element of unwavering 'authenticity' or selfcreative drive as essential to a well-lived life [36]. Practitioners of mindfulness understand, as Liam Neeson's *Star Wars* character Qui-Gon advised the young Obi-Wan, "Your focus determines your reality" [37]. The internal voice which narrates our lives is fragile, so easily drowned by the chatter of technology. To speak with confidence we must each be able to hear our own soul.

Digital child abuse

TLDR; Never let school get in the way of education.

In the 21st century a new word, '*cyberbullying*', emerged to describe employing communications technology to conduct psychological abuse. Workplace cyber-bullying is an adult problem, and I have tried to cover this elsewhere. But what is extraordinary, and preventable, is how many children are affected. Seventy percent of children become victims of cyberbullying at some time. Most are young girls. A sickening slew of teenage suicides has made the headlines. The problem increases year on year since 2005.

At the heart the problem is forced identity. Sceptics of the teenage suicide epidemic linked to social media say that schoolchildren have always bullied one another. Of course that is true. Traditionally, when children got bullied, they fought back, or told their parents who took them out of school until the issue was resolved. What is different today is that children are forced to occupy adult-free digital spaces, to form social hierarchies and self-organise in a brutal ecosystem where popularity, success, and normativity are wielded as weapons against fragile psyches.

We assume that as in William Golding's 1954 *Lord of The Flies* [38], a degenerate cruelty must emerge. In reality, as reported in the Guardian May 9th 2020 [39], the '*Real Lord of the Flies*' turned out quite differently. When a group of children were castaway on a Tongan Atoll in 1977 they built human relations that put modern conceits of 'civilisation' to shame.

Similarly when computer kiosks are set up in villages of developing countries spectacular cooperation, self-organisation, autodidactic capacity and kind mentoring of each other takes place amongst the children. Katrin Macmillan, founder of *Projects for All* has set up such self organising schools around the world. Her work is inspired by experiments conducted by educational pioneer Sugata Mitra on "minimally invasive education technology" [40], which changed the way we need to think about technology in schools.

In the West we have it all wrong. We force technology upon kids (often assuaging our own anxieties that they will "be left behind"). And it is the worst kind of technology designed by massive edu-tech companies that aim to collect data, profile our children, and make life "easier for teachers". In these digital cages they have no prospect of really educating themselves.

And when it comes to self determination, and the real rules of digital citizenship they have no prospect of fighting back. Any child understands that in reality they can punch a bully and put a decisive end to persecution. Indeed, many parents and teachers would hold that this physicality is the only real solution, even though modern societal pretences prevent them from publicly saying so. But what is a 10 year old to do against digitally mediated victimisation? How can they cope with being in a network that is much too big and hostile, the digital equivalent of being abandoned on the streets of New York City?

If little Emily knew how to run exploits against her persecutors phones, DDOS their home networks, plant evidence and wipe her enemies devices, it would be a different matter. What if she knew how to configure firewall rules on her device to block Microsoft from spying on her? But not many kids have parents whose first instinct is to teach them how to hack back.

When I first read of young girls killing themselves because of harassment on Facebook I could not understand. Why did they not simply disconnect? As a user of first wave social media from about 1990 I spent thousands of hours using internet relay chat (IRC) and other messenger systems, including those within multiplayer game communities. The important difference between first wave peer communication technology and today's centralised corporate systems, is that we had ephemerality and anonymity. That's what made it safe.

More than a mere question of scale, prior to about 2005, peer communications were qualitatively different to 'social media' today. Some people published their real names and home phone numbers in NNTP *Usenet* posts. Others had completely fictitious identities. Most people had several, and used them for different purposes. If things got nasty you just deleted your avatar, or quit a channel. The next day you created a new one. The plurality of services and ability to disconnect at will by simply dumping a digital identity, is something I believe is important to how humans should use communication technology healthily. During my formative use of peer communications I had many dozens of online identities. Why can young people no longer do this?

This isn't a question about behaviour and anonymity. There are many psychological theories that seek to explain how anonymity breeds cruelty and contempt, but just as many that reveal anonymity to be the core of honesty, generosity and altruism (see [41, 42] and [43]). To understand why a war has been waged against *anonymity and ephemerality*, the qualities that can make children safe from online bullies, from adult stalkers and predatory corporations alike, just look at *who* benefits. The enemies of anonymity are those who financially benefit from tracking people online and exploiting their personal data.

Schools, if they wish to use technology in the classroom, have absolutely no need to use real identities. Yet they are pressured by ill conceived policy forged by the lobbyists of corporate power. By forcing people to become invested in digital identities they can be controlled. Interestingly, this phenomenon emerged in Massively Multiplayer Online Role Playing Games (MMORPGs) like *Eve Online* where digital currencies were used to create an attachment investment in a digital identity.

Recall from an earlier chapter that there is a multi-billion dollar industry committed to ensuring digital users are tagged with a permanent identity. Advertisers will do anything to track and profile users, including overtly criminal acts of hacking, fingerprinting and infiltrating the phones of minors. One of their masterstrokes has been to convince politicians that tying devices to real-identities makes children *safer*. I cannot stress enough what a crock of crap this is, and how foolish (or corruptible) our politicians are if taken in by it. It does nothing but make phone users more profitable to 'surveillance capitalism'. As a side effect it places young people at more risk.

Today, parents give smart phones to kids who sign up to Facebook and other social sites using their actual *real names*. Schools give laptops to kids and create accounts using the child's real identity. In my opinion as a cyber-security worker this is absolutely unforgivably bad operational security. To put it as mildly as possible, it shows that the teachers and school ICT workers know absolutely nothing about technology or the world we live in.

In one case in the UK, a 10 year old girl was pretty much killed by her school laptop. Despite her mother doing everything possible to isolate her daughter from ongoing cyber-bullying, by confiscating her smartphone, the girl still had a school issued laptop, which her mum felt she could not take from her child. A school giving an 10 year old a Google Chromebook, with all of its security holes, having open internet access and Facebook, is grotesquely irresponsible.

Parents in that situation ought to make it perfectly clear to the child's school that unless they make immediate provisions to continue teaching using paper and pen alternatives they'll be seeing the inside of a courtroom. Cover any risk of financial liability by giving them written notice that if your child comes home with a laptop again, it will be going straight into the recycling.

Despite the best efforts of European GDPR to protect children, so-called 'edu-tech' companies are queuing up to foist their data harvesting technology on schools. The temptation for advertisers, governments and manufacturers to gather data on children is irresistible. Data from minors is seen as especially valuable from a psychological profiling and behaviourally predictive point of view. For the predators, there is just one problem. Under our laws, including all contract laws and those that guard against pederasty, a child cannot give consent. The rationale is that a child cannot understand the consequences of what they are agreeing to. Because Tech-Giants really want this data, parents are therefore put under extraordinary pressure.

The mainstream media normalise premature over-connection. Selling phones to children is big business and newspapers and TV do not want to upset their advertisers. Overworked teachers want things to be easy, so schools pick cheap, convenient products without thought for the long term consequences. And parents succumb to their own desire to micromanage and control their children using technology, mistakenly thinking they are 'protecting' them.

Finally there is a confusion around the wish to teach children digital literacy – which smartphones and crap from Google and Microsoft cannot do. In the 1980's western governments embarked on ambitious projects of teaching technology in schools. My lucky generation had BBC Micros and we programmed in BASIC. We are the generation that built the internet and the digital technology we have today. For 30 years since 1990, technology education lost its way, regressing to teaching Microsoft Word. During that era of confusion, an idea arose that *any* use of technology somehow amounts to 'technological education'. This is a patently idiotic conflation of ideas. A sad vestigial sentiment remains in the air, that"it's good for kids to have computers in schools, because it teaches them modern technology".

So children, who cannot give informed consent, are betrayed by all their ostensible guardians, because we really have another, bigger problem. By the same token, the vast majority of adults, including parents, teachers, school boards, and education ministers are utterly out of their depth and unable to make informed choices in this area. Technology is a cargo cult. One of the reasons we are stuck is that schools are inducting new generations into passive techno-normativity.

One important step towards positive change is removing unnecessary technology from schools. Presently, our understanding

about children and technology are woefully inadequate, in law, in social norms, in policies and in knowledge of long term effects. I think we will look back at the early 21st century in horror, as we now think of Victorians who sent children up chimneys or into cotton mills, thinking it was "character building".

My advice to parents at this point in time is this: Teach children technology, do not let technology teach children. Outside of computer programming and technology classes, just say no! Wherever possible, opt out of routine usage of classroom technology. Remember that the Silicon Valley billionaires don't let their children be taught by computers at school. Your child will not be 'left behind'. There is nothing they will 'miss out on' that cannot be learned through real-world interactions. Educational technology at the primary and grade school level is overrated. They will pick it up at an appropriate age.

And so to the second important step. Even better yet, help them learn for themselves. Teach your children to hack. Teach them to be brutally critical. Teach them their digital roots, and how to get root. And if you cannot, at least step aside and give them the encouragement to be curious and break boundaries for themselves. They have nothing left to lose but the approval of a society with nothing left to offer them. Help them to be the digital Rosa Parks of their generation, who will challenge domination, and overthrow it. And if you do not have the courage to do that, at least be honest with them that it's *you* who are scared and ignorant. Maybe then they will find a way out of digital enslavement on their own if they feel backed up.
Both solution and problem

TLDR; False dilemma.

People talk of technology as a double-edged sword, meaning it can hurt its user. We are ambivalent about many technologies. Cars get us to work, planes take us on vacation, and both harm our planet. A dilemma is a situation presenting two equally unpleasant choices. Like food and drugs, digital technology seems to offer us a dilemma, where we must give up the good things to avoid the bad ones. But this is untrue.

So, whenever I read articles about social media or smartphones by intelligent, thoughtful people, they are always prefaced by a phrase like: "There is no doubt that smartphones provide immense benefit to society". And then... here it comes... *but*...

Why do researchers in neuroscience, psychology, sociology, and cyber-security, who are daily discovering the most awful effects, feel the need to prepend apologetically to their findings? Because to even get published we need to make a respectful nod to the immense economic and political power we are challenging. So, in addition to rational ambivalence, our choices are further distorted by the power of those who create, mandate, and push technologies on us. The prospect of 'being left behind' is partly a fear, and partly a threat.

The false dilemma is an argument made to look like a dilemma, but which is really not. It is a fallacy or 'thought trap'

used as a propaganda device to agitate, divide and confuse. Who would offer such an argument, and why? Someone who benefited from the ostensibly inevitable bad sides of something, for whom those were profitable. False dilemmas can often be revealed by reversing the values in an argument.

So what about taking the opposite posture? As an expert in signals and systems, with a lifetime invested in communications technology, I sincerely believe we must face the fact that smartphones and social media are scourges of our age. They are clearly catastrophic to mental health at the individual and societal level. They are grossly distorting power and financial balances. They are sending people off to sleep at a time in history when we all need to be wide awake. Let that be the starting point. Bad news for people like me. But from there, let's now see what can be rescued. What necessary concessions and compromises can be made to admit some useful technologies into our lives?

Nicholas Carr's 2011 book *The Shallows* [44], is still a great introduction, though research is moving fast, and I am still unclear on the *consistent*, hard evidence around vanishing attention spans and some aspects of mental illness linked to mobile digital technology. I suspect the truth is horrifying but being ignored, and *'balanced'* with carefully selected research, especially with regard to the educational impact on children. Again, there seem obvious parallels to tobacco or opioids in the trustworthiness of research. Always look carefully at the motives and funding behind studies. Besides, it is also part of a wider, more complex problem that involves factors well beyond the simple existence and function of these technologies.

In response, apologists for negative effects vociferously claim that new technologies have *always* created anxiety about societal decay. And that is true. Socrates thought the written word caused 'forgetfulness', and later the printing press was blamed for destroying our ability to speak eloquently. They were not wrong. Writing and printing changed the course of humanity immeasurably, mostly for the better, but sometimes not. It's just taken thousands of years of exponential growth for us to see both sides, and understand the subtle complexity of how symbolic systems, thought and culture intertwine. Pointing out continuity with historical concerns is not any kind of argument against caution. Shifting the focus from measurable harms to people's anxiety is also disingenuous.

Indeed, historically we've been far more nuanced. Debates around nuclear power or genetic engineering seem mature by comparison to our almost total failure in the 21st century to admit there are *any* bad sides to digital technology. Worse, we have a conceit of such technology as 'a package'. Either take all the bad with the good, or leave it. Spot the false dilemma? You *must* accept the bad sides of this technology, because they are inseparable from the good. I don't agree, because I understand technology, but most are taken in by it.

Consequently, a refusal to proactively select and shape technology now grips us, and is a tacit admission that it's not something we choose or participate in, but a tyranny now imposed upon us. Some stubborn voices insist that we must "push through", and that the negative effects of digital technology are growing pains that we will adapt to on the path to 'trans-humanism'. I see no more reason to presume lost sailors might adapt to breathing seawater, or coal-miners to darkness and dust.

Taken to an extreme, this conditioning takes us down the darkest path to what Evgeny Morozov [45] called *Technological Solutionism*, where the only solutions we can imagine for the problems caused by technology involve more technology. Solutionists exhibit profound escalation bias when saying things like "you cannot turn back the clock", or "the genie will not go back into the bottle", as if to imply that all actions relating to technology are monotonic and irreversible. This leads people to a frame where it seems like adding blockchains and AI can fix the already disastrous problems caused by social media, network effects and mass surveillance. It is the logic of the gambler whose next episode will win back everything and put it all right.

Technology is a diversity issue

TLDR; One ring to rule them all.

Being different is a virtue. Diversity makes things stronger. Wood and diamonds are strong because they are non-regular (heterogeneous). In biology, *hybrid vigour* ensures resilient species. Crops of homogeneous stock are killed by the same disease while diverse (heterogeneous) populations survive. Countries that implement multi-culturalism properly have a stronger social fabric than those torn by racism. By that logic we can even argue that some measure of financial inequality adds strength – insomuch as it allows dynamism. Of course, my argument here is that diversity of technology is vital to creative innovation and societal resilience.

Random events drive our real, dynamic world, filled with unexpected and emergent challenges arising out of unfathomable complexity, like climate and disease. As Charles Darwin wrote in *On the Origin of Species*, diversity lets better adapted individuals prosper, and in any population there must be a diverse minority able to adapt to change [46]. Without a diverse reserve, eventually some catastrophe will destroy a system. Totalitarian systems that refuse to tolerate any marginal diversity have no long term future.

Once we had great diversity in digital technology. That lead to near universal uptake of interoperability standards. The

World Wide Web and Internet are examples of these standards. Standards connect diverse systems.

Surely, it would horrify you to hear any of the following:

"I'm sorry, we don't support black people here."

"The vending machine had nothing kosher, so it dispensed the next best thing, which was halal."

"It's easy! Just sign in with your Communist party membership number."

But look at the direction of technology today. Our mythology that technology brings more choice holds only when certain rare conditions arise. Its evolution generates a multitude of variants, along the way. But it tends to settle on monopolies and monocultures unless watered with the blood of innovation and constantly challenged with dissent, rather than find blind acceptance.

Let's take electronic money as an example of the dangers of lockstep technology. Facebook and Apple recently brought out their own 'currencies'. Apple has its 'Cash' app, while Facebook is offering 'Libra' as a replacement for real money. The following statements illustrate the reality of how technology can slip so naturally from an enabling to an excluding function.

- 1. The state issues cash. Everybody is mandated to accept it. Anonymity is built in for all small transactions. Some countries outlaw unapproved currencies although trade with alternatives, e.g. gold, are occasional and unmonitored.
- 2. Being a digital citizen of alternative corporate economies could be a convenience for you if a vendor accepts them as payment. Anonymity is a choice for everyday transactions. Customers and vendors may each exercise discretion. But there are many alternative systems, so you can't count on any one being offered. There are many technologies, electronic and paper based. It's best to carry several.
- 3. Not being a corporate digital citizen should not inconvenience you if a vendor does not accept them as payment.

Consolidation means there are a few major payment choices including state issued cash, so you can be sure to find a workable payment method. Anonymity requires some extra effort.

- 4. Not choosing to use digital payment will cause major inconvenience. Anonymity requires a near-criminal mindset and great effort. There are one or two approved systems that everyone must use. Vendors are obliged to use these under financial regulation.
- 5. Non-conformity to digital payment will exclude you from basic human needs. The mandated monopoly system tracks everything you do. It is also tied to your social credit score and personal tracking device. Prices will vary according to privileges and other control measures. The government can literally switch off your life at a whim.

Arguably stage 2 is the most agreeable. In the year 2020, countries were at different places on this slippery slope. China represents stage 5. Stage 1 is probably Switzerland. I was extremely disappointed to find that one of my favourite countries, Finland, is rapidly approaching stage 4. Unless challenged and regulated with regard to human rights, the linkage of digital currency, strong identity, contactless payment, tracking and discriminatory service will destroy Western society. We will descend rapidly into a vicious dystopia replete with criminalised underclass.

Smartphone technology can create socially fragmentary forces. These increase division, prejudice and inequality because they undermine interoperability with free systems of exchange and communication. As with upholding freedom generally, maintaining technological diversity and popular control is an ongoing activity. As people become more connected by technology, advocating for human diversity implies advocating for technological diversity. If we lose the latter, we lose our *real* freedoms.

In the past century we have moved a long way toward social justice and inclusivity. In advanced countries, exclusion of women and racial segregation are things from the last century. Some backward regimes still tolerate the murder of homosexuals, or conduct mass surveillance on their peaceful civilian populations, but the arc of history *does* curve toward justice, words first written in *Of Justice and Conscience* in 1853 by Theodore Parker and made famous in modernity by Dr. Martin Luther King [47]. That said, let's not congratulate ourselves just yet. Certain digital technologies are quietly reversing these gains. Technology amplifies old issues and generates new diversity issues.

Indeed, technology amplifies all human affairs, whether that's finding cures for diseases, inventing cleaner transport.... or tracking dissidents, suppressing democracy and building death camps. In the book *Data and Goliath*, Bruce Schneier points out a common phase lag between the benefits given to versatile actors, and older, entrenched power [48]. Lewis Mumford, eighty years ago, suggested in his 1934 *Technics and Civilisation*, a spectrum between 'Authoritarian and Democratic Technics' [49], an idea echoed later in 1980 by Ivan Illich, as the struggle between the bureaucratic and vernacular life, when he spoke of the human search for *Tools for Convivality* [50].

In our safe, progressive, Western lives, what characterises the most irritating aspects of sexism, racism and religious insensitivity are those persistent, subtle, unconscious assumptions that pervade every-day life. These symptoms remind us that just below the surface patriarchy and domination are alive and well. They have merely fled, and burrowed down.

Digital systems allow domination to be encoded, to take on new forms, to better disguise and entrench itself. Systematically encoded prejudice detaches itself from its human perpetrators, who are hard to trace. In thinking about *Places to intervene in a system*, Dana Meadows in 1997 might have said that despite cosmetic changes to functional appearance (the 'arity' of a culture), the systemic *values* remain unchanged [51]. For example, 'Algorithmic policing' extracts, freezes and then amplifies patterns of racism in order to "better serve ethnic minority neighbourhoods". Calling the racist an 'AI', makes it no less disgraceful. Indeed, it's worse. Having swept these racist values under the rug, as it were, we can now pretend it's a technological problem. A human doing the same task, showing the same biases, would be lambasted and no doubt removed, whereas a machine is simply exhibiting 'bugs and glitches'. It is therefore strongly in the interests of any nefarious actor to automate their wrongdoing.

Machine learning (ML) figures out how to kill more patients in a hospital whose data is organised around treatment 'efficiency' metrics. It also excuses and diffuses responsibility, as there are no traces of intent left as evidence in code crafted by human hands. Forensically, determining if a machine's bias is accidental or deliberately trained is not possible. Until machines can write their own research proposals, allocate grant money, and autonomously walk around collecting their own data, they only reveal the intrinsic fault in scientific method distorted by the optics of established institutional power. I will soon discuss the separate but linked problems of technologically proxied abuse in education and the workplace.

While this analysis is somewhat depressing, there is a silver lining. Awareness of technology in these terms can offer powerful new levers for defenders of software freedom, human rights, privacy and equality. There is a wealth of well-tested, established legislation and societal precedent to draw on once we understand technology as a diversity issue and how it systematises prejudice and exclusion.

Minimising choice

TLDR; Less choice, more control.

Pro-cybernetic critics play down the problem of digital discrimination. They say that compared to actual age or sex discrimination, or 'in real life' racism, digital discrimination is incomparable and unimportant. Some even feign offence that 'such geeky matters' be elevated to the status of *actual* unfairness. But I disagree. Computers now affect all aspects of life. What plays out in the realm of bits and bytes eventually manifests in reality. It is why, oddly perhaps, computer scientists have an uncanny heads-up on socio-cultural and political trajectories, and why we advocate for a "Bill of Bytes" ³.

Technology service workers frequently minimise and invalidate other users' choices. Insisting that something serious and threatening to one person is unimportant, is hostility. As users of technology we collude. We take 'assurances' at face value, only to be repeatedly tricked. We do not complain about, or take control of erroneous systems. We minimise the value of our own personal data, throw away our privacy and dignity for cheap trinkets of convenience. We still believe that what happens in the digital realm is 'not real'.

Computing choices create real power relationships and enable invisible abuse, by exclusion or marginalisation. Computing choices probably have a far more profound effect on peoples' lives and practices than their choice of friends, religious affiliations or

 $^{^{3}\}mathrm{The}$ 'Bill of Bytes' came from our Digital Self Defence lectures and stuck well with students.

sexual preferences. Roughly, according to the American Time Use Survey and the 2014 Pew Research *Social networking fact sheet*, we spend on average, 0.5 hours a day in prayer and group worship, 0.5 hours engaged in social and conversational activities, 0.35 hours in romantic and sexual activity and 8.0 hours of screen time, of which 3.0 hours is interactive [52]. This places computing, and the choices of operating system, applications, and workflows right at the centre of a Western adult's life.

We invest potentially thousands of hours learning and adapting to specific computing philosophies (UX workflows, data file formats, online services etc). Minority users of hardware and software, whose choices constitute carefully considered ethical beliefs, are not treated like other minority groups whose desire for recognition rightfully receives attention. However, it would be disingenuous to define the Digital Vegan as looking to other minorities for support against 'techno-normativity' – as we do not seek to define ourselves as a minority. Technological dignity, freedom and choice should be for *everybody*.

People have been convinced that they have no choice in their use of digital technology. Ironically, that technology was once sold as 'offering choices'. Computer historians like Bruce Stirling (1992) and Steven Levy (1984) have traced the hacker culture from military bunkers, through egalitarian communities, to effects on popular culture today [53, 54]. It's a narrative all about choice and struggles, as Rosalind Williams' 1990 Notes on the underground and Lelia Green's 2002 Technoculture explore. Both writers document the meeting of grass roots DIY culture with military spending budgets and the techno-cultural evolution of individuals, groups and whole nations [55, 56]. But this seems to taper off by 2015. Most recently Joanne McNeil's 2020 Lurking paints a picture of digital corporate brutalism [57]. Almost all these texts miss one point, that in every epoch the 'official' version of The Internet is always just one highly visible corner of cyberspace lit by the dominant narrative.

In the real world we happily let majorities minimise 'nonessential' choices. For example, there's no legal onus on restaurants to serve Vegan food. We assume it's 'up to the market', with an implication that Vegans or Vegetarians can always find other places, eat at home, or starve. Consequently, the most visible face of food on UK high streets is burgers, greasy pizzas and fried chicken. Much like the visible internet. When you search with Google, you're dining at the McDonald's of information.

As the only vegetarian in a small town of rabid carnivores, count your choices. The emergence of industrialised mass social networks made finding eclectic communities online harder. Big Tech seeks to ossify the internet into a hierarchical power structure for dissemination of entertainment and for surveillance. The former is used as a spearhead for the latter, thus the two are increasingly inseparable.

Less visible in the mainstream, are those who built the digital world, the geeks, academics, and good hackers, who moved out decades ago. We fled to alternative private, discrete and selfgoverned digital lands, as exiles from popularised versions of our own creations. Authorities and corporations work hard to ensure you never hear of this.

You likely think only of cybercrime and child pornography at any mention of the 'Dark Web'. Although it does harbour much cultural detritus, it's also a moniker used by the mass media to smear and demonise alternative, dignity-preserving technologies. There is an ever growing nexus of online exiles who use 'alternative' technologies, not because we are criminals, but because on the existing internet we must live amongst them.

We do not intend to stay outside of technological life in the shadows, but to build good alternatives to the degenerate internet, and to challenge the status quo. Amongst us are prominent computer scientists like Sir Tim Berners-Lee, who have thrown up their hands at the disgraceful fall of the corporate internet. Tor, overlays, ZeroNet, IPFS, I2P, Bit-torrents, Freenet, GNUnet, and Matrix; these are our hideouts today, where we are figuring out how to build the next internet.

But as well as minimising digital choice, Big Tech and governments can be *actively* hostile to digital independence and privacy. Communist regimes use overt measures. The Chinese *Great Firewall* is a monumental technological terror which other latent fascist regimes have been eyeing enviously. Russia is rolling out its own. These are ostensibly to control political speech.

Elsewhere, in Europe and the UK, more oblique tactics are used. ISPs are bullied into installing surveillance and blocking measures. These are imposed to shore-up commercial interests. In the West, many speech-crimes are punished in the name of 'copyright'. However, as surveillance itself becomes a business, the line between commercial and political motives is shifting. Leading the list of countries supplying oppressive technologies are Britain, the USA, Canada, Australia and Israel. The main customers are countries like Afghanistan, Bahrain, India, Kuwait, Pakistan, Qatar, Somalia, Sudan, UAE, and Yemen, who imprison homosexuals, womens' rights campaigners and democracy advocates.

Our own governments use the tired but ever effective ruse of invoking crime, national security and terrorism as justifications, despite no strong evidence of any substantive links [58] between privacy-respecting technologies and terror. (Real terrorists use unconventional methods). One of the worst ostensibly 'Western' governments for digital rights is presently that of Australia, whose dishonest fear-mongering to corral its population toward cybernetic dominance is notable.

Although some actors like the New York Times, the BBC and DuckDuckGo run Tor hidden service interfaces, and appear to understand the democratic and freedom issues at stake, most of the mass media, corporate communications and intelligence infrastructure remains hostile toward expressions of digital selfdetermination. While there is now public acknowledgement that democracy is under real threat from the effects of technological interference, Western corporations and governments are silent on the degree to which they are supportive of, and complicit in, technological mass control.

Technological choices at work

TLDR; Own your work, or your work owns you.

We can characterise *computing choices* as those we make about which products and operating systems to use; such as Apple, Windows, or GNU/Linux, or which editor we prefer; LibreOffice, Textpad, Vim or Word. Markets and personal judgement should determine such lifestyle choices. Judgement may be down to technical and physical ability, learning styles, personality type, and moral choices.

We do not live in a society where anyone is *forced* to use Facebook or where the police will arrest someone for *not* having a smartphone (at least, not yet). Most workplaces respect these differences too. But some less so. Outright discrimination against computing choices is on the rise, and it is something that needs robust challenge. Workplaces discriminating against those who cannot or will not adopt an employer's preferred technologies are an emerging threat.

Standards are the social glue that allow interoperability between people who make different choices. Standards permit people to do their job (such as reading and responding to email), without the micromanaging intrusion in their execution of that job (You *must* use Microsoft Outlook as your mail client, and do so standing on one leg while *whistling the Star-Spangled Banner*.) Corporations break standards because they know that by robbing people of the ability to make exchanges in widely agreed and accessible ways, groups will, by network affects of agglomeration, become monocultures in order to *use the tools that 'everyone else' is using*. Of course, they take a gamble that groups will settle on *their* product as the *de facto* standard, but if you are Google, Apple or Microsoft those are good odds. If you are playing with the commitments of other multinationals or government departments, such as Microsoft taking the US JEDI defence contract, then the mind-share of individuals hardly matters.

Legislation covering workplace equality acknowledges the need to respect race, religious, age, family and gender diversity. It is not acceptable to refuse somebody help based on their ethnic origin or sexual choices. It is not acceptable to exclude somebody from a meeting because they are a Muslim or a Christian. Why then do we allow employers, local authorities and massive corporate ICT providers to discriminate on the basis of digital choices? What's hidden behind the seemingly passive language of "We do not support..."?

A popular idea in the libertarian tech-world, most recently with regard to Facebook and YouTube censorship, is that because something is a *private company* it can set arbitrary rules and do as it pleases. We might call these tech fiefdoms. "My digital universe – my rules!" While it's illegal to ask someone to leave your shop because of their race, it's no problem to turf people whose ideas you dislike off your website. This means that in digital space, marginal rights are more important than ever.

I believe this is a great analogy for our situation with digital technology. Not only do ICT hubs and digital service providers act as unpaid marketing departments for Apple or Microsoft, with the power to render a person's job impossible for not 'buying in', they are actively hostile to any pockets of vernacular or marginal life. The term '*Shadow IT*' pejoratively describes workers who exercise choice in their workflows and tools, in order to make their jobs possible despite a tide of 'techno-communism'. 'Not supporting' is the *Cancel Culture* of workplace ICT fiefdoms which are increasingly centres of unassailable, opaque power. Specialists,

including scientists, doctors, teachers, and any creative workers who need to exercise original thought are most at risk from this scourge.

As with all corporate mischief, this culture is now spilling out into wider life. By failing to 'support' alternative choices, one can effectively mandate a product or approach. Proving whether a support policy is passively 'not supported' or actively blocked is rarely possible. In order to use services necessary to perform your job, deal with your bank, or access social services, people are increasingly forced to use products they might have genuine and reasonable moral objections to.

We are seeing a process in which groups within organisations construct techno-normative 'cultures' through policies decided by non-consensual process, and then militate against dissenters. You might hear "we use Zoom here" not as a friendly invitation, but as an interdiction, and a demand to abandon your learning investment and entire professional network in Skype. The rise of this techno-bullying excuses ICT people, often with skeleton staff and minimal budgets, from the more difficult task of maintaining fair and interoperable standards inclusive of the whole workforce. Fortunately, the need to interoperate with external consultants, freelancers and remote workers keeps some limits on this totalitarian tendency.

Wherever there is technology and choice, the battle to control that choice is fierce. Some companies want to force employees to install apps or change the model of their personal phones merely to fit 'company policy'. Far worse, companies have tried to get their employees to install bogus encryption certificates on their personal devices, so those companies can snoop on their staff. As a blatant *midpoint attack* (MITM), this an extraordinarily pernicious abuse. Uneducated employees are likely to casually go along with it, imagining these are legitimate, benign requests by an employer. If this happened outside a company the CIO would be behind bars in short order, but employers pressure staff into signing 'agreements' waiving their rights against what are clear criminal violations of computer hacking laws. Some companies even try to force employees to carry company-issued smartphones and take them home. In most of the cases I have researched these attempts led to swift legal action, sabotage, loss of reputation, and ultimately to the organisation backing down and apologising. But there are still some employers out there who think this way, and plenty of willing victims (who think they are being *given a gift* of a phone).

The pandemic of 2020/21 and rapid growth of working from home brought new security and privacy threats from employers. Many workers discovered how little their employers trust and respect them. The rush to proprietary videoconferencing software like *Zoom* and *Microsoft Teams* exposed millions to new privacy violations. Instead of deploying interoperable standards and management practices allowing employees to deliver their product to the place of work, firms embraced intrusive technologies to spy on employees in their own homes.

The boundary between private space and the workplace completely broke down for some workers. Students in particular, that strange group who pay to work and suffer all manner of abuses, were hit with intimate real-time bodily surveillance during exams. The backlash caused by so-called proctoring software was spectacular and universities backed-off as students threatened to quit *en masse*.

Even if cyber-law offers citizens some protection from online crime, employment law is notoriously weak. As workplace IT becomes more invasive behind a mask of 'policy', 'security' and 'telemetry', we will find digital technology becomes a conduit for narcissistic and psychopathic corporate values to infect our sacred personal and family spaces. Whereas jobs involving technology were deemed desirable in the late 20th and early 21st century, going forward the most desirable work, offering the best life balance, dignity and mental freedom, may be jobs where technology is absent. Manual and care workers who are not easily replaced by robots, like sports coaches, musicians, and the self-employed, may come to find themselves incredibly privileged compared to those enslaved to machines.

Quality and scale

TLDR; Shop locally.

A myth that sustains toxic Big Tech is that quality and stability correlate with scale. Google are awesome because they are 'too big to fail', right? The working model we have is supermarkets. Big stores can negotiate harder with farmers and transportation networks, drive down prices and pile cheap goods high. Good for consumers in the short term, bad for everyone if long-term sustainability is considered.

But this does not translate to technology services. The entirety of Amazon or Google is as likely to go dark due to a systemic error, like DNS failure, as any smaller company. Their homogeneity practically guarantees it. Indeed, the opposite holds – big organisations are 'all eggs in one basket' risks. The *SolarWinds* hack of 2019 is an exemplar. Seen as societal/national security or even broad economic security risks, these centralised, homogeneous, over-connected systems are a considerable threat.

The false rationale by which many people choose Big Tech, for security, availability and reliability, is not helped by their money or brand visibility. Even a rag-tag organisation like *The Pirate Bay* is able to leverage redundant distribution, with servers in basements and farm outbuildings all around the world. Furthermore, problems that companies like Facebook are having with diverse speech, or that PayPal have with operating alongside global banking, show that Big Money Tech doesn't necessarily scale to offer Big Utility Tech. These companies have not 'solved scale' the way that distributed ownership can. By failing to scale responsibly they have forced us into two choices, break them up or abandon them.

I favour abandonment, because in reality, the size of Big Tech is *not* an affront to choice. They still offer nothing that cannot be found in a dozen Free Software repositories and set up on a virtual private server in ten minutes. Shifting economic activity back into small business and communities is a better for employment diversity. Most of the products offered by Big Tech are actually derived from free open source projects and rebranded. The false value they offer is the *network* effect from the users who do not exercise choice and autonomy. We need to solve commercial 'network effects' as a resilience problem.

For so many reasons, they are also poor technical choices. Stability is one issue. Contrary to expectations, Big Tech choices are the least stable. Google *Beta* services, email providers or cloud systems like 'free' online photo storage, can and do suddenly disappear, taking your data too. The stability of online 'software as a service' (SaaS) is historically atrocious.

Google have ruthlessly axed services at a whim despite the protests of millions of users. In October 2019, Adobe shut down the entire creative industry of Venezuela by removing that country's access to its cloud software, following executive order 13884 from President Trump. These are not things that could happen to communities running networks of private cloud servers.

Building your business or lifestyle around the whims of a corporation is a silly thing to do. I have built servers for customers that have 15 years of almost uninterrupted uptime. Even if you have no technical knowledge, and can't afford to hire a computer technician to set something up for you, there are thousands of great, hard working smaller companies at the margins, struggling to compete with the tech-giants, and they desperately need you to exercise *choice*. It is a perfect analogy with small local shops versus supermarkets. In the long run, you are much better off supporting several more expensive local traders than a pile-it-high out of town megastore.

Wasteland

TLDR; And finally, monsieur, a wafer-thin mint.

In April 1973 scientists concluded that recycling plastic was infeasible. It is too expensive, and the polymer chains that form plastic degrade on each reuse. A 2020 NPR investigation by Laura Sullivan [59] asks *How Big Oil Misled The Public Into Believing Plastic Would Be Recycled*? It uncovers a lie spanning 50 years, starting with boxes of buried scientific papers, internal memos and details of meetings between Exxon, Chevron, Amoco, Dow, DuPont, Procter and Gamble and others with the aim of 'rescuing the plastic industry'.

This they did by promoting 'Recycling', with a \$50 million-ayear campaign to convince the public that plastic was a valuable and reusable product. The triangular symbol on packaging became permission for ecologically conscious people to buy more. Although the bigger message from governments was "reduce, reuse, recycle", pitifully little reduction or reuse occurred, so the idea of recycling plastic sold more plastic.

Sullivan concludes that "making new plastic out of oil is cheaper and easier than making it out of plastic trash", that the economics of recycling were always going to be a failure, but the industry maintained an elaborate, heavily-subsidised lie for half a century. The best we ever achieved was about ten percent recycling, which seems to be a limit, while plastic production is set to triple by 2050. When the economic impossibility of recycling showed signs of emerging, most of the plastic started being quietly shipped to China – which had 'advanced recycling technology'. In reality, it was burned in polluting, low-quality incinerators, landfilled, and sometimes just thrown into the ocean before it ever got there. The truth only came to light when China stopped taking the rest of the world's trash.

I was duped. I won't pretend that "as a scientist..." I always knew that plastic recycling was exaggerated. Recycling does extend the life of plastics. But its environmental impact is dwarfed by the other 'Rs', to reuse and reduce. Hearing these claims of recycling fraud in the late 1990's I dismissed them as crank scaremongering. I wanted to believe in recycling. So, like most people I spent hours in my life carefully sorting out different kinds of bottles and packaging, feeling a passion about recycling, encouraging friends, arguing how if we all did our bit we could make a difference. Much of that activity was social conditioning, to get us used to recycling and thinking about material recycling, which is a good thing. However, reading Sullivan's article left me feeling as furious and betrayed as I did reading Snowden, But not as furious and betrayed as knowing about e-waste.

E-waste is electronic waste, from televisions and TV remotes, musical greetings cards, phones, tablets, DVD players, smart watches, children's toys, and batteries. Look around your room now. Everything electronic you see, including the smart watch and phone you carry, will be in a landfill one day.

It is the most unimaginably difficult, labour-intensive, toxic, and complex prospect to recycle e-waste. Nonetheless, unlike plastic it *is* economical to recycle. Why? Because it contains, amongst other things, gold, silver, platinum, palladium, tantalum, and other valuable materials. It also contains mercury, cadmium, lead, gallium, arsenic and other toxic heavy metals that leech from landfills and recycling plants causing neurological disease and birth defects in nearby populations. In other words, the recycling of e-waste is an environmental problem in itself.

Each year a billion devices go into landfills, carrying with them irreplaceable rare-earth metals, dangerous heavy metals, plastics and mutagenic chemicals. Cynical telecom companies encourage customers to replace their handsets when switching networks. At some point all phones become an e-waste problem, with many people owning three or more handsets designed for obsolescence in a world where mobility has suddenly been curtailed in favour of staying at home (with the advantages of large screens, desktop computing and wired, reliable bandwidth). In the UK and most of the EU it is still not illegal for brands to software *lock* phones to networks, massively contributing to environmental waste. In the USA, the FCC is set to reverse environmental laws forcing carriers and manufacturers to leave phones open for reuse.

Bromofluorocarbons used as waterproofing and flame retardants are toxic and bio-accumulative compounds that *never* break down in the environment (their half-lives are on par with nuclear waste). These are released when millions of tons of e-waste is burned, crushed and washed with acid to extract metals, usually in unregulated 'recycling' dumps in China and India.

Like oil and plastic, it costs more to recycle the waste than to *manufacture* new goods (about half a metric ton of fossil fuel and a ton of water per computer), but unlike plastic where the raw materials of oil are still plentiful and cheap, the rare metals are in short supply. So we *must* recycle e-waste to maintain the supply side. Recycling is cheaper than mining and shipping raw materials.

Indeed, some 'Rare Earth' metals are *extremely* limited. They can only be mined in Africa. So called 'conflict minerals', come at the cost of wars, displacements and genocides that take place to secure supplies. Developing countries are also the main dumping ground for e-waste, taking 50 million tonnes per year.

Advertising around digital technology is vicious and relentless. People are pressured to feel a need to 'keep up to date'. Products with potential lifetimes of decades are designed to last for months. They are specifically designed to resist reuse and reduction.

Unlike real-world objects, like a coat, broom or garden spade, electronic goods do not get tossed because they wear out. They are deliberately crippled by remote kill mechanisms (operated over the internet) or timers built into them to trigger designed obsolescence. Technology is locked to carriers or individuals, hobbled by regional licences, deliberate sabotage of standards, and digital restrictions management (DRM). These factors ensure that products cannot be resold or repaired. By limiting their lifespans and reuse value, the manufacturers sell more. We throw away 350,000 mobile phones daily (152 million per year), each with an average lifespan of 500 days.

Knowing this, I concluded that Epicurean selection and abstinence are the only solution. We have to stop buying this crap. We should not just reduce and repair products, but outright reject those that are not fully under user control and maintainable. A phone or laptop that does not have an easilyreplaced standardised battery may as well go straight into a landfill. By using Free open source software and thoughtful tech minimalism, and knowing a little bit about maintenance, you can get extraordinary lifespans out of gadgets.

I have had my current laptop for six years, and the previous one lasted seven years. My first two cellphones lasted me 17 years. I am now on the fourth phone in my life, having broken one. I have never lost one of my ten buck Nokias, bringing my total expenditure on cellphone hardware in my life to less than a hundred pounds. My current main desktop is a Raspberry Pi4.

But none of this has been an easy *moral* choice. As I said, I once worked in an industry where we were given top-end smartphones worth thousands of pounds, so we would be 'influencers'. Had I never been involved with drugs, dealers and addicts in my youth, I would not have recognised what was happening. So I have personally given away three or four iPhones, or just left them in a box in the workshop – because not wanting that toxic rubbish is a *sound moral choice*.

I understand that you cannot be blamed for 'choices' around this problem of gluttonous excess. For the most part, unless you are technically educated, you have few choices. Without legislation to effectively ban onerous contracts, pernicious terms and conditions, regioning, DRM, locking, mandatory upgrades, remote and timed disabling, the very idea of smartphone ownership is an illusion. You are told when you will buy it. You are told when to dispose of it. And during the time you carry around this always-on surveillance and tracking device, it is never really under your control. Plastic is an externality. It is imposed upon humanity by a powerful industry that overproduces well beyond human needs. We have many alternatives. We can change our lifestyles and culture. We can abstain. We can lobby for more restrictions. But still, it is practically impossible to live a day in our civilisation without perpetuating plastic waste.

Electronics is exactly the same. You carry around a smartphone more for the benefit of others than for yourself, and most of the needs for it are contrived and foisted upon you. If I asked you to let me use your house to store some boxes of my junk you would tell me to get stuffed. If I asked you to carry around a bag of tracking devices and electronic bugs all day, so that I could sell more stuff to you, what would you say to me? Stop believing the lie about the 'necessity' of smartphones and try living your life without one for a few months.

Moral Mire

TLDR; What the eye doesn't see, the heart doesn't grieve.

Awareness of environmental damage, child labour and other human costs are hitting home. Many products are tainted with blood and tears which producers, distributors and advertisers conceal. Obviously, weapons and street drugs bring much misery, but so do other products like coffee and diamonds. We either ignore that, or hope 'Fair Trade' organisations can attest to the provenance of our purchases.

No such assurances come with phones, tablets and TVs. A spate of suicides linked to poor working conditions at the Apple iPhone factory (Foxconn) was reported by the Wall Street Journal in 2012 [60]. In response the company curbed unions, punished dissenters and installed nets to catch workers jumping from the factory. Children of 14 years old reportedly build what they call 'iSlave' devices, according to CNet [61]. Reported by the Washington Post, human rights group *Tech Transparency Project* uncovered forced labour in Xinjiang, China, where Uighur workers in ethnic concentration camps make components for tablets and game consoles sold on Western markets.

Content 'moderation' at Google and Facebook is another moral issue. Minimally paid contractors review abusive text, audio and video to meet censorship criteria. A Verge article by Casey Newton from February 2019, exposing the plight of *Cognizant* workers in Arizona, was so disturbing the text itself carried a content warning [62]. Her article, *The Trauma Floor*, describes a work environment so toxic that employees on the edge of mental breakdown selfmedicate in order to cope, and carry concealed guns to work in case disputes with their managers get out of hand.

Workers describe having their souls plunged into darkness. While watching videos of child rape and executions they are chastised for crying or praying. Workers seeking counselling were dismissed. It is a psychological hell far beyond any concepts of *emotional labour* first set out by Hochschild in her 1983 book *The Managed Heart* [63]. Of course, companies insist they are complying with regulations, and that any sickness lies in our society. Such attempts to shrug responsibility ignore the elephant in the room, that fundamentally, a business model harnessing advertising to mega-scale one-to-many dissemination, such that death, horror and racism create profitable clicks, is morally nonviable.

On a grander scale, all technology rests on ethics. Each tool may become a corresponding weapon. Without good faith assumptions of benevolence, technology to 'connect us' is transformed into weapons for spying and deception. Systems for polity become systems for tyranny. Civic legibility becomes a means of domination. Trust is the fabric of society, the foundation of money, education, medicine and the law. Society has experienced a bonfire of trust, as toxic leaders lied us into wars, created avoidable financial crises, built a surveillance state, conspired to hide climate change, devastated our health, law and education systems, and mismanaged a pandemic. Because the internet means we all know about this, trust is at an all time historical low. Technologies foster mistrust by imposing a systematised, amoral, economistic model on human relations. As we identify technologies and the companies behind them with societal problems, trust in technology itself dwindles. Cambridge University's Ross Anderson led a team 'Measuring the Changing Cost of Cybercrime'⁴. Reckoning the true cost of breakdown of trust in technology seems impossible. In the long analysis Big Tech may be guilty of harms dwarfing petrochemical and financial businesses.

⁴https://www.cl.cam.ac.uk/~rja14/Papers/cost_of_cybercrime.pdf

Techno Stuckness

Our technological addiction

TLDR; The first hit is always for free.

I lost a very good friend to addiction. Our medicalised ritual is to name a cause of death. Whether it's cancer, heart-attack or sepsis on the death certificate, the disease starts long before. What I learned from my extraordinarily intelligent, erudite and emotionally perceptive friend, during what was a 25 year slowmotion suicide, still bothers me today. It is wisdom not taught in schools, nor written in books. I have heard only one other person, the actor Russell Brand, attempt to speak on it with the sensitivity and clarity it needs.

It's something we all need to think about, because as a society we are addicted. Addiction fills emptiness and pain. Addiction is a kind of 'stuckness', and rather than being 'progressive' technology actually has us *stuck*. Just because technology advances it does not mean society necessarily does. This paradox is noted by philosophers of science, and pyschoanalytically by Freud, but widely misunderstood. Our society is filled with emptiness and pain, so it is addicted.

As a textbook definition, addiction is a neurological fault whereby your mind-body believes it needs something it does not. I prefer to say that addiction is a disease of 'The Will'. Like all cruel diseases it is indiscriminate. Rich or poor, smart or stupid, male or female, your chances are equal. Some say it is genetic. Some think that formative attachment needs play a part. Others who fear it most, claim it is a personality or character fault and criminalise its victims.

Based on a lifetime in technology and 30 years watching the spread of smartphones and their effects on people, I strongly believe that addiction and technology are deeply connected. We have a blindspot that makes technological addiction socially acceptable. It is not "a handful of vulnerable people" that have problems with technology. We have a significant societal problem involving literally *billions* of people.

Tobacco and alcohol advertising are regulated, but the laws around deliberately inducing a person into addictive behaviour, knowing that a product has addictive properties, is still not criminalised *per se*. I believe it should be. Some important 21st century jurisprudence is still afoot. Smartphones clearly belong in the same class as alcohol, tobacco and gambling. Today, there is no remedy for societal harms done directly by the advertising industry pushing junk food, and junk technology. In the future I hope many of the so-called Tech Giants will be outlawed and their victims acknowledged as such.

All drug dealers know that getting someone addicted is the core of business. The first hit is always for free. But those peddling ideologies use similar tactics to domesticate populations to normative patterns and values. Addiction can be quite shallow but personally complex, whereas conditioning is a longer game of redefining social capital, reassigning symbols and 'societal restructuration' (see Durkheim's Forms of the Religious Life and Putnam's *Bowling Alone* [64]). While addiction can give meaning to an addict, compulsive conformity subtracts meaning and simplifies existence. The conditioned mind is like a cyborg. Aspiring tyrants enamoured with cybnernetic governance make an unholy allianace with peddlers of social media and smartphones. For them, a society built on pushing the buttons of narcissism, envy and shame is the goal. Tens of thousands of teen suicides and widespread societal depression, is just the price we pay for "total information awareness", and "nudging control".

A dealer needs to hook only one or two customers, while a drug cartel sets out to ensnare a whole nation. Giant technology companies are just such cartels. They execute a carefully constructed interlocking trap. There are a few steps to the trick, so let's walk through them.

First, as with any dependency, the users are brought to associate technology with simple visceral pleasure. Whether as music, movies, pornographic images, or stories. It is a particularly powerful drug to those who get a sense of pleasure from selfexpression, with fast feedback for validation. A basic repetition compulsion is quickly ingrained. It is aided by a 'variable reward schedule', to use Skinner's terms [65].

Next, digital technology takes the place of memory, as planning and mnemonic aids, and as a store for photographs or messages associated with positive memories. We begin to change the way we relate to information and how we neurally encode memory (see Nicholas Carr's *The Shallows* [44]). This includes taking over the functions of spatial and temporal awareness, as it becomes clock, map and diary. By doing so it hijacks our temporal and relational planning faculties necessary to escape. It next insinuates itself as the sole mediator of connection and access, as key, passport, home control, and travel ticket. At this point we are functionally entrapped.

Most insidiously, it then begins to substitute directly for others we love, and the intimate bonds of human connection, be it through photographs, voice, writing, or video. This third level is devastating, because by commandeering our interpersonal attachments it makes separation an emotional challenge. Humans are highly social animals, so the intermediation of social bonds is as powerful as controlling food and water supplies.

Many people cannot quit drugs because that would also mean leaving their support network of fellow addicts. In the same way, family and friends are hostaged to keep us tied to unhealthy electronic habits. Its trick here is *network effect*, using standardsbreaking, lock-in and incompatibility to ensure no competitive networks, data migration or regulation can stop it creating a user base so large and hard to escape that others feel compelled to join. It is a runaway agglomerative process that sucks everything into it.

Its versatility, as a panoptic, panacea object ensures eventual total dependency in the user's life. Many people say they would rather have a pet die than give up Facebook, or as Sam Furr's 2019 *Tappable* article proffered *Millennials would rather lose a finger than smartphones* [66]. It is no overstatement to say that Big Tech is, structurally, in its most fundamental nature, a project of *total* domination.

Thus it creates insecurity. The thought of being without this single nexus and symbol of validity, presence, orientation, access and connection is terrifying. Some people feel it is a passport to life itself. I have seen tech addicts break into sweats, tremors and a full-on sobbing breakdown at the anxiety of digital disconnection. It creates simultaneously a fear of rejection, marginalisation, grievous loss of opportunity, social status and connection.

It seems real to say; "I cannot live without it". Of course this is not true. At least it's no truer than an alcoholic or heroin addict saying "I cannot live without it". Yes, there will be severe physical and emotional consequences to withdrawal, but there is a place on the other side, of getting clean, that is completely free of it.

One of the real harms is that Big Tech holds your data to ransom. Almost all companies employ devious one-way processes to keep you. Cloud services make it fast and easy to upload data, but painfully slow and expensive to retrieve it again. It is super easy to sign up to services, or find you have been illegally 'signed up' without your consent or action, and then spend hours or days fighting through call centres and deliberately hostile web workflows to get free.

However, the marketing around smartphone technology, its network effects and consequent societal pressure has been overwhelming to the point that many people simply believe it is a 'necessity'. Two words dominate discourse around technology today; they are 'inevitability' and 'necessity'. Casual thematic analysis of online tone shows a sustained repetition and context far more aligned with the principles of Heinrich Goebbels' propaganda techniques [67] than mere advertising, bluster or opinion.

The false idea that society is 'inevitably' moving in the direction of 'requiring everyone' to become a cyborg is aggressively implanted in the public mind. The idea, sometimes called *Technological Determinism*, originally an idea of Karl Marx, but later developed and criticised by Thorstein Bunde Veblen, is that technology drives society rather than being a product of it. Operating under this principle, no self-discipline is required. It excuses, even celebrates the frustrated, neurotic side of our compulsions.

In this sense, technology has become a religion and a cult. Andrew Kimbrell in his 2000 Schumacher Lecture on the phenomenon of *Cold Evil* points to reverence and awe of a people dumbstruck by the majesty of a space shuttle launch [68]. A more mundane racket is seen in Harmon Leon's 2014 Alternet article pondering the *Eight Ways Facebook is a Cult Just Like Scientology* [69].

Instead of a Digital *Vegan* I have wondered whether I may be a *Digital Atheist*, or even an *Antitheist* in the spirit of Christopher Hitchens' 2007 *Portable Atheist* [70]. Perhaps it is Bertrand Russell's disgust at the 'Moloch of corrupted civilisation'. All of these feellings are challenges to a dogma. No need to imagine 15th century Inquisitors denouncing me as a 'tech-less heathen', when so much hostility can be found in any city high-street.

Infotech as a weapon

TLDR; Putting the spoke in the ear of the unguarded.

Why would anyone want to get others dependent? Drugs afford an effective control mechanism. Of the many ways to gain long term control over a society, actual narcotics still own a significant share. But for those players, a looming danger is that legalisation will soon change things. Direct chemical control with its attendant violence and fear are going out of fashion, for now. Information technology offers alternative models.

Instead, one can control the ballot box directly, by rigging elections. This is almost trivial if electronic voting machines are used. But there is a risk of being caught and having elections challenged. A better way is to wield information power. If you have the resources, take control of the news, culture and ideas by having a total monopoly on media and entertainment. North Korea is the obvious example, but perhaps more interestingly, a nominally liberal democracy like Australia is a 'Murdochracy' run at the behest of gargantuan coal and ore mining corporations. No nation is immune.

Influence, in itself, is not a bad thing. Understanding the ways of influence is essential to modern digital literacy. An example I use when teaching intellectual self defence is of Darth Vader body actor David Prowse, who is something of a heroic figure in my opinion. Prowse minimises his role in *Star Wars*, not out of modesty, but because he saw clearly that his finest life work was as the "Green Cross Man". In the 1970's British television ran public information campaigns on road safety for children at a time of 8,000 annual road deaths and 300,000 injuries. Estimates of total young lives saved by Prowse's character with his memorable tag line "Stop. Look. Listen" range between 250,000 and a million. I am proud to have worked on positive influence campaigns such as 'prevention of sexual violence initiative' (PSVI) for The British Army's 77th Brigade, bringing attention to the use of rape as a weapon of war. They are presently leading a counter to anti-vax disinformation. In my reckoning, positive influence rests on the following important points:

- 1. It is based on authoritative, well evidenced, verifiable information
- 2. It is clearly in the genuine long term interests of its audience
- 3. There is no, even indirect, profit or power motive for the influencer

Benevolent influence is everywhere from health campaigns, to disaster relief, to education, which in its functionalist interpretation is technically a state sponsored information campaign on a grand scale, including the element of compulsion. Let's contrast positive influence with two other things:

Firstly, ordinary advertising. Influence conducted for profit, in its less objectionable form, *does* at least serve the interests of its audience (highlighting useful goods) as well as the advertiser and their customer. Degenerate forms of advertising prevalent today work against the interests of its targets, preying on psychological weakness and anxiety, and foisting useless goods on them and our environment. This kind of negative influence is addressed by such writers as Professor Carissa Véliz and Jaron Lanier in their analysis of social media led 'surveillance capitalism'.

Secondly, malevolent 'psychological operations' (psyops) is political rather than driven by monetary profit. The objective is control. In fiction, it is epitomised by Orwell's *Ministry of Truth*. Today the landscape is both too complex and extensive to cover in this book. It includes elements of 'non-linear' political information warfare, lawfare, media infiltration and control, fake news, and long term projects of cultural corruption. At very least it aims to;

- 1. Suppress or bypass reason and appeal to emotions like fear and disgust
- 2. Sow doubt, division, confusion.
- 3. Discredit authorities and institutions and undermine the nature of truth itself.
- 4. Spy on, profile, analyse, model and predict groups and individuals for targeting with malinfluence.

The internet, and social media introduced a rapid and disruptive change to established information power. Mountains of money have been shovelled in by all sides to make gains on this contentious ground, and what were once covert operations have gone mainstream. Today we hear of systematic foreign influence through social media, and even of our own wealthy elites bent on dividing and discombobulating the masses. There's no reason to dismiss these ideas out of hand. It's just that, the nature of evidence being what it is, they can only ever be enlightened suspicions, especially in an age where deep-fake evidence and attribution engineering are mature professions.

We know something of Russian psyops at least, because they are open about it. Multi-front 'nonlinear warfare' [71], the chaos-raising hallmark of Vladislav Surkov [72], and what Yuri Bezmenov had to say on long-term ideological warfare, have been known since the 1960's. Russia does not deny its operations within western social media, so it is hard to dismiss as conspiracy theory. Less is understood by this author about China, and whether the 'Long March' is still a project of the CCP under quasi-capitalism, or for that matter the USA, Israel, North Korea and a dozen other nations known for active electronic psyops. But make no mistake, Big Tech is right at the heart of it.

As with Surkov's tactics, Big Tech can even afford to be quite brazen. Facebook shamelessly wrote up and published its experiments on election influence as scientific research. This gave governments more reason to crack down through regulation. The Cambridge Analytica scandal seemed to materialise conveniently with a shifting mood against Facebook. However the effect will likely be damaging to democracy. Whoever gets to decide what is 'truth' and what is 'malinfluence' will be able to drive opposing arguments (on those platforms at least) further into the shadows. It is not hard to imagine a tactical alliance between Big Tech and governments to suppress particular modes of free speech where it leads to too much dynamism.

Such forces are real and have always existed. What's new is the amplifying effect of always-connected mobile technology. Given the volatility created by everyone vying for a louder voice and abusing technology to get it, I am surprised that governments do not do more to *discourage* social media use. Systems theory would tell us that by merely participating in social media we increase the positive loop gain and create more instability. Surely governments imagine they can retain full control, operate within the medium, and if necessary, pull the plug. Whoever has their finger on the trigger I think it's fair to say that social media is now weaponised against the population – although what is not 'weaponised' these days?

From the viewpoint of bottom-up, democratic control, neither appeal for restraint from the social media monopolies, nor benevolent government regulation will satisfy. While depressing to concede, monopoly corporations make money from increased political instability and eroding social solidarity. There is no prospect for natural devolution of corporate entities bound by shareholders and Wall Street. Forced breaking up of Big Tech will only add more heads to the Hydra. Voluntary disengagement is therefore the only solution.

Contrary to Cory Doctorow's recent writings on the necessity of "Pushing Through", presumably to a glorious Utopia where the people will wrest control of technology, I feel there is more hope that one can survive a car crash by accelerating at a wall to more cleanly demolish it. Instead we must learn the self-discipline and endure the pain of being able to disconnect first, in order to build new connections. Democratic power once hinged on coordinated withdrawal of labour. Today it requires withdrawal of attention. That means stopping certain behaviours. But it's hard work. As 'consumers' we are addicted, fearful of missing out and unwilling, or technically unable, to move to alternative distributed platforms. On the positive side many people are bored of social media, rightfully distrustful, and aware of the issues around privacy and democracy. There is a reasonable prospect some event may cause it to rapidly collapse.

As a defensive posture, some boundaries should be clearly drawn and not compromised. The right to refuse monopolistic corporate providers must be enshrined in law. The EU's General Data Protection Regulation (GDPR) proffers many interdictions, but it conspicuously lacks language that protects 'freedoms *not to*'. The freedom not to be coerced into systems that collect data is far more important than any assurance that collected data will be used 'properly'. The time has come when we need to assert our moral right to be free from the coercion, however oblique, of Big Tech monopolies.

A good start is to withdraw your moral consent. For example, if your institutional email or cloud service attempts to mandate using Google, Facebook or other tech services that you object to, courts and employment tribunals need to be involved. Let's unequivocally assert the rights of employees to withdraw their moral consent, to be held harmless in making that choice, and even to be supported in the workplace with making reasonable alternative choices. I believe this is a diversity issue every bit as real as race and gender discrimination, and have written about it extensively elsewhere. Otherwise, getting fired for *not* being on Facebook could be the future.

A disastrous outcome I fear, given the intractability of a standoff between Big Tech and Government, is a pact between Western governments and the tech monopolies to grant them quasigovernmental roles and effectively mandate a new instrument of social control, much like in China. Such a technofascist alliance would undoubtedly be the death of Western democracy. It is therefore vital that a significant percentage of the population vocally dissent from social media.
In its operation to profile people and divide them into silos, in order to leverage mutual hostility, Big Tech uses tools tailor-fitted to a generation high on the adrenaline of adversarial group-think, doom scrolling, conflict-seeking and denouncing. Social media based surveillance capitalism thrives not only on provocation (stimulation) but on one-dimensional shallowness. It prospers in monocultures where ideas cannot be challenged.

It transforms discussion toward the lowest state of lock-step thought. Like a waveguide, the *Echo Chamber* bounces ideas inside a fake dialectic until they are in perfect phase. Ideas escape via a quantum event, if someone outside the chamber observes them. Otherwise these electronic microcosms exist in a state of meaninglessness. It is a Lameness Amplification by Stimulated Expression of Resentment. Be aware that social media companies themselves, if not complicit in agitation, are infiltrated by *agents provocateurs* with inside capabilities and technical privilege. When it comes to getting unstuck from toxic technology, it's worth remembering that you are also part of someone else's battle. They aren't going to *let* you give it up easily.

Technology is power

TLDR; As thick as thieves.

If it were true that we are free to make choices about technology, half the problem would disappear. But that is not the case. Politics and technology are intimately combined. At the least, governments are torn between supporting the profitability of corporations and serving the needs of the people, which are increasingly in tension.

Where day-to-day morals intersect with politics, the Digital Vegan would wish to avoid products that enable spying, sell or process non-consensually collected data, use slaves or minimum wage labour, enable violent and oppressive regimes, attack free speech, abuse patents, trademarks or copyrights, ransom users' data and devices, discriminate against or exclude users on the basis of race or gender, coerce, bully, lie and manipulate for profit.

Why are there seemingly so few ethical technology companies? Why are universities filled with so much toxic politics? How have we created a society where interests of governments, researchers and businessmen intersect to encorage moral degeneracy? In my own politics, I am what they call a Classic Liberal. I love *small* business. It may surprise a few readers that I am neither pacifist nor anarchist. Many of my family have military service, and I've friends and relatives who work in defence, local government and the law. The infiltration of the state by corrupt and traitorous profiteers is a disgrace. It's the reason I admire truth-speaking individuals like General Smedley Butler and Edward Snowden as outstanding civic characters. Likewise, Julian Assange, whatever his alleged faults, represents what is vital about journalism and speech necessary to sustain democracy. His opposition to people being silenced into complicity with crime through fear, places him amongst the greatest living contributors to the Rule of Law. Assange is guilty of being selective about which criminals he embarrasses. Like a tracer dye that marks cancer cells, he has shown where latent criminality is hiding, for which he will not be forgiven. At his extradition hearing, details of US intelligence plans to poison Assange came to light [73].

There are historically *good* reasons to spy, lie, bully, manipulate and as a last resort, even kill people, but making a quick grubby buck, undermining democracy and wielding power over your own law-abiding civilian populace because of your own moral inadequacies aren't amongst them. Our great problems in the 21st century are the corruption of the state, attacks on the Rule of Law and tearing up the Social Contract.

On its own, this would be bad enough, but it comes at a time of geopolitical turmoil that threatens liberal democracy. US and European power is in decline relative to Asia, where new forms of authoritarian state-capitalism welded to communist ideologies thrive. Rather than countering by championing the values for which our Greatest Generation fought and died, a bitter cocktail of pride and resentment consumes our hopelessly incompetent rulers.

It is noted by historian Alfred McCoy ⁵ [74] that the British Empire was self-dismantling. Like a parent, having achieved its purpose of educating nations in its values, it had no more function than to watch their inevitable independence. Similarly, the US Empire bore the seeds of its own demise – having reduced everything to neoliberal economics and a dollar value, it eventually sold *itself*. Our fault in the West then, is that instead of falling back upon our democratic liberal values we've been prepared to sacrifice them, out of fear, to maintain positions we have outgrown.

⁵McCoy attributes to Mark Twain the quote "The American Republic, having trampled on the liberties of so many others abroad, eventually learned to do so to itself."

We happily throw away democracy to trade in consumer trinkets and convenience. Great threats to liberal democracy now reside in our own governments and intelligence apparatus turning inwards to 'defend capitalism against democracy'. Thus leaders of our institutions have become weak, confused about values, selfish, and complicit in creeping technofascism. A strong state can either serve its people, or in a fascist regime, can serve private power. A weak state can only serve private power and create injustice by its absence. Western governments may feel they are strong, but their legitimacy, and global standing is faltering. The supremacy of technology over traditional political values has a lot to do with this. Other than to collect fair taxes, the state has no business in any of our private affairs, our communications, trade, religion or associations. It exists to serve us, and does so with our permission. To the extent it overreaches, over-systematises and colludes with toxic private power, it loses legitimacy and support.

Disintegration of Western democratic nations via corruption from interlocking self-perpetuating systems came into focus with Eisenhower's address on the Military-Industrial Complex [75], which today, under its 'third era' has become the Intelligence-Industrial complex. For example, governments are happy to turn a blind eye to illegal conduct by so-called 'private businesses', which collect and share data that governments themselves would not be allowed to access directly.

I say *so-called* because in many cases companies are created and funded by government departments. For example, Facebook is allegedly mined by In-Q-Tel companies, funded by a 'venture capital' operation of the CIA [76]. The line between our governments and companies with foreign interests gets ever muddier. UK government and intelligence has opaque relations to Palantir and Northrop Gruman, despite legal mandates for transparency on how Britain is being governed. The weakening of Western states must be seen not only in terms of declining empire, but as a self-devouring process in which the irreconcilable values of democracy and privately wielded technological governance play out. The difference between Communist Party control of USSR or Chinese companies, and US companies' control of their governments, is only a subtle technicality [77]. Until profound legal changes guarantee strong individual rights over technology we remain in the condition that I call 'technofascism'.

Ideological politics also play a distorting role in reducing choice. Self-sufficiency of any marginal group threatens the ideology of Capital if it successfully fills a gap in the market. More so as a non-profit project, where it stands as an error against the efficient market hypothesis. One of Chomsky's [78] more interesting claims with regard to US foreign policy is that manipulation of smaller nations like Guatemala and Haiti occurred not because their socialist regimes posed an *actual* threat (by alignment with the Warsaw Pact), but because ideologues in the US government wanted to send a message, to sabotage their standing as successful independent economies. Their overthrow rested on *pure ideology*, not military or economic factors.

A Socialist may harbour a simmering resentment of power *qua* capital. But the Neoliberal feels an exclusive entitlement to competence as defender of the incumbent ideology. He suffers impostor syndrome and is terrorised by competing competences – what Wendy Brown terms 'aggrieved power' in the 2018 *Authoritarianism: Three Inquiries in Critical Theory* [79]. What if alternative paradigms can and do work? What if dignity-preserving independent technologies have a mind-share?

Unlike government, international banking and trade systems, technology provides a volatile Petri dish on which ideas can be tested. Today's smartest people aren't interested in classical politics, where it takes a lifetime of patient work to effect change. Why bother, when a tech start-up can 'change the world' in a decade? Technology is therefore wont to usurp or short-circuit politics. And much to the establishment's horror, dangerous new ideas can and do work. Socialised, distributed systems work better than centralised ones. Self-governance actually leads to stable communities. Managed anonymity leads to overall better social conduct than coercive identity. These are inconvenient truths to say the least. Technologies are a *real* threat to dogma in a way that alternative political parties are not.

Although technology is powerful, in the end though, Big Tech is just another theatre for the usual band of narcissists and psychopaths. And once ensconced in the high salary executive chair, they all betray their claims to being disruptors of dogma and enablers of the little-guy. They soon pull up the ladder. Effective tactics against upstarts, in which government and private commercial powers now collude, are; tactical acquisition, dirt sharing, patent trolling alliances, and buying favourable legislation through captive regulators or plain old bribery. Antitrust, monopoly and merger and anti-cartel law is impotent. Current anti-trust investigations are no more than a show.

Consolidation in tech is brutal. *Github* is now owned by *Microsoft*. *WhatsApp* was bought by *Facebook*. And rotten apples in the barrel soon spread. *Slack*, *SurveyMonkey*, *EasyChair*, *Linked-In* and so many other 'software as a service' vendors intersect with networks like Amazon, which recently appointed an ex-NSA director to its board of directors. Amazon operates the AWS network on which thousands of other companies run. In 2020 the US president used executive powers to outlaw Chinese tech rival *TikTok*... this shows how seriously the political ruling classes view the threat of digital diversity.

The more agglomeration there is, the more ethical problems I feel as a Digital Vegan. Using the services of criminal monopolists isn't something I am okay about. These companies are on the hook for tax evasion, fraud, blackmail, threatening and insulting their customers, bribing regulators and standards bodies and threatening their critics. But people still use their products. My refusal to enrich these companies, is a moral choice. It puts me at a social and economic disadvantage. But I will happily and proudly endure, because I am convinced that technology is an important social justice issue.

Serious matters

TLDR; More than just your dick pics.

Many of us worry about our privacy. We fear that things we say and do online might lose us job opportunities, or affect our insurance, loans and future relationships. In the last two chapters we touched on some bigger implications, of mass control and threats to democracy. Let's be less selfish for a moment, and think bigger. The rise of mega-scale tech, and the sintering of state function with private data processing and surveillance companies, is about more than our personal embarrassment, our stigmatisation, exclusion or even political disenfranchisement. For some it can mean death.

Heinrich Goebbels pioneered divisive agitation in the prelude to the Holocaust [67], and his methods are extensively studied in the fields of mass communication and influence. The Rwandan genocide stands out as a recent warning. The events of April 1994 are vital to our understanding of some controversial ideas on; hateful and divisive speech, absolute freedom of speech, media ownership, reach, monopoly, and demographics (the division of people along race and class lines).

In '94 Rwanda was already a highly unstable flashpoint as a product of unresolved colonial influence, but, as described in Chretien's *Media and the Rwanda Genocide* [80], it was through the Radio-Telévision Libre des Milles Collines (RTLM) that psychological agitation and eventually coordination of the Hutu militias took place. As examined by De Fleur's *Theories of Mass Communication* [81], priming, framing, fear-mongering, scapegoating, appeal to unified identity, compartmentalisation (building silos) and targeted messaging were key components of radical influence deployed. Most importantly, the dangers of polarisation plus a singular or dominant, centralised media entity without effective competition, is seen.

All of this should feel familiar. In July of 2014 riots broke out in Myanmar following agitation spread via Facebook, a platform so dominant in that country it is synonymous with *The Internet*. As reported in The New York Times, October 2017, the Myanmar military leveraged Facebook to propagate inflammatory disinformation leading to the ethnic cleansing of Myanmar's Muslim minority. Facebook publicly admitted its culpability and moved to 'ban dangerous groups', all too little too late, after allowing a vicious state backed influence operation to run for nearly three years. How could concerted destabilisation and stochastic terrorism campaigns just "happen to go unnoticed" under the noses of the most sophisticated communication analysis capabilities ever built ⁶ ?

Another ex-colonial country still scarred by ethnic divisions is India. The Indian government does not simply have a Facebook page. It has its *"Home on Facebook"*. Links between current Indian prime-minister Shri Narendra Modi, sometimes called "The Facebook Prime Minister", and Mark Zuckerberg are well known. Modi has over 50 million Facebook followers, the largest of any world leader, and Zuckerberg and Modi have met to discuss ways of mediating the relationship of citizens with their governments "beyond voting", which for Zuckerberg is a way of "bringing humanity together". To my mind Facebook is the fuse to a powder keg.

To this end, Facebook is partnering with Elon Musk's Space-X company to launch thousands of low orbit satellites to further dominate internet connectivity. According to its Project Athena, a staggeringly ambitious piece of digital neo-colonialism, Facebook aims to offer 'Free Basics' internet access to people in over 60

⁶Unless Facebook employ precisely no-one that can read Burmese, so had no clue what they were publishing on behalf of the military junta.

developing countries. Of course the price will be enslavement of up to 1 billion more people as digital chattel within Facebook's walled garden, where they will be subject to full-spectrum lifestyle surveillance and manipulation.

What is the solution to this dangerous situation? While I have many opinions, they have no place in this book, as it is a terribly complex geopolitical problem. It can be better understood by reading Edwin Black's *IBM* and the Holocaust [82]. In my lectures on Digital Self Defence we start by watching a film clip from the opening scene of Steven Spielberg's *Schindler's List* [83]. There are no barking dogs, breaking windows or shooting of children, as many students falsely recall. There is a table on a railway platform, a bottle of ink, a line of Jews, and one official in a dark hat who asks, "Name?....". Such an innocuous step.

For sure, a mass movement of disengagement with social media could be individually healthy for each of us. It might also spread to vulnerable countries like India, where it could buy the world time to stave off some serious possibilities.

Something wicked this way comes

TLDR; Creepy is the new cool.

Thomas Watson, president of IBM, said in 1943 that he thought there was a world market for maybe five computers. Bill Gates, founder of Microsoft apocryphally claimed 640 kilobytes of memory would be plenty. If these tales are true, why would some of the smartest people get their predictions so wrong? The answer is that even the staunchest adherents of capitalism underestimate the ferocious expansivity of markets, and their propensity to spawn new markets.

Based on US statistics, in the early 1970's a household that read a few books, magazines and listened to the radio consumed about 10MB of data per day. By 1980, with 90 percent of households having a colour TV a family that watched several hours consumed about 20GB. This astonishing increase is due to the richness of video as a medium. Of course, TV and radio were broadcast mediums, and there were only a dozen stations, so the total amount of information generated for civilian purposes was still only a few hundred gigabytes. The same data went to all households, hence a shared, if not coherent culture.

Today we still consume about ten or twenty gigabytes per household per day. Signal compression has squeezed in thousands more channels. But, edge network efficiencies aside, the internet delivers on an individual basis, so this number must now be multiplied by the population. For the US population of 330 million, the data generated is about 6 exabytes per day. Each to their own personal media bubble.

But at the same time, vast amounts of information travels the other way. Unlike television which only pushed data at us, the internet is a two way pipe. With sensor networks, CCTV, and IoT devices, as much data is collected and sent back as comes our way. By 2025, daily global data transfer is expected to exceed 400 exabytes. About 200 exabytes of data will be flowing *from* the population.

Our understanding of technology is really fragments from the last century. Take the idea of a telephone. Notionally it is a peer to peer communications system. Even until 2010 phones were still considered a private circuit based technology, even though cellular packet switched systems had rendered the earlier conception unrecognisable. Likewise, we think we understand the idea of a TV station or newspaper. Film makers and journalists work professionally to collect, filter and create high quality content for mass consumption. Only, that model vanished in the late 1990's.

The idea of an intelligence agency seems simple enough. At the behest of our elected governments, heroes like James Bond spy on bad guys in foreign lands plotting evil deeds. Truth is, they were replaced by a market of mercenaries and contractors some time ago. The present mission seems to be expanding a profitable private security state, patriotism and national security be damned.

Another familiar business is advertising. Unless funded by governments as a public information service, media creators and outlets will team up with advertisers for funding. Seems like a simple Faustian bargain where the lies fund the truth. If only it were so simple. Entertainment, news and shameless disinformation are now mixed arbitrarily, in ways to advance complex agendas. The quaint product advertisers of the late 20th century are now trillion dollar 'influence industries', with close ties to politics. An actor people may *not* recognise, which slipped quietly into our lives in the mid 1990's is the Internet Service Provider (ISP). Of all attempts to explain ISPs the best metaphor is of a landlord, drug baron or local mafia. People think their homes and phones connect directly to the internet. In fact they connect via ISP companies that have monopoly control over connectivity. These companies arose from the historical ownership of the telephone wires that once carried the internet.

A popular term at the turn of the century was 'convergence'. The supposed meaning of this was that technologies were going to become more connected, and eventually interoperate as a single magical service. The 'smartphone' is the epitome of convergence. In truth, it was not so much about tangible technologies as the businesses behind them. It meant that ISPs, intelligence agencies, television stations, and advertisers could merge into new entities completely unrecognisable by our culture. This happened in about one decade.

To complete the descent into digital domination, one more thing is needed. It is not a person or company, but an *algorithm*, wrongly referred to by the mass media as 'AI'. At heart, these are just databases and statistical tools that have been around for decades in banking and insurance. They perform business logic of market and risk analysis, and prediction. What is new is that extraordinary growth of scale and inter-connectivity has lead to a qualitatively different kind of entity which we call '*Big Data*'. The best way to think of it is a mirror which contains a copy, another version of you.

There is one for every person on the planet. Let's call this entity the 'shadow you'. Your shadow exists in a computer somewhere. For every thought the real you has about losing weight, shadow you is wondering how to get you to eat a biscuit. For every thought the real you has about fighting climate change, shadow you is figuring out how to convince you to fly on a vacation. You get the idea... this *shadow you* does not have your good interests at heart.

Given the move from bulk data collection to individual surveillance, and from broadcast media to individual targeting, a

new opportunity arose. Individual influence algorithms work to make you a perfect consumer, which includes being a consumer who thinks the right thoughts.

Modern computing power and machine learning makes this possible, and the system gets smarter every day. The more data you feed to 'shadow you' the smarter it gets. It knows where you've been, what you buy, and where you're likely to go next. Even if you switch off your tracking device, the plan is to track you with face recognition and contactless payment.

Algorithms now collect data on millions of individuals, about their thoughts, feelings, fears and hopes. They control your access to essential services and can predict, manipulate, frustrate or encourage behaviours, or target disinformation at individuals in real-time. This gives them more power than any traditional intelligence agency, government, oil or agricultural company, or indeed any army or nation state ever to exist. Even historical and literary depictions of Leviathan, Moloch, Babylon or Big Brother, don't capture the danger of such entities.

Somewhere on this journey we lost sight of means and ends, of purpose and utility. We forgot how this was all supposed to serve us. Even in warfare, the idea that more information is always better is crazy. Quality of information counts. So does our control over it. A push model, where the enemy gets to direct a fire-hose of adaptively misleading information *at you* is disastrous. So far the motive of this machinery is only to make money for its masters. Soon that motive will switch to self-preservation. Then we will see more clearly that we have created, within our own midst, a new enemy of democracy and freedom.

The fool stares at the finger

TLDR; Look at that!

The year 2020 was some kind of watershed or 'peak tech'. It marked a collision of a global pandemic driving people deeper into the arms of insecure and abusive communication technologies, geopolitical fracturing as the chickens of Brexit, Trump and China's ascent came home to roost, and new waves of anti-trust litigation. It was a year that AI and social algorithms made a popular impact, and when nervous suspicion of Big-Tech really went mainstream.

Who controls the media controls the narrative. So, the tragedy of 2020 was our focus, not on important issues like; Who controls our technology? What we want from technology? How do we collectively decide and coordinate? Instead we are stuck on; How do I copy a video from WhatsApp to Zoom? – the kind of problems that should have been solved once and for all in 1990 by standards bodies.

Obviously, communications technology could be an enabling force for so much good. But today, our concern is predominantly with technology itself, not its potential. Popular Tech news, on websites like *Hacker News*, *Slashdot*, ('News for nerds'), or *The Register*, is mostly industry gossip. It's "What Microsoft said to Facebook behind the bike shed". When a wise man points at the moon, the fool stares at the finger. The drama of Big-Tech also acts to preserve it, by distraction. One side of the so-called Attention Economy (or Distraction Economy, as I prefer to call it) is its ability to move focus away from its own failings. If attention is a commodity, then capitalism naturally has a stake in ensuring it is in short supply, and well controlled. Mobile social media tech is the perfect tool for maintaining ephemerality and volatility.

As Herbert Simon surmised in 1971, *attention* is a complex interplay between short and long term goals, risk, agency, memory, and utility [84]. In the tech world it is considered a scarce resource to be aggressively competed for. Jenny Odell, writing in 2019 reminds us that "Your attention can only be sold if you give it" [85]. Self-help books on managing personal attention and focus are multiplying.

To examine typical texts: Like Cal Newport, Nir Eyal takes a refreshing stab at framing our crisis of attention as inner work in *Indistractable* [86]. Like many works that focus on the psychology of time management, procrastination, fear of missing out and so forth, he underestimates the extraordinarily clever and pernicious psychology designed into technology, where it comes from, and to what end it operates. So many commentators on this topic are too charitable about the ability of industry and government to 'self-police', or to 'meet demands' for privacy and technological autonomy. I think they are also too optimistic about our personal abilities to exercise choice and self-control.

As with other social problems like debt, gambling or substance abuse, there is a danger of putting too much emphasis on the 'individual will' and potentially 'victim blaming', rather than acknowledging social reality. As the seriousness of tech monopoly, mass surveillance and political manipulation has gone mainstream, well-informed, accessible writing has come of age. Authors like Edward Snowden, in his *Permanent Record* [6] add clarity on the illegal overreach of intelligence agencies, Roger McNamee [87] exposes the underbelly of Facebook through his expose *Zucked*, and Bruce Schneier [48] explains data analytics in his carefully well written *Data and Goliath*. But for those of us who have been struggling with this stuff since the 1990's, ostracised and ridiculed by friends, marginalised in our jobs and left feeling helpless... "I told you so" rings hollow. There is still so much to tell. The power, aggression and troubling agendas of topical technofascism are but one square of a geopolitical chessboard on which we are pawns. The battle for our minds, influence games and psychological operations, has been going on since the start of the Cold War. We should long ago have heeded the warnings of KGB agent Yuri Bezmenov who bluntly spelled out what is being done to us and why [88]. The difference is that during the Cold War, we only had to worry about the Soviets. Today, every major government, corporation and small time cyber-gangster is playing against us in the influence and distraction game.

The identity game

TLDR; Never leave me, never change. Or I'll kill you.

Identity is a way of making your *self* disappear. It exists in two forms, self-regarding and imposed. The struggle between these permeates modern life, and is an aspect of stuckness. Thinking about people as what they *are* is called 'identification' when we do it to ourselves, and 'objectification' when we do it to others. We start to think of people as objects, persistent in time, that we can see, own, and control, or as names and symbols like 'black' or 'white', 'poor' or 'male', or 'Prisoner-819'.

Identity makes us stop hearing what other people say and prejudging them (prejudice) according to some fixed ideas we have. It's convenient, because it short-cuts the hard work of listening, prudence, thoughtful judgement, and the fact that people can change. It also makes us easy victims of manipulation and division. We have lived with this for millennia, but digital technology massively amplifies the downsides.

To name an object is to gain power over it. Exploiters and manipulators jump for joy at the growth of 'identity politics' and 'strong identity', which facilitate domination. Imposed identities can be traced back to Plato and the Vedic texts. The Republic [89] creates innate classes of guardians, auxiliaries and craftsmen based on a 'Noble Lie' to structure society. In India, a caste system is alive and well amongst Hindus and people of other religions, despite official legislation prohibiting it. Spiritual identity politics usually revolves around a reincarnation myth, to direct restive thought toward the 'next life' or abstract 'good'. In fiction, Huxley's Brave New World [90] builds its categories around a Utopia of breed engineering, eugenics and pharmacological control.

Even if identity boundaries are permeable, or elective, they are usually created and supported by some sort of ritual practice or priest class which gains from divisions. For example, the British cling to a vestige of 'class' through the invisible social ritual of choosing their seating on trains. 'First Class' buys you almost the same quality of travel for three times the price, plus bragging rights. First class carriages are often empty, meaning that thousands of tonnes of stock are shunted around the UK railways each day at immense environmental cost, all in case someone is feeling a little insecure in their status that day.

Air travellers have 'business class'. American Express offers a 'Gold' card. Managers imagine themselves to be 'above' those they serve. Everywhere we see the same problem, of a nominally egalitarian society struggling to contrive identity divisions to service vestigial social status impulses, when just being a normal person is not enough. What *do* you offer to a people who have everything, except a future?

Identity becomes *permission* to participate in new digital marketplaces. Those tagged as 'frightened and helpless' (victims) can always be sold protection (insurance, CCTV cameras), while risk takers (alphas with disposable incomes) will buy tokens of freedom and agency (SUVs, jet skis). This system feeds on intersectional identity. It operates in a category theoretical way, dividing and dividing again until there's a place for everyone, and everyone has their place. Much like in Dickens' London.

'Advertising' is the name we give to this sophisticated, transnational multi-billion dollar 'influence industry' built on data gathering and the dark application of psychology to divide and conquer. Humans are partitioned and labelled using 'demographics' then targeted with messages to change behaviour. Historically, groups of people such as 'young white mothers' or 'urban black youth' were targeted.

Today, messages are more likely to be personally targeted at you as an individual. Regardless, the aim is the same, to increase rather than alleviate consumption, alienation, anxiety and desire. While advertisers are ostensibly *overt* influencers, they increasingly operate as *covert* influence actors, because users of digital technology have no understanding or choice in its operation. The advertising industry is both powerful and parasitical, generating no human value while doing enormous damage to society and our lives.

With Plato's Republic and Veda back in fashion, identity, and therefore life opportunity, is increasingly *imposed*. Quasi-medical labelling of children begins as soon as they are at school, leading to distorted outcomes and self-fulfilling prophecies. Research shows (for example Raudenbush [91]) that teachers who ignore labels and build long relationships with students don't impose harmful expectations.

But education today encourages short-lived, synthetic, efficient interactions in which recorded *a-priori* information (systematised prejudice) plays a big part. For example, teachers care more about SATS scores because school budgets are allocated according to success, thus creating perverse incentives to focus on the best students. These days young people are most often categorised early as 'attention defective', 'oppositional', 'dyslexic, 'autistic', or with other labels about which hard science affords as much clout as phrenology [92].

These are ideas that educational and behavioural psychologists and neuroscientists constantly disagree over, due to a lack of hard evidence that is not *ipso facto* (by definition) models fitted *ex post facto* to populations in which such labels are assumed to exist. In other words, the research methods are appalling, and precious few specialists have the background in philosophy of science and critical thinking to get the necessary perspective. Thinkers from Anthropology, Feminist Economics and Psychoanalysis do seem to have the necessary scope and escape velocity from models of human value as instrumental utility within a belief system like 'economics' [93].

Fifty years ago the same kids would be labelled as 'delinquent'. In the 1970's British schools routinely streamed black children as 'educationally subnormal', largely because teachers could not deal with cultural difference. The sophistication of labelling has improved, but the basic 'science' is still rubbish. Even today it excuses societies' failure to understand and integrate diverse human characteristics. Durkheim and others describe the folly of this under the concept of 'labelling theory' [94]. Often we are encouraged to self-label in exchange for benefits and 'special treatments' so that institutions become Maoist struggle sessions favouring the most enthusiastic self-denouncers.

Everything heads south when technology becomes involved. Labelling was bad enough in small villages where gossip took years to abate. Cities, states and travel brought a period of individualist autonomy. The right to reinvent oneself became an almost immanent feature of modern being. Globalised computer networks threaten to snatch that away again, but without replacing the intimacy and forgiveness of the village.

Most computer systems are so hopelessly limited and naive they cannot even cope with the same object having multiple identifiers (never mind multiple incompatible models). For example: even today, banking rules for Confirmation of Payee (CoP) mean that joint accounts of heterosexual couples default to the man's name automatically, in a cultural throwback to the 1960's. Total failure in the absence of some data point is normal, such as passports needing fingerprints from an amputee, or a genetic condition that results in people having no fingerprints as reported in the case of Apu Sarker (BBC December 2020). No mechanism remains functional that allows human common sense to operate.

Millions of people have names on their passports, bank cards and voting slips that differ. If we cannot devise data structures to handle even these basic cases how can we possibly manage even moderately complex real world human affairs like reformed criminals, same name siblings, incest, polygamy, religious conversion, amnesia, witness relocation, adopted foundlings, and gender change?

What the politics of identity boils down to is this: We are not yet smart enough as a technological society to build systems that respect humanity, so we've got used to beating and cajoling humans into being compatible with limited and broken systems. Computers are really only 'one dimensional, sequential' things. Very useful for certain scientific tasks. They are no basis for building a society.

Cybernetic governance is a fraud, because it mistakes a suite of sensors, storage, communication and simple modelling tools for polity and equity which it never can be. It is a tragic overreach of expectation. We are far from even having anything approximating actual neural networks or quantum computers capable of operating in a Penrosian reality – let alone a machine that can realise that a 90 year old lady should not be financially penalised because her pet won a £100 prize in a cat show (which is technically 'taxable income'). Still, we happily raise these dumb, linear systems to a higher status than human life, which amplifies my assertions about digital technology actually being a dangerous religious cult.

A tragic side effect is that it makes modern life as dull as a dead clock. In order for us to be legible to the system, a deflationary effect on culture must occur. The needs of capitalism for surveillance-friendly, machine readable, standardised, saleable, componentised *identities* means compressing us into sound bites, avatars, and bullet-point profiles. Those who wish to be more, who choose to truly live, as Morgan Scott Peck would put it, on *The Road Less Travelled* [95], find the path of most resistance comes at an increasingly high price of marginalisation within the expanding technopolist project. The more authentic and interesting you are, as an actual human being, the more you are marginalised and punished by such systems. These alone are good reasons to get away from the mainstream Big-Tech web, and start to explore different paths.

Like the echo chambers of thought, social media resists you changing identity, and thus behaviour. In their efforts to control you and stop you leaving, Facebook and Google behave like deranged ex-lovers that stalk you, send you weird letters and make midnight phone calls. Social reciprocity, fear of missing out, guilt, and disapproval are all leveraged against potential deserters to keep us hooked. Central to this power is the conceit of persistent digital identity. The system does not want you to change, grow, or leave Neverland. You must remain inside the psychometrically-determined box built for you by the algorithms which have invested a great deal of effort in making you comfortable. Like the telepathic aliens in Ray Bradbury's *Martian Chronicles* [96], social media is able to extract, reflect back and thus utilise our own deepest thoughts to control and paralyse us.

Social media is an instrument of 'stuckness'. Perhaps we missed the real meaning of *The Web*. It is not a dynamic and egalitarian 'conversation of mankind' as we imagine, it is a power structure that ossifies ideas and identities, and builds mirrored prisons for them. It is cultural fly paper. To quote David Graeber;

"The real question is not 'what are the origins of social inequality?', but, having lived so much of our history moving back and forth between different political systems, 'how did we get so stuck?' "

There is one other sense of 'identity', again a negative one, which I think toxic tech exploits. Fromm's concepts of social atomisation and reification connect to a monumental work by Hannah Arendt, her 1951 *The Origins of Totalitarianism* [97], which challenges ideologies and false connectedness, deeming them foundations of totalitarianism. By creating existential loneliness without the redeeming space of solitude, the terror of non-belonging is exploited by totalitarian systems. We will don any acceptable and apparently coherent identity to cover our vulnerability and nakedness. Social media is thus, in Arendt's terms, *Organised Loneliness*. As Freud more or less put it, the very essence of *real* identity would be to stand outside of it, in the world as it is, rather than what we imagine or wish it to be.

The security game

TLDR: Nice internet you got there...

As seen during the Covid lockdown, a shared threat reshapes attitudes on a grand scale. In the case of Covid it is *real*. Isolation is justified, mostly proportional, and effective until we have beaten this pandemic. In some important ways the crisis has drawn our attention back to reality and shared living, to manners, body space, and social behaviours, all in a good way. And if nothing else, it has made selfish anti-social people stand out clearly.

But the same principle operates on the metaphorical level, and here many if not most of the 'events' are unreal and the responses inappropriate. Moral panics, massive data breaches, certain doom and the impending end of the Internet are daily dramas. Little ever comes of them. Soon the public reaches a boredom threshold where threats become normalised.

In 2019, massive data breaches reached the magic one-per-day threshold, at which point the tech press simply stopped reporting them. Not newsworthy. Cyber-doom has changed gear to systemic events like the 'SolarWinds' hack, which affect entire nations. Positive news is quickly buried and ultimately has little or no impact. Three times since Snowden's expose (2015, 2018, and 2020) a court has found the NSA "acted illegally", and then precisely nothing happens. It is a jaded and seemingly hopeless information landscape that Adam Curtis termed 'Oh-dearism' [72]. To make sense of media threat reporting, one must understand that insecurity is the end goal, not the means of abuse, from those who threaten your security in order to 'protect' you, or deliberately cultivate your dependency for their own gain. Curtis developed this thesis in *The Power Of Nightmares* [98]. It is what I see as sociopolitical Factitious Disorder, or 'Munchhausen by Proxy' [99]. Hurting people as a way to be able to 'help' them is more widely perpetrated than we think in security circles, not just as so-called *false flag* events, but as a way to keep business running.

Few minds in the field of security are happy to raise this, but surprisingly perhaps the writer Eve Ensler [100] has struck a powerful blow by naming "what may not be named". She longs for the basic right to feel insecure, like a normal human being should when living in reality, and not have a bunch of psychology and security experts try explaining that away, or offer hollow assurances. Security as an imposition is most often really about the insecurity of those who offer it.

This is apparent in cases of parents or teachers who medicate their children so that *they themselves* can cope with insecurity – like stigma, embarrassment, perceived parental or professional failure. Richard (Paddy Considine), the anti-hero character of the Shane Meadows film *Dead Man's Shoes* puts it bluntly when he says; "people give drugs to others to control them because they're weak". Tech-giants and the advertising industry are stacked to the rafters with weak-minded people who, being unable to understand and work on themselves, turn outwards as manipulators or silencers ⁷.

This insecurity of some people that leads them into controlling behaviours is explored *writ large* in Charles Derber's *Moving Beyond Fear* : *Upending the Security Tales in Capitalism, Fascism and Democracy* [101]. Understanding this dependency trap that centralised communications technology lays is a vital step toward a strong self-directed life-stance with real hope for personal development.

⁷Outward projection of inner emptiness is the essence of narcissistic personality disorder (NPD) and is found *writ large* in corporations almost by structural definition.

As well as being a reality, security is a feeling [102], a game and a narrative. Within a closed system it is 'zero sum', meaning simply that *your* security is often *my* insecurity. Think how often the security measures forced upon you (not your own security choices) are not merely inconvenient, but detrimental to other areas of your real security that don't intersect with power. So security, including its manifestation as that warm feeling of 'being connected', may be a ruse played for the benefit of others. Why else is there a trillion dollar *'security industry'*?

Security is also a great *motivator*. Security, or rather its opposite, *insecurity*, is the very heart of modern advertising. Not since the ideas of Edward Bernays took over in the 1940's [26] have advertisements primarily carried factual, informative content. Advertising works by identifying our vulnerabilities and preying on them. First, it amplifies those vulnerabilities, then offers itself as a cure. This means our vulnerabilities are never healed, only exploited. Social media scratches a permanently open sore.

We all have vulnerabilities. For Brené Brown [103] they can be a 'power' if properly understood. Advertising has no interest in allowing that to happen. The digital pseudo-world is, in the words of Theodore Adorno and Max Horkheimer, "Psychoanalysis in reverse" [104].

As adults managing vulnerabilities we must decide whether perceived risks outweigh benefits in life. Do we take a risk on starting a new relationship or looking for a new job? What will be gained, what do we risk losing?

Leaving is always a risk. Stepping outside into a world where you have to take responsibility is frightening. Covid has brought this into clearer focus for most of us. At two extremes are those who limit their lives too much in search of safety, and risk-takers who ruin the lives of others because they forget that their choices cause a sphere of effects. Neither group are particularly woke or connected, because both positions require abandoning the effort of continuous thought for a safe *a priori* internal working model – an idea of what you *are*.

Technology 3.0

TLDR; Taking back tech.

Technology 1.0 was tools. Tools extend human capability. Technology 2.0 reverses that relationship. The tools use you. In the digital realm, a striking reversal took place right under our noses in about one decade, from approximately 2005 to 2015. It corresponds, more or less, with a transition from what we might deem moderate, appropriate and goal-directed use of technology to what is obvious overuse and obsession with technology itself as *substitute for* rather than *adjunct to* real life. It tracks the rise of cultural memes of 'necessity' and 'inevitability'.

Technology 3.0 represents a retaking of technology, a return to utility and mastery, but I think that is still at least a decade away. Mature use of technology would respect proper balance and choice and find a natural niche in the world. The torch lit under the libertarian capitalist order of Silicon Valley has now been taken up by the Maoist technofascist regime of China. The world will likely be dragged further toward an anti-humanist dystopia before we start to re-emerge. The West is still in the final stages of our technological adolescence, where the party isn't over until the bottle is empty and the weed has all been smoked.

As a technologist and Digital Vegan I am curious about the optimal usage of technology. How do we avoid technological gluttony and obesity? I believe homo-technologicus, the urban spaceman, is no more than a Futurist or Cosmist hangover. Sure, I love Star Trek too, but never actually wanted to *live* on the

Enterprise. I hate itchy Lycra for one thing. The prospect of living to 200 in a world run by Google and Facebook is not a 'life' with any meaning. Besides, Rodenberry, as a Humanist writer, had a far more sophisticated, rounded and thoughtful appreciation of technology and history than the 'Naval Exploration' metaphor for which he is almost entirely known.

As a staunch advocate of the humanist position set out by IA (intelligence amplification) in opposition to AI (artificial intelligence), I believe that technologies should be enabling tools to serve humanity, not the other way around. They should be expressions and extensions of the human mind-body. But I recognise that this is always shadowed by the equal and opposite project, a technological dualism, to enslave human beings as extensions of a concentrated power nexus.

Technology magnifies dark psychopathologies too. Douglas Rushkoff recounts Timothy Leary's reaction to the MIT Media Lab [105]:

" 'Less than 3% are women. That'll tell you something... They want to recreate the womb' – As Leary the psychologist saw it, the boys building our digital future were developing technology to simulate the ideal woman – the one their mothers could never be."

Rushkoff, while discussing desires of tech billionaires to cocoon themselves from humanity, doesn't quite arrive at the right question. Indeed, the word *why* does not appear in his article. Why do people want to build private worlds where the rules of broader humanity don't apply? Why did Michael Jackson build Neverland? It is the same answer as to why Rushkoff's subjects became tech billionaires in the first place, and only begs the more important question: wouldn't it be better if instead of inflicting a profoundly dysfunctional model of life upon 7 billion inhabitants of Earth, the few Silicon Valley 'thought leaders' got themselves some good therapy?

For every technology, I suspect some sweet spot can be reached, beyond which we regress without realising it. Knowing when the balance has shifted is therefore vital. We cannot take measurements when the instruments are addled. It may be a cliche, but a monoculture of ivory tower educated, white, male, privileged technologists operating on a winner takes all profit motive is not a reliable barometer. It seems abundantly obvious that we need more diversity in tech. We need more women in tech. We need more black people in tech. We need a better mix of young and old, rich and poor, smart and dumb people in tech. Not just in low positions chopping code and colouring in user interfaces, but in leadership positions too.

Social media and mobile communications have become a vehicle for old colonial impulses. For that reason, a popular backlash against it is right and proper. It's overdue to restore balance. I don't desire a world entirely without smartphones and social media, I just don't want them to be unabashed tools of tyranny. The death of reason and democracy are not a price I am prepared to pay for convenience or the profits of a minority. Retaining the personal choice to *not* have them without being made a pariah is non-negotiable.

Technology 3.0, as I dream it, therefore embodies a mature knowledge of technological duality. It contains an uncompromising technological morality and active resistance to monopoly and domination. Humanism, feminism, environmentalism and an egalitarian telos will be baked into the silicon and bits of this next wave, not as an add-on easily stripped away by the next psychopath who gets the vote, but built in and enforced in strong legal, mathematical and cryptographic safeguards.

This is the course I believe truly progressive thinkers in the tech world are now glimpsing, having turned a crucial corner, but it is 'too little, too late' right now. Cultural isolation of the USA's West Coast is unlikely to help. As with climate change, we must deal with the momentum of legacy effects, while slowly dismantling monopoly power and the arrogance of the tech entrepreneur 'bro culture' that treats users and society only as exploitable objects.

Towards Change

Leaving a cult

TLDR; Make a new plan, Stan.

Are you in a cult? According to Stephen Colbert "If you're wondering whether you're in a cult, the answer is yes". All tyrants, who see their victims as property, pull the same trick to imprison them with fear. They present, to the world, the lie that you are absolutely free to leave any time. Meanwhile, any attempt to leave, or even signs of preparation are met with swift violence. Women who decide to leave abusive partners are threatened. People who help others leave religious cults are hounded and assaulted. The same principle applies, in a less direct sense, in the digital realm.

We rationalise staying in tech prisons like Facebook, Google, Apple or Amazon, with ideas that "there are no alternatives", or "it would be impractical to leave". Again, identity plays a part here. Groups maintain power over people via identity. In truth we are all afraid of what might happen to us if we leave a group. Will we lose something of our *identified self*? If the group or leader is abusive we deceive ourselves with exceptionalism. We say "I am special. Nothing bad will happen to me, I'm a good, loved and valued member" – a common expression of the "Nothing to fear, nothing to hide" trope. Well, ask the Uighur's in Chinese internment camps what being model citizens and loyal party members did for them?

When we think of cults, extreme doomsday, polygamist, racist and terrorist cults come to mind. Or perhaps we think of those religious cults which ended in mass suicide (Jonestown) or armed conflict (Branch Davidians). The word 'cult' is often used as an insult. Not all groupings of people who meet the broad definition of a cult are malevolent. Indeed, it is often a label used to demonise a group, especially by governments against political groups they dislike. Large populations of established religions have been designated 'dangerous cults', while in the West we are more likely to misuse the label 'terrorist organisation' against undesirable groups.

Does a *Digital Technology Cult* exist today? I believe it does. It is characterised by promoting overuse and over-connectivity, blending cyborg, transhumanist and singularity myths into a breathless narrative that profitable technologies are both 'necessary' to modern life and 'inevitable'. It is arguably more than the manifestation of smartphones, social media, and Silicon Valley values. But it is not a cult in the traditional sense. It is a *cargo cult*. Psychologist Sam Vaknin points to many similarities between social media and cult-like deep conditioning.

A traditional cult has unorthodox religious, spiritual, or philosophical beliefs. Such cults celebrate their separateness. They desire marginal existence and wish to be left alone, rather than harbouring expansive ambitions. By contrast, technological cults have more in common with belief systems such as communism which are totalitarian and aim to eliminate all competing ideas, either by force, or by systematic economic exclusion. Science fiction writer Robert A. Heinlein remarked that;

"Almost any sect, cult, or religion will legislate its creed into law if it acquires the political power to do so."

Leninist visions of global cybernetic governance, mixed with 'objectivist' hyper-individual philosophies of Ayn Rand seem to be at the core of the present Silicon Valley mindset. Like moral reform movements of the 19th century, missionaries, and other hegemonic projects, the modern techno-cult maintains a belief in its own benevolence beyond examination.

Grounded pragmatism and recognition of humankind as a diverse species is rejected in favour of unchecked positivism and

runaway systematisation. Science is usurped by scientism. Complexity is worshipped. Form is lauded over function. Fantasy and appearance trump unpleasant facts. In this cult, data is the new god. Everything must be measured and made 'smart'. Grandiose futurist visions abound, of self-aware cities, of space exploration, eugenically re-engineered humans, or electronically enhanced human-cyborgs. These occlude mundane but existentially more urgent matters like basic medicine for all, properly managed water, food, climate, and population.

But a cargo cult is more dangerous in many ways. Science fiction writer Arthur C. Clarke once said that

"Any sufficiently advanced technology is indistinguishable from magic".

He did not finish that sentence. Clarke should have continued "... to a sufficiently ignorant civilisation". Like so many science fiction writers he was giving us a warning we failed to heed. Technology should never be magic, except for those with mischievous aims to use it for enslavement. All truly technological societies have mastery of their technology, and a level of education necessary to reconstruct, maintain, and advance it.

Cargo cults blend indigenous mythologies, such as capitalism and communism with an abundance fetish – a post Malthusian blend of benevolent AI, Moore's Law, and singularity-economics. This is raised to the status of, if not a God in name, a supreme governing principle, whose manufacture, function and control are completely opaque to the people. Ubiquitous but mysterious technology replaces the lived life with 'value domination'. Strange new rituals must be performed to appease. Ultimately it is a regression to a pre-industrial mode for all but a tiny elite who control the source of technology.

The desire to leave a cult is most often first identified as a desire for self-determination. As with all addictions, the first step is realising and admitting one's belonging and stuckness. But once seeded, dreams of leaving never get less. They are the unconscious *real* self expressing unhappiness. The feeling of

escaping overbearing systematisation and objectification is one of the great liberations and joys of the human soul.

Separation defines us as much as joining does. We do it naturally at several stages of life; as infants separating from our mother, as teenagers rejecting and reconfiguring identities, and as mature adults navigating careers and political lifestances. But when we first experience those growing-pains they often go unrecognised; they are mistaken for paranoia or mania and our energies misdirected or medicated away. Orwell illustrates that beautifully through the wavering layers of Winston Smith's (entrapped) awakening [106].

Once you see that the myth of 'smartphone ubiquity' is a coordinated marketing ruse to pressure and shoehorn every aspect of modern life into 'an app', thus creating a dependent underclass, it gets easier to think about ways out. Then it gets easier to take baby steps, like just leaving your phone in the drawer for a few days to experiment with the effects of disconnection and building your strength. Watch how acutely the system notices any deviation from your 'normal' behaviour. Notice the subtle disapprobations it dispenses.

What starts as a restless dissatisfaction with technology can become moments of clarity that feel exhilarating when we reject digital domination. Disconnection can become as addictive as connection. Ironically, these manic mini-highs became more prominent as the Covid lockdown drew attention to our disconnectedness, and then came the release of rediscovering interpersonal and genuine human connection.

Recently, I have seen an interesting social attitude from people when they notice I do not carry a smartphone. For years they would see my cheap 1990's Nokia 'burner phone' (with its threeweek battery life), and assume I am a drug dealer. Now I get a different vibe. They assume I am an 'official' or someone who is rich. That's because many institutions, such as the Army, are now advising personnel not to carry *any* kind of smartphone (I have been teaching soldiers and lawyers this for years). Celebrities and the super-rich don't eat the dog food either. Tech-billionaires don't let their kids use Facebook or Google via smartphones. So when you see someone with a cheap Nokia or cool looking dumb-phone, don't assume they're a criminal. It might be an opportunity to strike up an interesting conversation with another Digital Vegan.

People who get out of *real* cults suffer a range of problems that might also happen to those getting free of smartphones, social media or excessive indulgence in gaming or pornography. These problems are probably less pronounced than for lifelong cult escapees. As for all addicts getting clean, they can be triggers to go back to social media or seek comfort in the smartphone.

Symptoms include; fear, resentment, regret about time wasted, boredom, cognitive inefficiency and confusion from having relied on the device for everything. Basic life functions need rediscovering; having to structure your time, managing relationships using only your memory, thinking about the future in a measured way rather than reacting to push events. Panic attacks and gnawing anxiety about the loss of a familiar object are common.

Some fear retribution, marginalisation and ridicule by those who are still hooked. Others suffer guilt about those 'left behind', and become aggressive evangelists toward friends who have smartphones. Self-fear of an un-lived life, imagined potential or FOMO can be profound and upsetting. Depersonalised or melancholic memories of 'smartphone moments' can intrude at random; embarrassments or happy memories of chat buddies that felt 'more real than real' may haunt you. Getting free of any dependency is a struggle, so don't expect becoming a Digital Vegan is an easy road.

But progress, Luddite!

TLDR; More progressive than thou.

Being a Digital Vegan is not something visible. So when people discover what 'I am', hostility, insults and accusations can be hurtful to me as a scientist. It is a heresy to dare question 'progress', the God of the populist unthinking tech addict. But, as a humanist and sceptic, I do question it.

You speak of 'progress', but progress towards what? If the doctor said you had a 'progressive' illness, that would be a bad thing. The idea of progress as an unqualified *good* is nonsense. We use the word to avoid caring about where society is headed, and I think many people hide behind it to rationalise the horror of having their privacy rights and freedoms stripped from them. If not for 'progress', then for what?

To talk of progress without a vision of a better world, is meaningless. Is dependency on a little box in your pocket 'progress'? Is a "boot stamping on a human face, forever", a vision you like? [106]. If not, define your 'better world' – don't just accept someone else's definition. Now, prove your actions are a step toward that. Show they have popular informed consensus. Exactly none of that occurs when people revere technology *lorum ipsum* (for its own miserable sake).

Digital determinism is nonsense. It forgets that what humans make, we can unmake. Atomic weapons prove we're wonderful at that. Besides, we all make meaningful, creative decisions about our future every day. I recommend Andrew Kimbrell's [68] exploration of *Cold Evil* which brilliantly explores how we distort technology into a new religion.

The actual problem is zero democratic control over what we are asked to call 'progress'. Science is debased by greed. Ethics boards of universities, increasingly fused with industry, are a sham simulation of restraint, leading an unreflective stampede to profit from unethical research. Computer scientists such as Joseph Weizenbaum and voices from the Union of Concerned Scientists implore us to "slow down" and place moratoriums on technological misadventure. As with climate change, the most intelligent words fall on deaf ears until it is too late.

There is nothing 'inevitable' about the course of quasi-deified technology. There is nothing mystical or transcendent about it. On the contrary, it is all rather mundane and grubby... shallow agendas of the powerful are being foisted on an uneducated and sleeping society as 'inevitable' to make a buck. As Zeynep Tufekci [107] puts it, "we're creating a dystopia just to get people clicking ads". It isn't the tyranny itself that is staggering, but as always, the utter banality and mundanity of evil. Its aims are so low, yet its effects are so extraordinary.

So, does opposition to tyranny make Digital Vegans antiprogressive? Luddites? Not at all. It is really another way of saying 'Technological Optimist'. We are only anti-progressive if progress *must* be towards tyranny and domination. To imagine a different kind of technology, and kinder ways of using it, is simply rejecting the status quo. And I would counter that, by that logic, it is Google, Microsoft and Apple that are 'anti-progressive', because their conceit of progress is so short-sighted.

On a personal, practical level, being free of 'toxic consumer tech' gives me time to focus on complex problems in code, signal processing, cybersecurity, and to read philosophy. I get to program in the languages I love, and to build microelectronics and music synthesisers as my hobby. I spend time thinking about ways to make technology great, useful and safe, in ways that bypass tech oligarchies and resist domination and dependency.

Information I need comes from a text-only browser via Tor, enabling me to access the internet in confidence and privacy.
It's faster than a regular browser, even on a low bandwidth connection, and at less cost. I avoid adverts, useless images and tracking scripts. Should I need an image or video, it's one keystroke away to view or download. Text-based personal websites, Wikipedia, the Internet Archive and Project Gutenberg are the backbone of my information world. And thank heavens for *SciHub* on which all scientists depend, inside and outside academia, whether they have the courage to admit it or not. The web was once a thousand flowers blooming. We have been through a terrible period of power agglomeration that has destroyed so much. But today, far from dying the *indi-web* is thriving again. On the other hand, perhaps what the corporations have to offer is dying, because all they ever really had to sell us was each other.

Simple tools make a productive life. I am a fan of 'suckless' technology ⁸. Modern corporate websites are swollen with tracking JavaScript, so disabling this avoids a heap of dangers. Despite legislation mandating accessible design, corporations deliberately make inaccessible websites so their intrusive technologies can steal your personal data. Big browser brands like Chrome and Firefox pay lip-service to security and privacy, but in reality support bad behaviour.

Offline, there's the public library or ordering from a local bookshop (I don't use Amazon). The map on my study wall, plus some good planning, covers most of my navigational needs. I've never ordered an Uber, or a pizza that I didn't pay cash at the door for (that's how pizza delivery people get their tips by the way). When I get lost, I walk up to people and ask them directions. Yes, actual real, sweaty, smelly people. People like shop owners still exist. You can just talk to them... like you do with Siri... real people have that 'skill pack' too. Not fearing them is the best 'social media app' I have.

My own coding abilities fill in the gaps. I consider this a 'grown up' use of computers and the internet; it's where adults should get to after growing out of the Neverland fun park and fumbling around with tiny, expensive and limited toy computers. This idea is nicely presented in an article titled *On Becoming an Internet*

⁸All technology sucks, Some just sucks less. https://suckless.org

Savant, by a pseudonymous writer on technological frugality known in the hacker community only as Cheapskate ⁹.

In terms of hardware I have £30 Raspberry Pi computers doing almost everything I ever dreamed of. I hope to replace these with more open RISC-V devices at some point. When I am outdoors the last thing I want is another damn computer. Making computers mobile was quite a mistake in my opinion. Walking time is thinking time. Train journeys are book reading time. Or talking to strangers time. Or sometimes I take my £40 second-hand Linux notebook.

So you decide. Am I a Luddite? Or is it maybe that our ideas of what 'technology and progress' are, and how people can use technology, are different? The Digital Vegan idea works well for me. In fact, as many Vegans love food, I *love* technology. I am immersed in it and have made it my life. Being a Digital Vegan is just *my way* of using technology. You may think it sounds awfully insular and selfish. The congregation of our church for whom I produce weekly videos, the thousands of students I have taught, or the hundreds of people I have helped out of technical problems, might disagree.

So now, as you can hopefully see, I care a lot about technology. Especially, I care about the wellbeing and choices of everyone who use it. But most of all, I care about its corruption by privileged college drop-outs and their lackeys in government whose one-dimensional debasement of 'progress' dominates the narrative. Fortunately, after years feeling alone I find myself in great company and part of a growing movement of others, digital *revisionists, minimalists* like Cal Newport [108, 109], and people *re-humanising* their lives like Catherine Price [110].

⁹https://cheapskatesguide.org/articles/internet-savant.html

Saturation and equilibrium

TLDR; One day in Hatland, someone forgot their hat!

Remember from chemistry class that only so much salt can dissolve in a glass of water, and then it starts to crystallise out. The water (metaphorically: society or markets) gets saturated.

Smartphones have reached their equilibrium or 'unity' point. According to some studies of sales, 'peak smartphone' occurred sometime in late 2018¹⁰. The pressure to cycle handsets moved from an annual affair to a six monthly period, indicating a glut of devices and a desperate industry looking to find new ways to force their product on the populace.

A Deloitte survey also suggests peak smartphone use has already passed (2017) [111]. Concurrent with evidence of mental health issues, privacy concerns in the wake of the Snowden and Cambridge Analytica scandals, Western European growth has slowed, dipping below 7% (down from 9% in 2016). In some places, growth in smartphone use has stopped.

Not having a smartphone is an increasingly rational, and fashionable lifestyle choice. For anyone concerned about the environment, or about the ethics, provenance and trustworthiness of foreign manufactured goods, a ten quid Nokia looks ever-more attractive. A landline telephone is an awesome productivity tool,

 $^{^{10}}$ According to International Data Corporation (IDC) and World Economic Forum, negative growth of 2% in Q1 2018 reached about 6% by Q4 2018.

because it reintroduces structural, location and time management boundaries. Dumping smartphones in favour of more human technology also makes a strong statement about your courage to sacrifice some convenience in your life for a better world.

Yet at the same time, the Covid pandemic brought an increased pressure to use mobile applications to book food deliveries, an uptick in vendors taking only contactless payment, and Bluetooth-based track and trace apps. For Digital Vegans who have never joined the cult, life carried on pretty much as normal with some inconveniences, but for those already trapped the noose tightened one more notch.

In a naive model of progress, benefits always supplant downsides. In reality, at some point a technology makes new problems as fast as it solves others, so it reaches 'opportunistic unity', a kind of saturation point. This is true of automobiles today. Even as the technology perfects itself it has become a victim of its own success, and its side-effects, which were barely visible early on, start to dominate. Reducing the number of automobiles, and gratuitous travel in general, is now a universal priority for city planners.

In most technological areas, utility still greatly outstrips the problems. For example, robotics and medicine are both way ahead of their unity points. Perhaps we have yet to experience the serious downsides of people living too long and killer robots run amok (two problems that might solve each other).

We are on the cusp of the same saturation, the utility equilibrium, for communications technology. There is only so much we can say to each other, only so many movies a person can watch in a year. The attention scarcity is insoluble unless we create consumer robots, like Douglas Adams's Electric Monks ¹¹ [112] that can take the burden of believing in capitalism for us. A colleague of mine, Carmine-Emanuele Cella, suggested we create a start-up to build a global network of these robots, but oddly we were unable to secure funding. Of course that is

¹¹"The Electric Monk was a labour-saving device, like a dishwasher or a video recorder...Electric Monks believed things for you, thus saving you what was becoming an increasingly onerous task, that of believing all the things the world expected you to believe."

why communications technology has mutated into surveillance technology, because it must. The market for its ostensible purpose was exhausted long ago.

Just as a generation could have moved to reject smartphones – with environmental and ethical concerns mounting – along came Covid19, possibly the greatest gift to excessive technological consumption.

It is a feature of complex systems that their primary focus eventually becomes themselves. For all evolution of X, 'X will eat itself'. This immutable rule for bureaucracy is examined in *A General Economic History* by Max Weber [113], by Cyril Northcote *Parkinson's Laws* [114] and by John Gall in *General Systemantics* [115]. Try this; casually eavesdrop on any phone conversation while on a train or bus. What's the overwhelmingly dominant topic? It is phones themselves... who called who, why didn't you call me back, features my new phone has, what this new app does, awful battery life, OMG I cracked my screen... at some point the main concern of a technology is *that technology*. Its marginal utility cannot escape the gravity of itself.

Nowhere is this more true than the fatal combination of centralisation, social media, corporate consolidation, greed, advertising and manipulation, mobility, and identity politics. Richard Jones in his essay Against Transhumanism: The delusion of technological transcendence [116], asks it succinctly: "The question is, do our more powerful tools outstrip the greater difficulty of our outstanding tasks?"

I think the answer is, in the limit, no. On the present trajectory, our sociopolitical 'technical debt' grows faster than the social utility of the tools can grow. That's not an argument against technologies in general, just against the perverse overdevelopment of any particular one.

Inconvenient truths

TLDR; The path of least resistance.

Healthier technology involves our rejection of the deceptive idea of *'convenience'*. Convenience is a slippery word. It is used to sell us *'solutions for our too-busy lives'*. Fast food is more convenient than cooking. Casual sex is more convenient than building lifelong intimate relations. Boarding school is more convenient than parenting. Drugs and alcohol are more convenient than being alone with our thoughts. The problem is sometimes called "technological solutionism".

Political scientist Alexis De Toqueville writing in his 1840 *Democracy in America* [22] questions the perils of convenient systems so perfect in their pampering and coddling that they render life pointless. Of what today we would call cybernetic governance, he writes:

"That power is absolute, minute, regular, provident, and mild. It would be like the authority of a parent if, like that authority, its object was to prepare men for manhood; but it seeks, on the contrary, to keep them in perpetual childhood: it is well content that the people should rejoice, provided they think of nothing but rejoicing. For their happiness such a government willingly labors, but it chooses to be the sole agent and the only arbiter of that happiness; it provides for their security, foresees and supplies their necessities, facilitates their pleasures, manages their principal concerns, directs their industry, regulates the descent of property, and subdivides their inheritances: what remains, but to spare them all the care of thinking and all the trouble of living?"

Convenience is always a trade against *quality*. If a builder bodges a home repair, or a surgeon messes up an operation, we would complain they took shortcuts. Maybe they used a convenient solution? Conveniences *are* shortcuts, that temporarily hide future harms caused to ourselves or others. For the benefit of overseas readers, in Britain 'a *convenience*' is something you urinate in.

It's a word that shields against intelligent tech critique. To eschew convenience is heresy against the god-given right to low-quality living. Besides, convenience saves time, right? Are you kidding me? Anyone who knows anything about computers recognises that in the past twenty years computers have become instruments of frustrating make-work pointlessness. There is little left in life that cannot be improved by taking some tech out of it.

In keeping with earlier remarks about cargo cults, consumer computing has become a kind of magic, in the dark sense of having transformed into tools of deception and control rather than enabling real choice and creativity. Convenience, where it exists, is as much for the benefit of the manufacturer or service supplier as for you. After a promising start at Xerox with the mouse, Human Computer Interaction (HCI) and User Experience (UX) have, as research disciplines, run into the long grass, becoming profoundly failed projects that reduce useful tools to one-dimensional 'experiences' on rails. Veteran of UX Mark Hurst writing in *Creative Good* (2021) remarks that the mission of UX has transformed so much it now stands for *User eXploitation*.

The art of creating a menu or page layout is increasingly the art of 'dark design patterns', as Arunesh Mathur discovered by looking at over ten thousand popular websites [117]. The goal is to mislead users, to hide privacy settings, revert to insecure defaults, or influence and 'nudge' users into making 'choices' that are against their interests. All applications now hide an *a priori*

suite of non-functional agendas, covert policy, shady business logic, not to mention their overt primary function of surveillance.

Mobile computing apps are now able to determine what we want and actively avoid giving it to us. "What nonsense!", you say? Well, the design principle of 'intermittent variable rewards' is woven into corporate UX these days. A major figure in the research and development of addictive technologies is Brian Jeffrey Fogg, a proponent of 'persuasive technology' [118]. Gambling machines like the classic Las Vegas 'one armed bandits', and more modern quiz games found in pubs and arcades, are designed according to the psychological manipulation techniques researched by Fogg and others. These same techniques are used to keep you hooked in apps and web pages that never deliver what you want, in order to distract you with advertisements.

Remember, the currency of apps is *your attention*, to get you interacting and clicking. Psychologically, we respond with more addictive engagement if there is randomness in the outcomes. Computers and websites that *just work* (effectively and efficiently) may be what we want, but they are not what the dominant order needs, so not what we get.

Another use of Byzantine interfaces is to simply deflect people from engagement if they might create work or harm profits for an organisation. Tech support desks and services for cancelling products are perfect examples. Everyone will have their own anecdotes, and for me – I once needed to report a dangerous fault at a children's playground. Finding the web form, seven levels down in the ninth circle of JavaScript hell, took me forty minutes. Nobody ever replied. My partner noticed a faded phone number on a rusted sign near the playground. It was immediately answered by a keen engineer, and an hour later the fault was repaired. Knowing a direct phone number is worth a dozen websites, Twitter, LinkedIn or Facebook accounts, all of which are buffers *against* communication.

Another disabling quality of digital technology we are falsely told is convenient (and therefore 'inevitable') is the 'sign-on' mechanism. For a decade between 1995 and 2005 the World Wide Web worked perfectly without any form of persistent identity. It was only the introduction of internet banking that created a 'need' for identifiable users. Today sign-on is gratuitously used on everything from online newspapers to recipe sites as a way to extract trackable identities. It offers *you* no real convenience at all. It slows down your use. It adds more moving parts to go wrong. The only reason you accept the 'convenience' is that you have no choice. Always question convenience. Convenience for whom?

One-way streets

TLDR; Look before you leap.

Ever gone on a diet, then celebrated by throwing out all your 'fat clothes'? Then after six months of feasting you wished you hadn't? Diodes, hash functions and burning bridges are all examples of one-way processes. They increase entropy. They are easy in one direction, and really hard to go back the other way.

Whenever you find yourself on a 'easy' route, ask this question: "What is the cost of going back if I want to?" What is the situation *vis a vis* entropy? Climbing a hill is hard, falling into a hole is easy. The tagline for digital technology is, "it makes life easy". Sure it does. For now.

For example: our gushing project toward an 'online cashless society' is clear folly. Security experts concur that time-tested systems like cash, printed receipts, cheques and paper voting, preserve fairness, opportunity, inclusivity, robustness, resilience, transparency, and practicality.

Consider how the UK government let our drinking water reservoirs be sold off for property development, believing that advanced JIT (just in time) management technology, smart metering and so forth, would dispense with them. Then climate change came. Reservoirs are like power supply capacitors; they absorb as well as smooth out supply. Now in the UK we have housing estates built on flood plains. Rivers burst their banks with every downpour. Knocking down thousands of peoples' houses to regain reservoir capacity is much *harder* than it was to sell the reservoirs to 'developers'. Digital technology seduces us to easily give up what will be expensive or bloody to win back when we realise our mistake.

Scores of arguments *against* our current trajectory now come into focus: privacy, dignity, censorship, the erosion of democracy and speech, mental health, equality and diversity, monopoly domination, environmental impact, provenience of information, alienation and atomisation of society. This list grows daily as we discover the fundamental intractability of turning people into computers, and the failed ambition of mobile computing to dominate all areas of human life.

The arguments *for* are few: Efficiency. That's about it. To serve profit. But destruction of a stable and meaningful life in pursuit of profitable efficiency is societal suicide. On balance, then, it seems surprising that a society which believes itself so rational, evidence-based, and scientific, cannot seriously reflect on the presenting evidence.

As a scientist devoted to technology, this *would be* painful and tragic to watch unfold, had I not read from the Frankfurt School of philosophy, which has helped me make sense of it. For example, Herbert Marcuse's One Dimensional Man [119] is an extraordinary counterpoint to blind positivism, which all serious scientists ought to read.

It helps us see, much like Plato's allegory of the cave, how a greater understanding of the world creates not less fear, but more. As the circle of human knowledge grows, so does the circumference of the shadows surrounding it. That is not an endorsement of ignorance, but a warning that our philosophy and socio-politics must expand in proportion to our technologies. We are doing 21st century science using 18th century epistemology. Without radical reassessment of aims and methods apropos Paul Feyerabend's 'anarchic theory of knowledge' [120] we may find science is not a journey of discovery but a folly of seduction down one way streets.

Information cul-de-sac

TLDR; Please drive slowly through our digital village.

Information 'superhighways' were the vision of the 1990's. The idea that *more and faster* equals *better* never really met the question; *exactly what* must we transfer around the globe so fast, and why?

People need time to digest information and consider their responses. That is why we sleep and dream. Presentation and selection of information is necessary. Do you always eat everything on your plate as fast as you can? Do you always say the first thing that comes into your head? The idea of *rationality* is that we have a contemplative part of our brain. It sits between the reactive 'lizard' part, and our words and actions. Abusive technology seeks to bypass it. For fifty years a broadcast model (radio and television) was the norm, and dominant media business model. It persists, in that Big Tech companies usurped an early 'consumer internet', which promised peer relations, restoring the old and profitable model. Web 2.0 participatory culture was a lie. So what went wrong?

When Sir Tim Berners-Lee, then at CERN, envisioned the World Wide Web, it was for authoritative sources in institutions to publish to other institutional academics and engineers. A parallel culture of bulletin board systems (BBS), subsumed into the new Web, also comprised mainly educated participants. Both were unmediated and distributed systems. After the commercialisation of the Web in the mid 1990's companies started to figure out how to make money from peoples' communications. The twin processes of inter-mediation and centralisation began. Web 2.0 was the gimmick to draw in audiences. But instead of selling them content, the Web 2.0 companies sold people to each other under the promise of 'participation' and 'sharing'. Unlike book or music publishers, there was no incentive for content quality, like correctness, utility or relevance. Profit accrued from sheer volume.

Soon this populist web was hot water. What people most want to share is not what governments, media giants, politicians and moralisers thought they *ought to share*. A business model facilitating anyone to post their naked pictures, opinions about immigrants, historical fantasies and half-baked delusions wasn't as profitable as hoped. What some people really wanted was everyone to sit round like good children in the glorious days of broadcast, and listen to mother. Web 2.0 became walled gardens, with guards and identity cards. Next it was heavily censored. Today it is a ghost-town of factional echo-chambers.

In an attempt to recover profitability from the failed experiment of Web 2.0, its owners pivoted to a surveillance engine. To make this work the delivery model of information fundamentally changed. It is a mistake to think that 'surveillance capitalism' grew on the side of old web technologies. As is widely but wrongly presented, all these wonderful services we have just suffer the unfortunate side effect of collecting our data. On the contrary, data-mining was built-in from about the turn of the century. It is the core rationale and business model which silently supplanted the entire Web 1.0 information service philosophy. Corporate apps and devices are being designed as surveillance apparatus first, and only incidentally offer the functions of communication, storage and processing.

The method driving this philosophy is *mandatory always-on streams* and end nodes (your computer or phone) that are outside the control of their owners. They monitor a constant stream of data *from* you without asking permission, and at the same time foist a constant stream upon you. In this model, 'your' computer is not something you control, but an extension of the corporate apparatus right up to your fingertips. A problem, aside from its attack on privacy and secrecy of stored data and communication, is that its ostensible primary function is broken. What Big Tech offers is no longer *Information Technology* – it may be *Surveillance Technology* , or maybe *Advertising Technology*. But not IT!

Information must *inform*, which requires basic epistemological conditions, of truth, trust, reproducibility, and verifiability. These no longer hold for technologies broken by surveillance capitalism. Like Orwell's *Ministry of Truth*, one never steps into the same river twice. As a departure from Berners-Lee's Web as a 'library', it becomes useless for research or education. Finding the same content twice amidst the ever shifting sands is hard. Search engines may work for finding local services, like the old Yellow Pages, but fail for deeper tasks, having been debased by advertising. Google's original purpose, a 'search engine' to deliver information to you, has been usurped by its new function, to extract data from you.

None of this is good for our society, for truth, for reason based decision making, or for our emotional health. Humans need more reflective space. For example; sometimes you need to re-read a web page or watch videos again. Or to search them in a random-access way. We used to call it *'browsing'* the internet. That is where the word browser comes from. Animals that browse take a long time to digest (ruminate) and consume slowly.

A download model, where you can locally store data, always beats a stream/feed. Storage is vanishingly cheap, while the cost of bandwidth is maintained artificially high. Curating also provides a superior information structure. We organise and memorise in a spacial way. A store has multi-dimensional structure, whereas a feed is always one-dimensional.

Big Tech companies do not want reflective users. The 'war on downloading' is to force you to consume media in a way that profits them. Unlike the web envisaged by Berners-Lee, the 'streaming' internet has no essential static structure. Its surface aim is to normalise reliance on external providers and cloud services. At a deeper level it is a project to obsolete the notion that you can, as an individual, own or curate any data. Researchers, lawyers and journalists must now take screenshots of web pages. The idea of reliable URL is more or less obsolete. Stable points of reference are Project Gutenberg, Wikipedia, The Internet Archive and SciHub. Serious internet users, who need tools for work and research, are heading back to something not unlike Gopher (a predecessor to WWW), where one keeps local bookmarks and local caches, to remember the relationships between pieces of knowledge.

This ever changing landscape of information has a dark psychological effect on people. The function of the *Ministry of Truth* was to perpetually confuse, discombobulate and gaslight the population. Spending all your time in a reactive state, where no ground truths exist, is like a combat situation. PTSD is lifelimiting and exhausting. You enter a quiescent state of low-level stress, whether you use the internet for social media or too heavily for work. The term 'doom-scrolling' was coined to refer to stuck behaviours, of feeling anxiety at news and gossip, but being unable to disconnect.

Over-connection is bad for your health. Constant volatile anxiety blocks thought, corrodes trust and distorts judgement. 'Living in interesting times' is supposed to be a curse. But millions of people like myself are living proof that an always-on, reactive technology is unnecessary. We don't *need* it – in neither of Maslow's senses of basic or higher needs. The more it's thrust upon us, the more we recoil from what is evidently an aggressive and sapping energy.

So the phenomenon of hyper-connectedness to aggressive agents raises questions; For what reason do we stay connected? What are the gains? Are there parallels to other kinds of abusive relationships? Let's stop pretending that social media makes us more 'productive'. Or that Facebook 'friends' exist, in the sense that they'd sit up all night with you or drive you to the hospital if your life fell apart. Perhaps one in fifty of your 'virtual friends' would actually do that, but by that token they would be real friends even if Facebook didn't exist. Maybe it is silicon immortality you seek? Being seen and heard? Leaving a mark? Is it about validation? Does social media underwrite your existence? I've heard the phrases "Doing it for the Gram" and "Pics or it didn't happen". Is all Western life now just a vicarious narcissistic performance for the 'Big Other'? Perhaps you feel compelled to join in by peer pressure?

There's nothing wrong with these human motives. Everybody has their own complex psychological needs for attachment, expression, validation and belonging. Unfortunately you won't find them on the internet, and we are not taught enough psychology and attachment theory at school to help with that. Researcher Sherry Turkle, in her book *Alone Together* [121] identifies 'gratifying fantasies' about connectedness, that technology will mean we are always heard, never alone, and in total control of our attention. Only the last of these is untrue. The first two, unfortunately are.

Intermediated digital worlds are unhealthy and societally dangerous places to go looking for connection. Most of us are left to find out the hard way by experimentation, as with drugs. This makes us all easy victims of Big Tech dealers. Feeling pressured, and that you don't have a choice, changes you from a user of social media to a victim of it. I highly recommend mindfulness, as part of a martial art or yoga, or as simple sitting meditation. Once there is enough space in-between hits of techno-adrenaline, your taste for it starts to recede. Cultivate that inner dialogue with your soul, and ask it, "Why am I doing this? What am I looking for?"

Then one day you will feel able to go to a beautiful remote mountain, without a phone, and enjoy a personal private moment made special for the precise reason that *only you* will experience it. You will not feel lonely, or excluded. You will rejoice that nobody even knows you are here. You will not feel anxious that nobody will believe you had this experience. You will not care, and for one special moment, your life will be your own.

Freedom from, or freedom to

TLDR; The cake is a lie.

As I see it, there are broadly two ways to be happy, through serenity or affect. One is to enjoy a quiet well-lived life in times of certainty and stability. The other is to be on the winning side in a great historical struggle. Most people prefer the former (repose) and turn to the latter (response) when tranquil conditions are absent. These broadly relate to different forms of freedom; *from* (hunger, tyranny, disease), and freedom *to* (have agency, exploration, curiosity).

Modernity implies struggle, as we are always *at odds* with the world (nature). This is of course the idea of the philosopher Hegel, of Freedom as a *process*, a synthetic struggle toward a better world. These two views of freedom are manifest in two life stances: stillness or active/warrior behaviour. Other philosophers, like Jung, Freud, and American Pragmatists like William James have all explored this. Let's consider peaceful existence first.

Peaceful, sustained existence held in China for some 5000 years, and in Ancient Greece for around 2000. Many other civilisations have enjoyed periods of extraordinary stability in which one's degree of involvement was simply participation in civic life. Although the Greeks leaned on the economic crutch of slavery, 'Arete', the joy of living life to its richest and fullest, was possible where norms are solid and life allows for tradition. Such a way of life dominates history, changing only after our profound misreading of Rousseau and Hobbes 'State of Nature' in relative modernity. What is lost is the *Ludic* position, fun as explored in practice by Huizinga's *Homo Ludens* [122], as a life-stance by David Graeber in his 2014 essay *What's the point if we can't have fun?* [123], and in design by Bill Gaver, a less fragile philosophy that celebrates timelessness.

Basically we forgot how to have fun and to live in a way that puts more emphasis on participation over winning, on the ephemeral over the permanent, on the journey not the destination. I believe it is central to many of the remaining free-form arts such as sound design. I put these ideas into practice when I wrote *Designing Sound* in 2010, establishing the field of *'Procedural Audio'*. In that work, an approach that is both Buddhist and Ludic, emerged to allow me to see connections and hierarchies in the field of sound synthesis that I believe others in the computer game and film business could not see at the time.

The field of *sound design* was stuck at the grindstone of entrenched workflows and ideological ghosts from the *recording industry*, which clung to sound as a static form. Instead of a possessive attachment to sound as capture and curation, I imagined *sound qua process*, living but infinitely reincarnated running code. This flowed from the observation that all sound is energy from other processes on a journey toward a higher entropy. This philosophical breakthrough changed the way I thought about sound, and creative work.

A decade later, the same epiphany took place in my feelings about technology in general. I believe that many digital technologies today, are mired in self-flagellating misery and a sense of inescapable defeatism because they resist life as a process. The extent to which many bad aspects of the Western philosophical cannon have been baked into our technology is disturbing.

In history, our transition from the world of nature to social agrarian organisation, was, as writers like Rousseau [7] up to Jacques Ellul [124] claim, the first step of three. The second step transforms us from a social society to a mechanical society. So, don't be fooled, 'social media' is anything but social – as

pointed out in Siva Vaidhyanathan's Anti-Social Media [125], it is 'post-social'.

One troublesome word in Social Media, is 'media' (the other is *social*). It is predominantly people (you and me) interacting with algorithms and machines that project filtered and distorted images of other pseudo-persons and imaginary groupings to us. Though we feel that we are communicating with one another, in reality our interaction is being 'mediated' (that's what media does – it stands between two end points and thus can mount a midpoint attack).

Peer-to-peer communication, where you and I talk directly, like on an analogue telephone, is rare on the internet today. However, peer-to-peer is a term that describes the fundamental design of the internet. It was meant to work without mediation and to offer a direct form of connection equally to all participants, be they receivers or senders, creators or consumers.

Big business spent billions on demonising the term 'peer-topeer' and equating all forms of self-determination or creative production with 'piracy' [126]. It shamelessly brought laws that would favour a highly centralised network under its control and has largely succeeded in destroying at least the visible part of the formative internet that existed at the turn of this century. This was a political phase called anti-disintermediation, aiming to restore mediation.

The last step in mediation is the elimination of people *qua* people, in which we become 'raw identities', entirely the figments of machines interacting with other machines. These identities, which earlier I called 'shadow you' are obtained by deterministic intersectionality and dynamic programming.

What the press call 'AI', what we computer scientists call 'machine learning' is really advanced statistics. We attach weights (distances) to vectors of information. Imagine a complex mobile made of pendulums and windmills that swings and rotates in intricate ways when pushed. Then we make filters that reinforce or diminish those weights until a predictive model emerges. When you push on it in a certain way (stimulus) it moves in a certain way (prediction). That's fine for getting a machine to write essays or music. But when applied to people it is unethical. It creates an oblique and disguised form of oppression, enforced through hierarchical labelling, and behavioural data collected through non-consensual surveillance. Subjects are then rewarded for their compliance to the expectations of their shadow model, thus inhibiting all rational and sceptical thinking, self determination – what we colloquially call *freedom*. All attempts to roll out this synthesis of surveillance capitalism and Maoism in the West, following more aggressive experiments in China, should be vigorously snuffed out.

We call this 'cybernetic governance' (see The Invisible Committee 2014) [127], and it is the aim of all totalitarian states. Past this point there is no freedom at all, only compliance with an algorithmic master. Those who set the system in motion, imagining themselves to be at the controls, will become the most zealously pursued victims, as surely as the engineers of Stalin's power were rounded up the moment their use expired and they became a threat. Getting this message to the tech workers of Silicon Valley who are still labouring tirelessly to forge their own chains, is an urgent project.

What happens to our physical bodies after this is that they become inconsequential collateral damage in a world that no longer needs them, except as tokens of biological existence. Or, as in China, spare parts to extend the lives of party members. The transhumanists imagine this is a good idea. Loathing the flesh, perhaps for quasi-religious reasons, they hope their bodies will become silicon-augmented vessels to carry around our digital identities forever.

Yet it is our instinct to protect these physical bodies that drives us ever deeper into the trap of technological disembodiment. Technology tries to insinuate itself to mediate our food, medicine, and exercise. It is only a small step from 'smart-watches' or 'track and trace apps' to provision of medication based on enforced data analytics. Given that one of the companies involved in the UK's failed Covid tracking project is Palantir, a corporation straight out of a sci-fi dystopia, it does not bode well. Fear is what allows others to leverage our desire for 'freedom from'. Freedom from foreign raiders. Freedom from disease. Freedom from poverty at the invisible hand of economics. Hobbes constructed his Leviathan, by art, upon fear. Terrorists perform the same function today as foreign raiders. Hobbes, traumatised by the English civil war, declared life "nasty, brutish and short". He then travelled the world and lived to the age of 91 as a respected, and no doubt comfortable, tutor to aristocrats. So Hobbes was a sniveller. Ultimately the main thing we should seek freedom from is fear itself.

In the end it was not packs of wolves, bandits and plagues that swept away the agrarian world. It was *industrialisation* that brought the 'career' (meaning to be out of control), the rat race, the pollution and the stress of wage slavery so corrosive to human health. Consider this before buying into any arguments about how smart-watches and wearable tech is "making us all healthier". Does *all* include the child labourers in India and China who work for a bowl of rice a day?

We are led to believe that only technology can keep us safe and well. But self-care and preventative living should cover 99 percent of our health needs. Doctors who do not see themselves as part of a 'health industry' would certainly agree. Despite Hobbes's bleak appraisal, many in antiquity lived out their three score and ten years in good health without extraordinary demands for mere survival.

We should remember these things before defending an abstract idea of progress that crushes us all beneath its wheels. Let's not, like Ayn Rand – a model Soviet if ever there was one – spin romantic narratives about the glory of industrialism, and the march of progress. Notice the conspicuous absence from her 1943 novel *The Fountainhead*, a tale of chisel jawed architects building skyscrapers, of the thousands of Irish, Italian, Navajo and Mohawk 'skywalkers' who actually built Manhattan.

The good fight

TLDR; Everybody is kung-fu fightin'.

Let's consider the second mode of happy existence: struggle. Clearly this is more about 'freedom to', and concerns 'the will' of humans. Some people are surprised to think of struggle as a happy state, and imagine that happiness comes only when all struggles cease. The Greeks, as do Buddhists, strongly disagree with this. An end to struggle is death.

A most important point is that serenity is a *scalar*. One is more or less tranquil. Struggle is a *vector*. It has intensity and, most importantly, *direction*. If an enemy can get you to struggle in many directions, by confusing aims, you struggle against yourself. Human struggle is a project that is easily derailed by echo chambers and halls of mirrors, where the illusion of meaningful dialectic is really screaming at your own shadows. Non-linear warfare à *la* Vladislav Surkov is now understood by the likes of Facebook who use multi-front, multi-mode discombobulation techniques.

Technology thus understood is a struggle, 'Nature' being the usual enemy, but we may also think of Science (big S) as a struggle against superstition. Fine pursuits indeed, you may think. Except that there is nothing that isn't 'nature'. So by that logic, we are in a bind, a struggle against ourselves. This is how technology turns on us, not as an *alien* monster, but by the monstrosity of our own cracked and amplified logic, as Mary Shelley so beautifully framed it [128].

In a related way, I am, as an educator, often in the mindset of seeing education as a struggle against ignorance. For me, science and education are inextricable, which is why I do not support suppression of non-commercial copyright. However, by casting my concerns as a 'fight', it is hard to attend to the nurturing and nourishing that is really what teachers do. The fight, if there is one, is against university administrators, ICT departments, deanlets, chancellors, education ministers, and all the other hopeless systematisers and sworn enemies of humanistic pedagogy.

The genuine warrior experiences an intense happiness, but a statistically shorter life. For that life, one needs sprightly intelligence, some magnanimity, a clear sense of purpose and moral certainty (however flawed), peace with fate, or at least the ability to take punches, and some semblance of rounded education to offer perspective.

The warrior also needs a powerful sense of necessity. Nobody but the most twisted soul <u>wants</u> to be a revolutionary or soldier in times that could be peaceful. One can, and people do, find happiness in fighting for a good cause, and in peace, purposeful struggle can be cast as the *Moral equivalent of war*, a stance taken by William James [129]. Focus is tight but intense, it is vanquishing an enemy or territory. Unfortunately this thinking is also responsible for wars on abstract nouns. The "War on drugs" becomes the war on drug users, and the "War on poverty" becomes a war against the poor. Be sceptical of those who want to recruit you for their 'war' on anything.

The human spirit is in constant struggle against the forces of death and forgetfulness (convenience) that the Greeks called *Thanatos*. A great disservice is done to that spirit by digital social media, in its goals to subdue, pacify, and divide society into atomised, narcissistic, hyper-individualised units of consumption, for it gives us nothing to struggle against but our own vanity and emptiness.

In that sense, I see social media as the natural enemy of the thinking person who finds happiness through struggle toward a better world. To continue the warrior metaphor, social media is 'difficult ground', a tar pit. Like the Devil, its greatest trick is to become invisible, as water is to the fish, to become the very substrate of discourse for a population mostly unaware that Facebook is a tiny corner of a vast internet.

To allow the enemy to define the battleground, is to allow the enemy to define the battle. The real internet, now mostly invisible to useless and deceptive search engines like Google, dwarfs, predates and will succeed the centralised corporate islands. That is to where the struggle must be taken.

Blocked generation

TLDR; Can't get no satisfaction?

Sadly, for young people today, perhaps uniquely in history, exactly *none* of these conditions hold. Unable to find peace, but robbed of the dignity of a straight fight, on the first count, they cannot have nice homes and families. And, No! Hard work, self-discipline and a positive attitude are not enough any more. Sanctimonious writers of *Rules for Life* take note, conditions have changed since our generation. Late 20th century ideas of 'how life works' look obsolete today. They are excluded from economic society except under conditions of humiliating penury. That is why they are warehoused within virtual societies.

Neither is it enough to point out that even the worst living conditions in the urban West are better than in developing countries, or better than a hundred years ago. That misses the point. It rejects the most basic psychology of Maslow, Freud, Bowlby, Fromm, and a hundred more who speak of human dignity and belonging within a narrative culture.

Western democratic capitalism has run its course to an endgame, so we need to understand endgame rules. What do you do with seven billion consumers in a world where "consumption as a way of life" must end to save the species? One thing is sure – were they to speak without fear, to truly share, organise and act through uninhibited peer technologies they control, the existing order would implode. So, every underhand trick and devious law is used to take technology from them.

Cyberwar

TLDR; The only winning move is not to play.

An immanent problem with enabling technologies, is that they enable all connected parties and carry their values. Stare into the abyss, and the abyss stares back at you. When picking up a technological tool you had better know what it is for. What is connected to the other side of it? And you should do so with the intent of mastering it, and using it kindly. As Andre Loesekrug-Pietri, a founder of European *Jedi* ('The European DARPA') project put it, unless the people of Liberal democracies take control of technology "other people or other political systems will impose their values on us".

For example, when email first appeared, people struggled to manage it and maintain boundaries. We felt compelled to answer every little piece of spam, because computers seemed to represent authority and power. Today we have a healthier contempt for electronic communications. It took us 30 years to get a measure of that technology and take back control over it. And here lies the deeper problem of Big Tech, which has been shaped by Silicon Valley values, and State Tech insomuch as it spreads values of cybernetic governance.

We cheered-on Silicon Valley values in as much as they seemed to champion individual rights. Today they threaten democratic and privacy rights. We cheer on the convenience of social control, but its effects will be the same. The one thing we won't cheer for is the effort of actively taking control of our technology, of talking to friends and family, teaching our children, learning or caring about the new structures that run our lives. In that sense, digital technology is an abdication of the General Will. It emits what Douglas Adams called an 'S.E.P.' field – it's *Someone Else's Problem*.

Unless you create and assert your own values they will be decided for you. Other people will decide who you can talk to, what you can say, what jobs are open to you, what privacy and rights you have, what information, travel, education, medical treatment you can access, and how money functions. This is the antithesis of a social contract. It is no longer a society by and for the people.

A problem with 'The internet' is we do not write the rules. We feel it's something 'outside' of us, not cultural property that *belongs* to us. While we assume the internet must be a great 'force' *for* democracy, there is no democracy *of* the internet, unless *we* make it. A handful of governing bodies, engineering task forces, and administrative committees were formed in the eighties and nineties, mainly from US American military and business interests. The miracle is that they have lasted as long, and done as well as they have. Sadly, they are as prone to lobbying, bribery and infiltration as any other organisation. For example the Internet Corporation for Assigned Names and Numbers (ICANN), despite claims of transparency and protestations that it does not wish to "police the internet", acts to exclude individuals, businesses and national actors it dislikes. The only democratic 'force', within the history and culture of the internet, is at the end nodes. It's *you*.

But since most users are passive, we might better say that it's 'the active hackers' who hold the cards, on all sides. Most hackers, being intelligent people, realised the fundamental gotcha of power struggles in a shared space. The fabric is fragile and the first casualty is the space itself. It's why we don't fight atomic wars on a finite planet. The balance and compromise that made the internet possible has been remarkable. Because of its potential power symmetry and our shared interests, there was a long period of cooperation. In that sense, 'The Internet' was a tacit agreement not to fight. This started to dissolve from about 2000. Some would say that 'The Internet' is not a thing, rather it *was an idea* that only lasted for 20 years. A valid model for 'The (modern global) Internet' is therefore as an ideological battleground. Cyber-war is not something that *might* happen. It has been happening for some time now and we are all being dragged in to it. A *tragedy of the commons*, occurs when the majority who would benefit from limited active decision making, and coordinated involvement, defer (out of laziness) to a minority of vocal, selfish defectors and exploiters who destroy value for everyone else.

Everywhere are Doctor Strangelove type maniacs who imagine we can 'win' a cyber war. This parochial disregard for Kantian nuance seen in late 1960's radical agitators such as Alinsky [130], for whom "all is fair in love and war", exists in US cyber command, China's People's Liberation Army unit APT-1, Russian state cyber-offence groups and within some chapters of Anonymous civic hackers. The outcomes of this nihilistic selfdestruction is explored in Sam Esmail's drama series *Mr Robot*. The winners are corporations, private armies, security companies, and intelligence services. The losers – are everyone else. As Junior Murvin sings it, "Police and thieves in the streets. Scaring the nation with their guns and ammunition."

And so to the next point – *getting a fair fight*. What marks out tough leaders from tyrants, revolutionaries from terrorists, and harsh but meritocratic societies from fascism, is that all of the former are governed by rules, whereas the latter are *unsportsmanlike*. They disrespect the explicit and unspoken rules (and rules for changing rules) of human conduct. They feel above playing the game.

There are rules to fighting. Believe it or not, even war has rules. International law, elaborate protocols, and the Hague and Geneva conventions govern acts of kinetic aggression. Business was once seen as a fair theatre of conflict, where the casualties are economic. International regulations of tax, banking, stock and trade were supposed to govern this. And Democracy (the combative form of more tranquil Polity) is also a form of managed conflict, for which there are rules around funding, disinformation, lobbying, and disenfranchisement. The crisis of the 21st century is that these rules, and the institutions that served them, are disintegrating. Against this background we are on the back-foot in a losing battle for our digital neighbourhood. It is a battle for preservation of the underlying rules and agreed standards that allowed a culturally laissez-faire ecology. It is actually a rather British conceit, that the best system is no system, but with rules to enforce that. One of those battles is now against many forms of technology, which after an initial blip favouring freedom, is now firmly appropriated by power. We are in an explosive phase of corruption and overbearing micro-control in the name of 'security'.

We do not ask about the slippery word 'security';

- security for who?
- security from who or what?
- security to what ends?

To the extent that 'national security' is the sum total of individual citizen's security, we are insecure against enemies that include Facebook, Google, the US National Security Agency and so-called 'security services'. I have to teach this in cyber-security classes all the time (a principle we call *Dolev-Yeo*): that the cybercriminals (however you define them, whether as foreign crackers, corporations, states or radical activists), run our internet, and they are winning.

The loser is *societal good faith* – the very frameworks by which progress is made towards social justice and prosperity. This is what adherents of the Surkov strategy want. New order out of chaos. They presume the emerging order will be one they favour, and that the destruction caused by chaos will be bearable. The problem is more subtle than it first appears. It isn't a question of whether the 'white hats' can secure systems from 'bad crackers'. We can make all of our systems perfectly secure and incorruptible, just nobody will be able to use them. Or nobody will *want to*.

The problem is that by making things more 'secure', obsessing over 'certainty' and 'identity', we are making societies that are not worth living in for human beings. We have a technological auto-immune disease. It began after 9/11 in the USA when governments decided that shredding democracy and the law was a sensible response to terrorism. Letting our ideological enemies destroy the basis of our free society by our own hand, is far worse than any thousands of deaths from terror plots (exactly *none* of which have been stopped by the draconian measures).

Nobody wants to admit that regression is occurring. Nobody wants to admit that probably the best strategy is to stop hurting ourselves, and repeal vast swathes of cyber, trade, copyright, patent and national security laws that are killing democratic society and innovation. Our narrative of monotonic scientific progress under the rule of law is supposed to be unassailable. It's failing, but it's prohibited to discuss this. It's a heresy to question our technological Gods or the priests and inquisitors who defend them from blasphemy. However, the time has come to say without fear; it seems our technology in its configuration as smartphones and social media, has become more of a danger to progressive liberal democracy than a boon. Perhaps we must choose between freedom or Facebook, or between *actual* national security and the NSA.

In the first quarter of the twenty-first century we have seen a marked dissolution of the Rule of Law, internationally and domestically. A read of the Secret Barrister's popular book exposing, *How The Law Is Broken* [131], or even the most generous account of the disgraceful persecution and misconduct of legal cases against prize-winning journalist Julian Assange [132], or the decision of police services during the pandemic to simply stop investigating most crimes, will leave little doubt in anyone's mind that we are entering some sort of 'post-legal' era.

Regulation of corporations and other powerful institutions has effectively ceased. Protest is ineffectual. Police no longer even pretend to be neutral. Tax, banking, copyright, patent and other business laws enable the powerful to exclude ordinary people and small businesses. Business now means *Big Business*. Democracy, and the free speech necessary for it, is under massive attack in all quarters.

The middle classes are being crushed. Leadership and civic institutional power is faltering. Everywhere it has abdicated its duties, preferring giant centralised systems over people. It builds vast automated monopolistic unassailable empires of profit and control. Global inequality is at obscene proportions, and a wave of might-is-right philosophy is sweeping the globe. There is little if any hope for 'social justice' in the immediate future.

Because technology connects us all, it has grave implications for horizontal infection of dangerous politics, much as air travel has done for the pandemic. In a 'global world' it is thus a fact of life today that there are battles we are losing *as a species* (not merely as pockets or nations), and there is no point putting a happy gloss on it. Instead of creating a global conversation of ideas, communication technology hijacked by power, has sent us scurrying for bunkers. As Erich Fromm saw in *Escape from Freedom* digital technology erected on a foundation of totalitarian capitalism has nothing but atomisation and anxiety to offer. Its 'negative freedoms' of 'not missing out' (on the stale crumbs) make it an engine of our fragmentation and disconnection.

With the ideal of global unity and a 'conversation of humankind' sold up the river to advertisers and snoops for a few dirty dollars, what do we face? Splinternets, fragmentation, incompatible protocols, exclusion and class based access, secession, nationalism and isolation are all firmly back on the table. If we follow Fromm, the alternative is to replace 'social media' with 'socialist media' – not a system in which people have an *opportunity to participate*, but actual collective ownership of a system that guarantees fundamental rights to speech, privacy, control of personal information, including the right to nonparticipation and anonymity. Whether such a info-socialist 'utopia' is feasible, or desirable (or another nightmare in disguise), is up to you. It may be that non-participation is not yet an option for the Digital Vegan. That may be the battle you need to fight. But if you don't, someone else will decide that for you.

Digital Diet and Detox

Turning the tide

TLDR; Stop helping them.

The thesis of this book is rather simple. Less is more. It is a call to disengagement and more careful, slower, deliberate and thoughtful relations with technology. Unlike texts pitched as self-help guides, I am not going to deny that positive changes are inescapably political. Change happens on a personal level, but also by expressed demands. You must change yourself *and* the world. Demands for digital privacy, dignity, transparency, freedom, protection of children, defence of basic rights and the pursuit of justice under the rule of law are things that nobody should should feel bad about insisting upon. You should not be browbeaten into believing they are unobtainable just because computers came along. On the contrary, digital technology has increased the pace and urgency of all historical struggles for social justice and a good, sustainable life.

While the politics of Digital Veganism are aligned with Gandhi's strategy of non-cooperation – stop feeding the enemy – there are other active steps you can take. Domination cannot be defeated by wasting time on social media, which dignifies it with value as contentious ground, which it is *not*. Social media is a problem and it cannot be beaten by going there to argue against it. Obviously, that only serves the enemy by bringing the battle to it, to its own platform, where it's easy to monitor and manipulate resistance. Use the liberty of movement while you can. Take the battle elsewhere. To *your* ground. Ranting on Facebook or Twitter monetises your discontent. It uses algorithms to wield your own

mind in a struggle against yourself. Please don't promote this book or these ideas on 'social media' where the response will be anger caused by fear of moral judgement. Social media users are not 'bad people', but one cannot even quietly point out the harms their actions cause without making them *feel that way*.

The only way to win is to rewire the internet to serve your interests. There can be no appeal to authority here; you must do it yourself. Not because 'authority' is to be disrespected out of hand, but because it is hopelessly incompetent and in disarray itself. Nobody knows how to control Facebook and Google. Right now 'authority' is not to be feared, it needs help. Contrary to the commonly held 'history of the internet', it is *more* of a Wild West than ever, because of, not despite, the rise of multiple powers seeking control.

Certainly it's more important than ever for young people to learn to program, to swear never to work for these behemoths, never be lured by their money. Stop supplicating their systems and learn to participate in, or at least try to use alternative Libre (GPL), distributed and friendly software which restores control to the people. Now, as Keren Elazari comments, *the internet's immune system* has been triggered [133]. Make sure you're on the right side of it.

After Snowden exposed the NSA's corruption, some activists ran a campaign called Intel-Exit, to persuade intelligence workers to quit their jobs. For complex reasons, I think that was misguided. However, the general principle of advocating coordinated disengagement is a legitimate and powerful weapon. I hope something like this is brewing for Google and Facebook. If "Techxit", a morally principled 'walkout' of programmers and system administrators were to occur, the Big Tech sector would be brought to its knees and corrected in short order. What stops people is *learned helplessness* (see Selig 1972) [134]. I think that young people no longer know their power and potential. The young always have at least *one* invincible superpower... they will outlive the old order. As Max Planck put it:

"A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it."

Maybe Google and Facebook are like Santa Claus and The Tooth Fairy. They were fun for a while. It's not so much that the Tech Giants will die as we will all just outgrow them. No amount of technological supremacy can outpace a cultural sea-change. In the 1920's, futurology and techno-mysticism were fashionable. Moving walkways in the sky were 'inevitable'. One hundred years later Cosmist Futurism is popular again. But these mantras of 'inevitable necessity' are psychological warfare waged by those set to benefit from over-connection to centralised power.

The path of science and technology is always a more complex one, driven by discoveries, capital investment and innovation, yes. Driven by war and fights against disease, yes. But also beset by world events, cultural paradigm shifts, emerging desires and taboos. More than anything, progress is driven by the moral values of people who strive for a better world. It is driven by *belief* in *the good life*. Deep cynicism around digital technology today is a profound threat to progress. The chasm between our stated values as professionals and the reality of institutions is captured well by physicist Jeff Schmidt, author of *Disciplined Minds*. Like all who speak the truth too clearly, Schmidt was fired for his book that reminds us we are forced to conduct the moral battle for humane progress deep within our institutions [135].

Supposed ideas of "where society is headed" or what are "vital necessities to our way of life", are the ravings of shaman and soothsayers. The loudest voices are always those that stand to profit from *solutionism*. We need to aggressively challenge these ideas and put humankind back on course toward technological morality. The truth is that nobody knows what the future holds. Things are immensely volatile at this moment in history. The tiniest of projects could set off landslides of change toward a world unrecognisable in ten years, because just one young person reading this book decides they've had enough of negative, corrosive tech, and rather than work for Facebook or Google, builds something radically different of their own. Hackers have the power. Those of us who work in IT, as developers and administrators have a special responsibility to stop feeding the doomsday machine. Otherwise, as consumers of Big Tech we weave the rope to hang ourselves. Not just to eliminate our own professional agency, but to ruin the future for our children. Be resolute. Don't hedge half-alliances. Ask, why would Google's *Summer of Code* programme give away 'free money'? Why would Facebook back your project or programming language? What 'altruistic' aims do Microsoft have in taking control of GitHub, the industrial heart of Free Software culture?

Part of my job, as I see it, is helping students to take care of their ethical career development. Is a *Linked-In* profile really a way to stand out as an independent, innovative professional? Maybe you'd be better off *not* taking that sponsorship or scholarship that asks you to sell your soul. Maybe a quiet, smaller self-hosted or federated community would be much better for your project than the big city of GitHub. Maybe absorb the extra cost of hosting with a more independent provider than Amazon, and enjoy a better quality of support relationship.

Let's stop treating tech corporations like clubs and football teams, or cheering them when they deign to throw us a few crumbs like feudal lords. In Southern Italy there is an important wisdom, echoed by William Burroughs, "Be careful whose money you take!" If we cannot distinguish oppressors from friends, and cannot distinguish what is ours from the realm of enemies, how can we fight domination?
On the Splinternets

TLDR; There are alternatives.

It's clearly time to abandon centralised social media, *en masse*. Unfortunately the first question that comes up for most of us is not how to manage abstinence, but what alternatives exist. A cultural exodus has already begun in the tech-savvy enclaves of California. Traditionally, geek leadership filters down to the public after a few years. But that is not fast enough.

One trap is our conceit of "The Internet", as if it were a single thing. Originally, computer scientists used a plural form, talking about "The internets", being networks of networks. The Internet, with a *capital I*, is a cultural and media construction. Today, what we really have is *The Splinternet*. In response to the corruption of the space by giant tech monopolies and intelligence gatherers, and sabotage by the old institutions of music, film and publishing industries, we now have multiple protocols and workflows. To escape the values of the monopoly giants, the internet is getting technically more diverse, less interoperable, and made of smaller communities.

Many technologies have entered cul-de-sacs and are dying. How technologies fare in the long term is hard to predict. Email has always been simple, but faulty as a protocol. Yet it will probably survive another half century with incremental improvements. Its fundamental *idea*, much like real street mailboxes which anyone can use, can be abused, but has enduring vitality. Contrast it to the domain name system (DNS). Along with HTTPS and domain certificates, DNS is likewise broken. It is a weakspot for bad hacking, failure, and privacy abuse. DNS is now exhibiting severe problems and many computer scientists think it should be dismantled. Unlike email, DNS is both cumbersome and unnecessary. The problem is that a profitable industry is built on the back of it. This is a common pattern in technology, for power to be entrenched in actually obsolete but profitable systems, so extending their life beyond what is good. Meanwhile, email which is not lucrative, is attacked as 'obsolete'. Big Tech monopolies increasingly foist their ideas of internet protocols on the world, bribing or short-circuiting standards and governing bodies.

Setting aside Big Tech services in favour of building new, and smaller digital communities, rests on distributed efforts, on Free Software, and on the courage of splinter groups to break away from Big Tech hegemony and form strong alliances upholding the older principles of democratic and meritocratic internet governance. Independent, Free Software is the third party in the game. It is the peoples' candidate. Education is sorely needed about how Libre software works, how it empowers end users, and why distributed and federated ownership is better than centralised systems. Restoring peer-to-peer relations is essential, as is the promotion of wholly decentralised double ratchet, anonymous strong end-to-end encryption. In almost all cases the sacrifice to be made is access to a smaller community. But if you think about it, most people connect to only a few hundred other individuals and services.

The landscape is ever changing, as independents struggle to grow before they are bought up or destroyed by legal manoeuvres of Big Tech. An important evolution must be new forms of *incorporation articles* that create companies that can never legally be acquired. This will certainly require a different investment incentive than 'venture capital'.

At the time of writing, Matrix software and GNUSocial are nearly viable, but people must be more widely educated about Tor, ZeroNet and IPFS; just some examples of the kind of technologies that could cut corporations and governments out of our private lives for good. Sir Tim Berners-Lee is heading several initiatives, but since Facebook, Google and Microsoft claim to 'support' those, we clearly need much more aggressive and radical changes. Even if it means splitting the internet and leaving the Tech Giants with the 'old internet', then so be it. To preserve democracy and innovation, this must happen.

Sadly, instead of recognising a weapon being used against them, people in other parts of the world are still embracing social media. In India and China, millions more flock to the digital mind prisons. India is now essentially a pseudo-democracy run through Facebook. Politically, this is dangerous. People join-up to, and are encouraged to 'organise' protests online. This amounts to entrapment. Anyone organising on centralised social media is doing so right under the nose of mass surveillance and the largely unfounded trust that Big Tech will not sell them out. Based on the events in Hong Kong in 2020, things are not looking good on that front. The idea that we might vote in general elections using digital technology moves us into the realms of the absurd if any semblance of free, fair and verifiable elections is to be preserved.

"Technology will save us", they say. What hope, if we cannot save technology? The mythology of Facebook and Twitter being engines of the 'Arab Spring' is still fresh – despite being a partial history, one obviously amplified by those companies after the fact to capitalise on a pro-democracy ticket. But the unheard truth of that story is of good hackers and grass-roots communication system experts, the IRC channels, the encryption and steganography and midnight coders risking their lives to put together obsolete computers and old modems when Big Tech kowtows to oppressive regimes. This is the real story of how technology can save us. It is the story of fearless independent hackers.

The basic problem is that corporate communications firms will always put making money before human values. That's not even a moral judgement, they are legally compelled by shareholders to do so. As mass spyware, configured for selling our data to advertisers, it is inherently unsafe from a cybersecurity viewpoint. No journalist or politically active person should ever rely on corporate tech, except as cover traffic to 'appear normal'. The same is indubitably good advice to local councillors, doctors, or anyone in business who has a trade secret or unpatented design to develop.

More generally, there is a strong case for dropping your smartphone into the recycling. Whether it's made by Google, Huawei or Apple, binning it would be a shrewd move right now, while you still have the option. There is a moment in every descent when we know there will soon be no turning back, and that moment is coming for humanity with respect to digital dependency. Under the pretext of public health or financial regulation, smartphones may become digital identity cards, and then we will all be subjected to mandatory lifetime tracking, like farm animals. For those who simply cannot separate, phones like OpenMoko, PinePhone and Librem which use dignity-respecting operating systems like PureOS are emerging as solutions to Apple and Google's compromised systems.

Space, focus and calm

TLDR; Make room for you.

Space is such an important concept. Head space. Body space, thinking space. The word has been overloaded, perhaps by psycho-therapeutic language. In the digital world, space has been redefined by The Cloud and in cybersecurity by the 'disappearance of the perimeter'. For John Perry Barlow, who wrote the seminal *A declaration of the Independence of Cyberspace*, electronic space ('cyberspace') was both infinite and infinitely malleable [136].

Ubiquitous mass surveillance has robbed us of our sense of personal space, belonging and safety. We now live in the deadland, the technological cactus-land of non-places, ubiquitous brands built from the corporate architecture of steel, glass, barriers, cameras, elevators, escalators and touch screens. Creating and preserving sacred spaces where quiet, private words may be spoken is a vital quest.

'Safe Spaces' are not just where we might be protected from difficult thoughts, but where we can explore those thoughts on *our own* terms, to grow stronger. Digital safe spaces are as important as the sanctity of the private family home. We can no longer have business meetings where people bring smart phones. Therapists and doctors are increasingly asking patients not just to switch off their phones, but to leave them outside the room. Schools that have taken down their CCTV cameras and banned smartphones are winning the approval not just of parents, but of pupils who openly welcome digital-free spaces. There is also the idea of information space. Ironically, in geek culture *circa* 1990, the Internet was a retreat for the intellectually gregarious but inter-personally shy. Today it's what we flee *from* in search of clarity. To solve the problem of digital incursion we must gather our thoughts and refocus. So eroded are our attention spans and unaided mental capacities we are losing the ability to navigate information spaces, to process complex multidimensional information or carefully research facts and theories. We cannot discuss in calm and rational tones, *what is to be done*.

Before we can struggle against anything, we must first win the struggle to take back tech from systems that try to define our space. Facebook is *not* a space, a place where you can go, and then choose to leave. It comes *into* your unguarded space as a barbed penetrating intrusion that you will have to cut away a part of yourself to get free of it.

In order to extricate and decamp for new lands, we need a map, and calm thought. Leaving some Big Tech digital services is complex and time consuming, so you may need to set aside several days to close your accounts. Simply deleting an app from your smartphone may not do all or any of the things you hope it should. Like a disease it can recur, or have ongoing side effects.

Third party services exist to help you escape. It is not something you can do while stressed and in a panic. Fleeing in an emotionally charged state usually leads us back to a source of pain. Exiting a toxic relationship takes planning. Getting professional help may also be necessary to understand the four stages of recovery;

- 1. Motivation is recognising a problem and understanding the need to fix it. Close friends and family are vital in this step.
- 2. Detox is removal of the damaging influence.
- 3. Maintenance is what we need *space* for. It's the hardest part and needs willpower, patience and support.
- 4. Rehabilitation is the last stage where we recover the skills and happiness lost during addiction. Even with social media and smartphone abuse this can involve neurochemical changes that take years to rebalance.

My own theory is that toxic technology is not just an addiction but a societal trauma. What I think we are seeing is an entire generation suffering from PTSD, frightened, screaming at meaningless systematisation, at algorithms that run their lives, at eyes in the walls and bugs under their beds. They want out, but don't know how to flee. Trauma causes you to freeze.

One of the most depressing reports I have ever read, up there with climate reports on the dying oceans, mass extinction, and peak oil is a 2017 PEW study [137] based on interviewing experts about an encroaching *Internet of things*. I have not read such a pit of hopelessness and defeatism in my entire life. Each expert, among them professors of sociology, computer science, politics and economics, bemoaned the 'impossibility' of escaping total technological enslavement. Each tried to outdo the others in painting a bleaker picture of our 'inevitable' descent into technofascism.

What left me feeling so sad was not that for one moment I thought it might be true "because other experts thought so" – obviously experts can disagree – but I am also astounded by the lack of imagination of fellow scientists. It left me realising that the solutions to our technological problems cannot come from experts who are profoundly over-invested and cannot see the wood for the trees. More worrying is that our profession has been the subject of 'capture'. Part of the way forward must be funding truly independent computer scientists and a sea-change in the ethics around university research.

A thesis that my partner, attachment based psychoanalytic psychotherapist Kate Brown, presented some years ago at the Goldsmiths University conference on *Confiscated Futures*, and a theme Cory Doctorow recently explored in his non-fiction writing, is of mass trauma and PTSD writ large. Our society is in a state of 'shock and disbelief' at the rapid loss of human values and democracy to industrial systematisation.

Symptoms seen in individuals, like splitting, dissociation and rumination are increasingly seen expressed on a societal level. As explained by Judith Lewis Herman in her book on *Trauma and Recovery* [138] the conflict between our needs to deny terrible events, and our need to express and process them aloud, is the root of trauma. Truths must be heard, and recognised as truths to allow grief, and to let a society move forward.

For actual wars, we have mechanisms to cope with loss. We have Remembrance and Holocaust days. Past wars are fitted to a coherent historical narrative. But since the late 1940's, Western society has been through a series of unresolved traumatic events. The assassinations of Kennedy, Gandhi and Martin Luther King, wars in Iraq and Afghanistan, the World Trade Centre attacks, Abu Ghraib and Guantanamo Bay, Snowden's revelations up to the recent show-trials and political imprisonment of journalists in the West, have been a long falling down since the Greatest Generation gave their lives.

A symptom of trauma is collective dissociation. It is as if we keep trying to 'wake up', to become *aware* once again. Thus the language of 'woke' culture emerges. It is, to use its own vocabulary, 'problematic'. Hungry for attachment, to be heard and to coordinate, we are driven deeper into the disinformation machinery of social media. Virtue-signalling becomes moral procrastination from *actual* quiet virtue, and while indignant, our energy is sapped by persecution narratives. This is the 'hopelessness' I saw in the PEW study on IoT, amongst what seemed to be predominantly white middle class, male academics.

Thus 'wokeness' itself becomes a focus of division and fear. It tokenises meaningful action. Sharing a meme feels good, 'socking it to *the man*', but it won't crumble the foundations of Babylon. Ironically, this over-connected group could effect a colossal impact on the machinery of technological domination by unplugging. Striking from schools as climate protest is well meaning, but tactically unsound. If Greta Thunberg could get a billion young people to switch off their phones for a week then we'd see some action. Besides, it would be good for their health, education, and the planet.

Rescuing good technology

TLDR; Babies and bathwater.

The anti-vax movement is a clear symptom of systemic societal trauma. The reputation of scientific expertise is damaged when people believe that science and technology are being used against them. A symptom of trauma is hyper-vigilance and paranoia. Traumatised people are poor at making subtle distinctions between imagined 'conspiracy theories' and *actual*, well documented abuses of technological power against the population.

This clearly relates to the basic concept of justice. Our failure to name and bring wrongdoers to account creates an accumulating moral debt that corrodes institutional trust. I suspect the internal mass surveillance programs of the NSA, GCHQ and other 'Five Eyes' nations have done as much damage as any foreign operations to destabilise western society. Loss of faith in one aspect of science and technology becomes a loss of faith in all. Even from the present Covid crisis, colossal corruption around the UK track-and-trace app is emerging. Each of these small misdeeds adds to the growing pile of suspicion and rejection.

This has led to a devaluation of scientific facts and the emergence of a '*Post Truth*' culture. Science makes an easy political football. Much of the infighting amongst the digital tribes attempts to use or abuse science. 'Facts' are deployed as if cards

in a game, by those with no epistemological knowledge of the history or philosophy of science, or sufficient scepticism to know that 'bare facts', as such, are non-existent.

One terrible mistake people make about 'bad science', is supposing it is merely based on poor evidence or method, or that its conclusions are logically flawed. Science is not to be judged only on its correctness. Neither science nor technology come as a bundle, to be admired or rejected in entirety. There is bad science that is evidenced but dangerous, such as eugenics. There is bad technology such as mass surveillance or biological warfare agents. And don't pretend it depends only on 'how people use it'. Moral relativism about science and technology is dishonourable cowardice.

If its correctness does not absolve bad science from human judgement, then to fight such science it is better not to dispute its truth but to accept its truth (where it is deserving), but then wholeheartedly reject its value. Relevance and utility to humanity are what make science 'good'. Our inability to separate out values, and deal with them rationally in this way, is compounded by a mass media that delights in deflating complex topics in the name of simplifying them. Once we can separate issues, we clearly see that most people's belief in the necessity and effectiveness of vaccines is not actually in question. They just don't trust governments that have systematically lied to them for 40 years. To label that 'anti-science' is dishonest.

There was a time when scientists would have taken this as self-evident, when we naturally spoke of science as an *apolitical* pursuit. Today, by conflating itself with capitalism, taking part in undignified public spectacles in social media, and regressing to a one-dimensional conceit of utility, to Blake's state of *Ulro*, science is damaging itself and heralding a new dark age.

Even while science can save us, with cleaner energy, medicine and better agriculture, we remain at war with now highly partisan technology. Because it is not <u>our</u> technology. The values now baked into digital systems: extraction, exploitation, and control, have upstaged other values like unifying, nurturing, and sharing that are equally valid and more desirable qualities. These are not faults of technology in general, or the 'inevitable fruits of science'. Bad people made bad choices for these bad things to happen.

When we forgot to ask "progress towards what?", a blind spot clouded our vision... where we cannot see *bad technology*. Technological evil is far more that just nerve gas and machine guns. It can have a friendly face and come to help us solve problems. It gives us fish, but refuses to teach us *how to* fish. It becomes a servant that insinuates itself and then refuses to leave. Good technology that explains itself, then seeks to eliminate its own necessity is something humankind has barely even glimpsed, let alone understood. For now, technology remains an instrument of power, and as such we do, and should, have an ambivalent relation to it.

Thus we face the old problem of babies and bathwater. The failure of communications technology to discipline itself as a positive social force, aside from obvious motives of fast profit and political machinations, is now causing a *real* Luddite backlash. In the absence of rational, measured tech critique, informed by experts who are not beholden to corporate or government masters, we now have Anti-Vaxers and 5G-Covid wingnuts, Flat Earthers and a former US president who speculated on the benefits of ingesting disinfectant.

Torches and pitchforks

TLDR; Burn it down!

I use science fiction and classic horror extensively in my teaching of Digital Self Defence. In a hackneyed trope, the Mad Scientist hides the Monster in a basement while the Mob gather outside ready to burn down the Laboratory (gratuitous capitals emphasise these *archetypes*). What we are seeing, is a crowd who would rather destroy science and technology than have the courage to take it back.

Mary Shelley was a beacon. She wished that science could have saved her mother who died in her childbirth. She grew up in the company of male intellectuals, chemists, poets and pioneers who were into animism (proto-neuroscientists who spent their time electrifying dead frogs). Like Ada Lovelace (with whom she was tangentially connected) she saw the inner light of science, and its shadow. Personified, as she paints it;

"I have love in me the likes of which you can scarcely imagine and rage the likes of which you would not believe. If I cannot satisfy the one, I will indulge the other." — Mary Shelley, Frankenstein

One result of our disenfranchisement from technology is a disconnect and growing disrespect for experts. We distrust the millions of good scientists who are working to make a better world and bring enabling truths to light. The Mob is a reaction, not to the potential of science but to its shadow. Google and Facebook are Dr. Frankenstein's monsters. The populist milieu celebrates the ignorance of 'the people', and sets it against '*elites*' whose advice is always to be mistrusted as conspiracy. Issac Asimov denounced Western antiintellectualism, a "what do they know?" culture, as a dark side of technological democracies. In the USA, lionising wilful ignorance went mainstream under the Trump administration during the Covid pandemic. But these are not the same '*elites*' as the 0.01% who hold capital wealth and are almost entirely ignorant of science and culture, except insofar as it might threaten their position.

As daily deceptions, safety and security are used as dishonest covers for control and profit. This further erodes the trust of people in the majority of good scientists, who work extraordinarily hard for good, but are assumed to be complicit in 'elite machinations'. Don't imagine that universities attract and concentrate any fewer psychopaths than corporations do. Pursuit of shallow personal advancement and profit plagues both camps. The greatest enemy of good scientists today is therefore not the anti-vac crowd, uneducated mobs, religious people, antiabortionists or climate protesters, it is *other* scientists who have no moral compass, and bring our whole endeavour into disrepute.

Even though the pandemic briefly made science sexy again, we have a long-standing PR problem in STEM. A small number of people who horribly and selfishly abuse technology tar us all with the same brush. We are responsible, as technologists, because we fail to more actively bring them down a peg or two and call out their lies. I am disgusted that the face of Science is L'Oreal, and that technobabble dominates marketing of pharmaceuticals, household products and digital technology without any riposte from *actual* scientists – most of whom cower in fear of having their research grants cut if they 'speak out'.

Seemingly absent from the agenda of the *The Union of Concerned Scientists* is the broader reputation of *science itself*. Science is a fragile thing. It requires humility, integrity, patience, and profoundly fallible honesty – basically the opposite of prevailing Western culture. It isn't in the culture of science to self-police. We rely exclusively on evidence. Apoliticism, an idea mentioned earlier, that scientists quaintly cling to, does not seem appropriate today. Indeed science has always been political, but we pretend otherwise, as if that engendered higher nobility. Science needs to face the problem of dirty hands in more ways than advising we wash them.

Because of this, scientists get played. We may have reached an era in human history where scientists need to be much more politically aware, and forceful in defence of humanity. In 2020, the journal *Scientific American* reluctantly broke with 175 years of neutrality by snubbing President Trump for "damaging society by ignoring evidence". I think it is also important for those of us who are truly thinking about the world, to denounce aspects of emerging technofascism. Scientists need to be more vocal that more technology is not better technology and dependency is not progress.

Can education save us?

TLDR; It's not the kids who need schooling.

Education can only do so much. Despite engaging and sensitive classes on contraception and careful sex, some girls and boys will still end up as teenage parents. We can have drugs awareness projects, and some kids will still get hooked. But we must still try, however inefficient and awkward such lessons are.

I mentioned earlier that maybe we ought to teach young people to hack, in order to fight back against digital abuse. Perhaps one reason we don't do this, is that we believe they already can! You see, a strange attitude that stops young people receiving proper education on technological dangers is the pernicious and ridiculous myth that "kids are wizards with computers and phones". We have clung to this folksy narrative of our 7 year old kids helping granny to send an email since it became a trope in 1980's TV and movies.

A powerful comparison was given to me by a colleague who works with immigrant communities. Often, when investigating family problems she encountered parents who do not speak English. But their children do. This meant that 6 year old's were left to translate to police and social workers, accounts of domestic abuse, intimate medical issues, financial problems, and even rape. Forcing children to prematurely become adults, to take on responsibilities in matters they cannot understand, is recognised in social work as abuse and neglect. The fact is, most kids know nothing about technology. When I was a ten year old we were able to build and program computers because they were relatively simple in 1980. Today's computer systems are immeasurably more complex. Even where they are able to simulate technical knowledge, by copying what they see, children still lack the social and political depth that contextualises their digital actions.

We have to ask, when it comes to 'online', who are the adults in the room here? Isn't our failure to engage with our children around smartphones and social media a reflection of our embarrassment and avoidance, created by our same ignorance of technology? Adults cannot care for and meet the needs of children if their own needs have never been met. Technical ignorance is therefore an accumulating inter-generational problem.

A generational reversal in which those assumed to 'be in charge' are pitifully failing their responsibilities is playing out in many spheres now. Child-like insults toward the erudite and sincere teenage climate activist Greta Thunberg from prominent politicians and media persons were simply embarrassing. Thunberg was patronised, ridiculed, called 'a turd' and 'a stupid brat'. Other than the First World War summed-up as '*Lions led by Donkeys*' I know of no other historical precedent for a younger generation making their elders look so weak, hopeless and immature.

The last generation to receive any semblance of real computing education was my own. After about 1990 western governments reversed the original project of digital literacy, realising it was dangerously empowering, and switched to a watered down programme of teaching Microsoft Word as so called 'ICT skills'. Generation X onward, indeed our whole millennial youth, have been robbed, not only of programming skills that would make them innovative competitors in a global technology market, but crucially, of the socio-political skills needed to understand and participate in the new digital world.

We teach our children not to accept sweets, or a stranger's offer of a 'ride home', because we ourselves understand these risks. Our belief that Big Tech like Google and Facebook is 'safe', because 'everybody else is doing it', is seductive but false. Ironically, when it comes to data abuses, there is no 'safety in numbers'. The more of us there are, the more attractive a target we all make.

What is desperately needed is indeed *education*, but it's completely missing from our schools. On offer is what comedian Stuart Lee called "Mr. Fox's guide to henhouse security" [139] – junk 'information and advice' written by the very people we should be protecting our kids *from*. Guides on "How to stay safe online" funded by consortiums of ISPs, smartphone manufactures, social media companies and data analytic firms are beyond laughable.

More worryingly, these same abusive companies are insinuating themselves into our school systems. In 2020 The Institute for Public Education for British Columbia wrote a critical report on the displacement of school's own ICT systems and educational software by Big Tech cloud systems that collect and sell our children's data [140].

A big problem is that most *teachers* are unaware of the issues. People in the cybersecurity and intelligence world are too well paid, and too busy to be giving classes to schoolkids – even though I think it is the highest priority for civic security. Organisations like the US National Security Agency (NSA) and the UK's National Cyber Security Centre (NCSC), which from their names we might imagine should be providing civic cybersecurity education, are derelict in this function.

This is partly because they are conflicted in their mission. Sabotaging cryptography and lobbying for communication backdoors show our intelligence services obtain a great advantage from weak digital security and a misinformed, ignorant and docile population. It is simply not in their interests to provide or support civic cyber-security education. This is a fundamental error in the structure and values of our society that is never discussed.

That's why I started teaching classes in *Digital Self Defence*, a mix between a 'crypto-party' and self-defence classes. Among my students have been lawyers, journalists, doctors, women at risk of violence, soldiers, academics working overseas, social workers and psychologists... a huge slice of professional life. But despite

my efforts, I have not yet been able to expand this programme to younger students.

What I see is a whole generation that has sadly fallen into the dependency trap of technological enslavement to corporate social media and surveillance capitalism. But what I have come to realise is that it's not their fault. We made a generation stupid to benefit ourselves. I am speaking to the tech community here, to my fellow computer scientists and security engineers.

Partly, I want to blame my disappointment at the lost promise of technological society on something external. Big Tech makes an obvious villain. But Google and Facebook are symptoms, not causes. They are what rushed in to fill the vacuum left by our societal dereliction.

Once the Computer User Groups, Newsgroups and BBS died at the end of the last century, we gave up on altruism and social stewardship as geeks. The 'Eternal September', when the internet went mainstream in 1993, marked the transition from an age of technological innocence and sharing to a dark age. We let our families and friends become prey to the corporate internet.

Admit it! Most of us knew what was coming. The common thing amongst all the smartest people I know is that they will admit nothing Snowden told us was a surprise, just a sinking disappointment. Indeed, even before it happened most of the hackers with attitude had sold out to grey 'security companies'. Yes, it was easier to just say "Sure, use Google" than help a colleague by fixing their computer. I even had a t-shirt that said "No, I will not fix your computer". But the fact is, we let them down. We let them give up free communications and generalpurpose computers that they owned and controlled for walled gardens and golden cages.

At the same time, the education system abandoned them. Schools and universities are now in the pockets of 'edutech' companies, so they have no rational interest in delivering enabling technical education. Apprenticeships and fast-track vocational courses designed by companies like Cisco, Google and Siemens are displacing real computer science degrees. For twenty years, while we taught Microsoft Excel instead of programming, education that could make students masters of their own technology was squandered. We lost two generations of innovators. I firmly believe that Microsoft set back western computing by a couple of decades. In place of innovators with skills that might *really* challenge the corporate status quo, we have created more guards for the castle. A decent education in computer science is increasingly looking radical and subversive, and must be obtained outside of, despite and not through, the official education system.

The information age was a lie, for everybody but the powerful. Western civilisation, viz democratic capitalism, is in the process of committing suicide by strangling its own innovation pipeline, through a mixture of censorship, copyright and patent law, and general abandonment of the rule of law. It will take us decades to catch up with China and India because of the damage deliberately being done by dumbing down our youth, just so that our corporations and governments can avoid dealing with the internal threat of an educated populace.

But unlike economics, leadership, or consumer behaviour which we cannot do much about directly, education can be fixed. Education is a value system at a root leverage point. All other things are symptoms. Admittedly, it would take two more generations for the fixes to filter through, and maybe we don't have that much time. But it's necessary to start somewhere.

Writer Daniel James, in his *The Fake Woke and the Shrinking Middle Class* gave an erudite account of this degeneration in the UK. From the deceit of student loans, to the corruption that ushered in the UK's 'New Universities' as property developers dressed up as educators, the last 30 years has been about selling out education. Benjamin Ginsberg in his 2013 masterpiece *The Fall of the Faculty* [141], and Wendy Brown in her 2015 *Undoing the Demos* [142] document a thirty year spiral of depression in higher education.

Trying to effect meaningful education is desperately hard for us as computer science professors. Neoliberal systematisation has driven so many good teachers from the university system. The choice is between high paying jobs, risky but fun start-up's or staying in teaching via marginal retreats, where we exist as adjuncts, associates, and zero hour temps in the disposable highered gig economy. What is left 'inside' the universities? Little but administrators, as Ginsberg documents in his account of the "all administrative faculty".

As professors, we need to have second 'real jobs' to subsidise our indulgence in teaching, research and other human callings. This is how those who might exercise conscience are kept away from the table. Now with Covid and the debt bubble, the universities, and the very project of functional civic education following from Horace Mann [143] is circling the drain. Where can this vital education on digital civics take place?

As the universities await the bursting of the student debt bubble and fallout from the pandemic, Big Tech companies move in like vultures. Google Career Certificates will soon be equivalent to a four-year degree when it hires staff. For universities, there seems to be a small window of opportunity left to offer a genuine value proposition before the higher education system falls to the media and tech-giants.

Rather than re-humanising the faculty we are moving in the opposite direction, sabotaging what is left of originality and passion from teachers. We are creating adversarial relations between staff and students, creating low-value templated, pedestrian courses based on dull video materials. These will not be able to compete with Coursera and other online educators who have had far more experience and have better technical infrastructure than the universities. Can education can save us? First we must save education. Parents, students, and teachers must stem the encroachment of Big Tech before it dominates our culture and values. Then our hope of teaching civic values like privacy, dignity and democracy will be lost.

Knowledge and power

TLDR; DIY.

Children as young as two or three years old exhibit normal expressions toward independence – to walk, dress, use the toilet and feed themselves. It is a powerful human life drive. Dependency and learned helplessness have to be taught, by oppression or neglect.

Our present state of dependency as adults is quite parochial. Throughout history people have made and mended things. Even in modern Britain, a densely-populated country, a popular selfsufficiency movement in the 1970's had millions of households growing more than half of their food. In the 1980's, at school we learned home economics, cookery, woodwork, needlework, metalwork, electronics and chemistry, simply because those were good things a human being should know.

We have mistaken the glut of information brought by computers as a substitute for knowledge and wisdom. We are no longer prepared to take responsibility for our minds, to carry the burden of self-education and active interest in the real world, to think and work things out, and build common-sense knowledge.

Largely erased from our history is millennia of popular folk wisdom and common good sense. We have abandoned shared knowledge. The problem with the modern concept of *'experts'*¹²

¹²'Experts' is quoted because while there are many people with extraordinary expertise, the media has created 'celebrity' talking heads experts and changed the culture around specialised knowledge. Perhaps the word 'pundits' is better.

is not a question of their valuable specialised knowledge, but of *our* culture of deference and dependency. The problem of experts is their hijacking by a hierarchical information structure. Experts are as much victims as everyone. We are set up like gladiators, and used as tools of 'policymakers' who have already decided their course.

A knowledge hierarchy substitutes for a power hierarchy on the sly. It skirts the established and official rules of control by building parallel systems of access. The military term 'deploy' is used to describe technology roll-out in this stealthy social reconfiguration. Those who deploy technology look down on 'users'. And they, in turn, are looked down on by 'developers'. Developers are the tools of 'Business and policy architects'. Users defer to administrators, administrators defer to vendors... It is disdain all the way down, and deference all the way up.

Any common, shared view of social technology, our collective responsibility for it, our ownership of it, has vanished. And because we are divided, we are vulnerable. That's why cybersecurity sucks. Authoritarian states like China and Russia, on the other hand, are coordinated and of single purpose.

Thus expertise does not resonate with 'the people', but sets itself up in opposition. Always in the popular press "Experts warn..." They never 'suggest' or 'opine'. On the other side, a 'know-nothing' arrogance feeds the divide. Because of this proxy power struggle taking place through information technology, our society is in epistemic disintegration.

An intelligent person naturally *seeks* the advice of experts and teachers. An intelligent person will ask a friend whose knowledge they respect, or find a local expert whose counsel they can pay for. Such 'friendly experts' have skin in the game and tend not to give bad advice to regular customers. An intelligent person will then make up their own mind.

Shared wisdom about technology disappeared in the 1990's, along with the 'computer guy', the local repair shop, programming classes in schools, and technological diversity. Under the present Big Tech monopolies we are *told* how to use our computers, how to interpret things, how to organise our lives. We seem to be

taking all the worst parts of communism, minus the egalitarian idea.

A specious argument is that this stuff is 'too complex' for us. But that's a lie. I teach it every day, and understand the mind of the average student. We have been actively corralled into laziness and stupidity as a means of profit and control. The most common thing I hear from my Digital Self Defence students is "Why doesn't everybody know this already?" So I explain that to teach empowering computing knowledge is now a radical act. There may come a time when it is considered subversive.

Take the Covid pandemic. It should be obvious to anyone that keeping away from others and wearing a mask are beneficial. That's stuff my grandmother knew. Indeed, many people were isolating *long* before governments offered that advice. But the vast majority had to be told, and then 'alternative experts' (perhaps paid by 'alternative' economic interests) came along with 'alternative facts' to argue about it.

Knowledge hierarchy, a media spectacle with policy makers at the top, a middle class of experts to proclaim their bidding, and a mass of stupefied users at the bottom, is not scientific progress. It is a recent condition. Few people know that prior to the industrial revolution, potters, carpenters and blacksmiths once used their surplus income to hire readers, so they could enjoy classics of the canon while they laboured. Amateur science and innovation were the norm. We saw no contradiction in the idea that vocational workers were some of the best-educated people. It is only a product of 'scientific' management that Huxley's [90] caste system ranging from Alphas to Epsilons has prevailed.

As Orwell held, literacy and practical engineering skills amongst the working classes, were, in volume and intellectual difficulty, far superior to that of the gentry, who were not just idle, but intellectually incurious. Factory industrialisation ensured that workers had no spare capacity for study or self development.

Can we reverse this, to retake tech? What would a populist intellectual renaissance even look like? Is there something latent in society that's bigger than 'hobbyists and tinkerers' as the Free Software movement and start-up companies are disparaged? Or are we doomed to be unthinking slaves to technology? The narrative we are currently immersed in is that people are stupid and lazy 'utility maximisers'. We 'need' to be told what to do, given the illusion of choice, but have our agency replaced by machines. Because in the end that's what we *want*. Is that true? Is this what *you* want?

The first step is to realise that's *probably not* what we want. The question has to be asked, simply and honestly: "Do we wish to be enslaved in a non-democratic regime?" I suspect the answer from a great many people, if they answered honestly, would be "Yes, as long as you don't take away my iPhone". We are too distant from WWII and the horrors of the camps to understand the question. However, I don't think the willing victims would be in the majority. That raises the further question of what is to be done about them by the majority on the side of long-term social justice and freedom?

I think there is great hope to topple the tech power elites from beneath. The world has always been pushed forward by amateur scientists, not professionals, who are a recent breed. Historically, people had more leisure time, even in agrarian cultures, than a middle class professional besieged by make-work technological process has today. The free open source movement and those mobilising for privacy reflect that surplus intellectual capital. While things like the fabrication of semiconductors are beyond popular capability right now, the problems are not insurmountable.

Certainly, an Isaac Newton or Copernicus of their ages had wealth and time to study. They also had connections to publish, and circles of stimulating friends to converse with. But the idea that brilliance and success is only a product of privileged education and institutional support is untrue. Money confers rather little motive. For every Newton there were dozens of decadent libertines in opium dens. On the other hand, scores of scientists came from poverty, built their own laboratories, and changed the world.

They would have less hope of emerging in today's impenetrable 'professional' scientific world. That's partly due to the privatisation and paywalling of science by giant publishers like Elsevier who horde the world's knowledge. Again, the popular 'information age' is something of a lie, one that Aaron Swartz [144] set out to put right, and which Alexandra Elbakyan [145] continues to fight for today.

Brilliant ideas are ten-a-penny. The difference is having the means and the opportunity to try, test, experiment and grow them. Our society awards means and opportunities to select for ideas that preserve power. As established power gets more control over all our communications, it gets better at neutralising threatening ideas. Presently it uses copyright and platform access as ways to slap down threats. The new gentry of Silicon Valley 'tech leaders' are not so different or special. Even when Apple were making the *1984* advert, they knew perfectly well that the whole 'computing freedom' shtick was empty.

Some tech entrepreneurs climb from modest backgrounds, but as many are from existing wealth, which means they can afford to play with ideas and fail while other smarter minds need to work for a living. For the most part, tech-giants feed on popular technology. They appropriate Free Open Source software, and acquire start-ups to stifle or control new products. The real hope is that we massively outnumber them. Even if they were coordinated, the combined might of Google, Amazon, Apple and Microsoft is about a million employees. The number of technically educated people in the world is hundreds of times that.

A popular technical renaissance does not require that everyone become a coder and network engineer, no more than a Vegan food economy requires that everyone return to growing their own vegetables. It simply requires a widespread and influential understanding of the issues that would make technofascism impossible. We can, and I think we will return the technology industry to being servants of our needs instead of new rulers.

Libre Software

TLDR; Eat yourself fitter.

For a Digital Vegan, Libre software (also called 'Free' software) is the organic wholefood store of technology. Libre software respects freedoms and enables user communities to defend against being controlled by companies. Strength lies not only in the software design and its licence, but the community around it.

That does not mean Libre software can't be used to do harm. Indeed, all of the Tech Giants are built upon Libre code. But it affords you and others important rights to examine and change the code. It ensures other developers are free to compete and offer better technology that respects your dignity. It therefore supports the true spirit of competitive markets and works against monopoly power.

The original culture of software was such that people freely shared it. Companies selling software obtained laws that made program code subject to copyright. Libre software is generally recognised to have begun with the GNU operating system, an alternative to proprietary operating systems like Microsoft Windows. Since the mid 1980's users and developers of GNU software have been active advocates of Free Software, forming a powerful movement that has changed the world and done wonders to advance computer science and popular technology alike. The Free Software Foundation (FSF), an organisation created by computer scientist Richard Stallman, who also launched GNU, promotes software freedom. In the early 1990's Finnish hacker Linus Torvalds created a vital missing component, a kernal called *Linux*, which enabled the GNU operating system to be run without some other system underneath. Though many variants exist, a popular Libre operating system is called Debian GNU/Linux. It was founded by Ian Murdock and Debra Lynn (the name being a composite of their forenames), and extols the credo of Libre Software through documents by Bruce Perens which create a 'social contract' between developers and users. These set out the egalitarian basis of a software lineage that now includes Ubuntu amongst its many progeny. Google's Android operating system also uses a Linux kernel, and while Linux is a component shared by Android and GNU, Android is locked down and proprietary whereas GNU is Libre.

Software freedom is promoted by the method of 'copyleft'. What makes copyleft software clever, is that like Aikido, it uses the enemy's strengths against him. The enemy is a victim of greed. Being selfish and unjust, he wants to restrict the way people use computers and software. Unlike a tangible good, all code is reproducible infinitely for zero cost. This eliminates the scarcity criterion on which capitalism rests. Profit is maintained by stopping us from cooperating and sharing knowledge.

Copyright, which asserts that symbolic representations of ideas can be owned, thus seems to rescue a corrupt version of capitalism based on contrived scarcity. Using copyright, 'licences' may be applied to software which then control the behaviour of anyone using it. Licensing in itself is a uncontroversial facet of contract law, respected by almost everyone. However, proprietary software usually comes with onerous licences which restrict the users' basic freedoms to run programs as they wish, and to copy, study, modify and redistribute them.

Stallman executes an audacious masterstroke and re-purposes copyright, by writing a copyleft licence called the GNU General Public Licence (GPL). Libre software leverages this licence not to restrict but to enforce freedoms. Like Rousseau, Stallman compels us to be free. The GPL says that you can only use or redistribute software if you respect its four freedoms:

- freedom to run the program as you please for any purpose
- freedom to study the program and modify it to work as you like
- freedom to redistribute the program to anyone while affording the same rights
- freedom to redistribute modified versions that afford the same rights

This last freedom is important. The GPL places obligations to preserve freedom upon distributors of any modified copies. Thus it is sometimes called a 'viral' licence, in that it spreads freedom. So long as Libre software is not damaged by encumbrances such as Digital Restrictions Management (DRM), or run on locked down hardware or hardware with backdoors, it gives broad 'digital health' protections to users. It allows you to know what your computer is doing, and if you don't like that, to change it and make it behave properly, and then help others benefit from your efforts. In addition to Libre-Free software, there are other kinds of Free Software (non-copyleft) such as those based on OpenBSD and NetBSD. These actually offer more secure operating systems than those obtainable with the Linux kernel, by being simpler.

Both a strength and weakness of Free Software is that it is sometimes maintained by volunteers who are unpaid ¹³. As such they are less corrupted by power relations, but also they rely on donations and handouts for funding, and are less coordinated in their operations. To some extent the FSF helps with this. Stallman has written extensively on the social philosophy of Libre software, the injustice, and societal dangers of misusing copyright and patent law in digital technology. His most notable book, foreworded by Lawrence Lessig and Joshua Gay, is the 2002 *Free Software, Free Society* [146].

 $^{^{13}{\}rm See}$ 'Postel decentralisation' and RFC2468 (This footnote inspired by the departure of dhcpd maintainer Roy Marples 2021.)

Practising Digital Veganism

TLDR; There is no 'try'.

Back to practical values. Being a Digital Vegan is certainly helped by using only Libre software and fully open, ecologically friendly hardware. But it is more than that. It is an attitude toward subtle harms and impositions. By analogy, a Vegan might eat only organic vegetables, but unwittingly use cosmetics tested cruelly on animals, or buy ivory products. Digital Veganism requires we are mindful of the provenance, external costs and consequences of *all* our technology and services. For those who like lists and tables, here's a few keywords;

minimalism	transparency
single functionalism	interoperability
resilience	privacy
appropriate anonymity	security
choice	flat structure
maintainability	reuse
modularity	repairable
clarity	stability
dignity	self-determination
anarchic governance	recyclable

These words are meaningless in isolation, and are open to individual interpretation. The question is, how do you apply them? For example, I am personally never an early adopter. That fits the 'stability' criterion. It goes well with the job of security engineering, not to be over-enthusiastic about every new thing. Besides, after a few decades you've seen it all before. I'm on the third turn of the VR hype-cycle and the second turn of the AI hype-cycle in my life. Let others iron out the kinks. The second mouse gets the cheese.

Confidence in your mastery of technology is important. If you do not feel in control of technology then you will allow it to control you. A computer or phone is a tool to *serve you*. If it behaves in a way that you do not understand or you do not want, that is unacceptable. Then it is time to find out why, and to fix it. The old adage of "Computer says no" is about those who are helplessly deferential to technology.

It therefore helps to really know what you *want* technology to do. What do you want it *for*? As an example, there is no domain I need to compete in where faster technology can outweigh my skill and experience. That fits with the 'good enough' criterion of minimalism. Ninety nine percent of the work I do as a human is thinking – then I hit the return key and let the machine do a billion times as much work in a split second. It hardly matters whether it does one billion or ten billion operations per second.

This is called intelligence amplification (IA) as opposed to AI (the opposite project which aims to replace human thinking). As levers of intelligence computers are so unbelievably awesome that it doesn't matter whether I have the latest Apple CPU, or a 1990 486 PC. Like the guy in the expensive red sports car, it is mainly people who are compensating for some missing part of their human capacity with super powerful computers.

On a similar tip I have met other Digital Vegans who don't mind *old* computers, for different reasons. Even accounting for power inefficiency, reuse is good for the environment. Repurposing things like games consoles or routers that would end up a landfill makes sense. There is an obvious overlap and affinity with the 'Maker and Repair' movements.

But we've also entered a strange era where often it's older technology that's *more secure*! Weaknesses in the newest micro-

processors or hardware, like those made by Intel or Cisco, mean that sometimes the best solution is a less powerful, older machine.

As a rule, Digital Vegans prefer wholesome Libre/Open Software (preferably GPL), and we like open hardware for which component functions and provenance are verifiable. We avoid proprietary 'black boxes', insecure by design and bloated. The ethos of the Debian operating system and the technical integrity of BSD are to be admired.

Overall, the idea of being a Digital Vegan is quite pragmatic, rather than an ideal. It's a long game for the better health of our shared digital futures. Most of it is what you *don't do*.

It is about small, meaningful steps which on their own may not seem terribly effective. For example, one cannot enjoy total privacy and security. But that is no reason to not bother with any. The idea is to make life for adversaries harder. Like putting locks on your door. Locks won't stop determined burglars. But they do raise the bar against casual trespass.

Screen-time management is a simple Digital Vegan practice. Manage your availability too, with regular switch-off times. Some friends tell me that they have 'analogue weekends'. At 5pm on a Friday all phones and tablets go in a drawer until 9am on Monday morning. The weekend is only for human activities, riding and fixing bikes, playing with the kids, walks and swimming, baking, DIY, gardening, making music, and seeing friends face to face. Maintaining resolve needs effort. People actually get scared thinking about reducing technology use. Feeling threatened by imagined loss of control is a big obstacle.

The most effective activities are habit forming. It's a great benefit to do things that create and maintain self-discipline and awareness. Such behaviour is like manners. On the face of it manners are just rote-learned protocol. Saying please and thank you are habits, but *good manners* become genuinely thinking about others' needs and feelings.

When personal computers first came into our homes, schools used to teach good digital manners, which we called *Netiquette*. Things like considering whether to reply to an angry email, or share a joke to all your contacts were part of university in the 1980's where we had lessons in Netiquette before being allowed onto the Unix network.

Habit is really important. The nature of technology is that things that seem tedious the first time soon become invisible second nature. It's a danger and a blessing. If you get into the habit of thinking about actions that involve other people's data (hint: almost *everything* involves someone else's online privacy), it soon makes you painfully aware of how you can accidentally harm others. I habitually use Tor, because it's better to use it for everything by default than to choose on a case-by-case basis. The 'good mannered' choice to *not* use Tor is for large downloads that would strain the network.

Habit is also important from another viewpoint. It is good to think like a recovering addict. The truth is, addicts are *always in recovery*. In other words, be *mindful* of your technology use that could trigger a domino effect of bad life choices. Watch those little things you do too much. Using card payment instead of cash isn't something I totally avoid, but if I spot I am doing it too much then it's time to rethink my behaviours and the consequences.

It's about purposeful balance. Avoiding obsessive behaviour and being realistic is important. I know some Vegans who would not eat a cake because it had been made in the same kitchen as non-vegan produce. That kind of silliness happens with some privacy advocates. If there's any attack possible, if its not 100% secure and private, then they feel "what's the point?" This is selfdefeating. For example, Tor affords far from foolproof anonymity, but it's *good enough* for me. I just require the dignity and peace of mind that nobody but global intelligence operations, with great effort, can casually snoop.

Making risk assessments is a core skill. In some ways the risk model of technology is like bad diet, drinking and smoking. You can make more or less good choices which proportionately affect your health. That's the metaphor I am pressing in this book. It is one that allows hope and measured change. On the other hand there is also a risk model in cyber-security that is more like Russian roulette. A technology user is also like someone who tries to eat normally in a world where one in every hundred pieces of food is lethally poisoned. Installing the wrong app on your phone or a single careless click can undo everything.

With the former kinds of risk it is better to play the game well than to not play at all. With the latter type of risk the only winning strategy is not to play. In my judgement, as a teacher of computer security, our corporate-made digital products are now faulted with so many threats as to make them unworkable. They are strewn with bugs, deliberate backdoors, disinformation, criminal malware, tracking, cons and deceptions, dying batteries, designed obsolescence, remote interference, exposed personal data, risk of theft... so much trouble that it tips the balance to where their experienced utility is far outweighed by their burden. In short, smart phones ain't worth the hassle. But there are alternatives.

Life as a Digital Vegan shouldn't be one of starvation or punitive self-control. It's about uncompromisingly seeking ways of living in a connected world that doesn't harm ourselves or feed the parasites sucking on humanity. With sincere respect to those who suffer that awful disease, we are not digital *anorexics*. However, when it comes to smartphones, at the time of writing my recommendation would be total abstinence. At least until major legal or technical reforms have changed the entire landscape around surveillance capitalism, the best thing to do is ditch them for the simplest dumb phone you can find.

Two seemingly immiscible attitudes need to be blended. One is earnestness and the other is levity. Making something a matter of principle, and sticking to it, is hard work. If your team want to use *Google Docs*, and you are the sole objector who says "sorry that's non-negotiable", you must be able to argue doggedly. You must be persuasive and elegant, but uncompromising, and that can only happen if you deeply believe in what you are saying.

On the other hand, lightness is important too. Flippant and Ludic, the Digital Vegan banner may have power precisely because it isn't so serious. It is a bit disarming, maybe. We need no appeal to identity, class, status or station. Thus we Digital Vegans can mock ourselves a little, with no real need to preach about what is self-evidently rotten food. As a fun identity, Digital Veganism can be an alternative. It's necessary for digital rights activists not to get stuck behind the cart of corpses forming the funeral procession of the old political Left, or the selfish entitlement of the libertarian New Age. Politics of envy, resentment, decrying privilege, economic power, male domination, and so forth; sure, those things are real and pressing things. But they are nothing compared to the urgency with which we must challenge the immediate oppressive effects of dangerous technology.

In the ludic spirit of hackers, Digital Vegans are creative. As developers we insist on the right to grow our own, to write, modify and freely share our own software. But so should everyone. Your right to build or repair your own hardware and software, to create your own networks of communication, is what defines you as a citizen of a technological society, and not a slave. It's an attitude we should cultivate at elementary school, to travel with us through life. And I could go a little further, and say that personal technological mastery is a *responsibility*, not just a right. Like the owners of cars and firearms, we can do a great deal of damage to others when we misuse technology, not through knowledge but through ignorance.

Helping others

TLDR; No good deed goes unpunished.

People do not like others criticising their lifestyles. At worst, having your faults criticised evokes a 'reverse psychology'. People are prone to dig-in their heels. Vegans, vegetarians and other 'green' living folks often upset others they want to influence by speaking in a way that comes across as accusatory or superior. We sometimes fear losing friendships by preaching. Yet in many ways, a mark of a close friendship is exactly that deep care, to risk telling a friend you disapprove or don't want to see them hurt, plus the reciprocal ability to hear it.

For decades, mainstream culture, egged on by commerce and government which benefit from poor security, has dismissed good personal computer security. People like myself have been ridiculed, and labelled, 'privacy nutcases', 'unrealistic idealists' and wearers of 'tinfoil hats'. Today the chickens are coming home to roost. Privacy and the abuses of data by Big Tech are becoming a mainstream concern.

Therefore a Digital Vegan does have an evangelising edge. We are not just practitioners of healthy technology, but advocates of it. And obviously that rubs people up the wrong way. I know because as a meat eater, *actual* vegans annoy me with the same thing. "How can you do that to your body?", they ask, peering haughtily over their iPhone. "How can you do that to your soul, our society and our children's future?", I ask. But as Digital Vegans we must be patient with those who are less aware, or filled with bluster and imagine themselves immune. We try to lead by example. Often that involves making sacrifices, putting yourself last and forgoing easy career advancements that tempt you to sell out your principles.

Trying to help others can be frustrating. It is hard not to suffer a Cassandra¹⁴ effect because so many ears are disbelieving, much as I imagine Rachel Carson and Dana Meadows must have felt.

As the flight attendant says, secure your own mask before helping others. Be gentle. Help them understand the issues. Help them take action to change. Encourage friends, family and colleagues to vote, buy and speak with confidence about the dangerous social and environmental effects of our increasingly abusive digital world. Help the whole world to eliminate surveillance states and intrusive corporations, moderate gluttonous consumption, and unravel surveillance capitalism before it shuts down all free speech. We depend on informed, difficult debate and human coordination to solve the greater issues of energy, transport, social relations, population and climate change. We cannot do that until the people take back technology.

¹⁴Cassandra was doomed by Apollo to see the future but forever have her warnings ignored, never be believed, and have to watch tragedies unfold helplessly.
Notes from the Old Skool

TLDR; When computers were real computers.

Retro is fun, fashionable and effective. Reusing is always better than recycling. So why not restore and enjoy a classic computer? In December 2020 Chris Wilkinson wrote an article for Ars Technica on working through the pandemic with a 1991 25MHz Mac Quadra. As a writer he found it not only effective but more focused.

Each year your computer seems to get slower. How can that be? Some people think they get worn out, tired like living creatures or mechanical devices. Apple even took advantage of that fallacy by sending updates to deliberately slow their older models and make people buy new ones.

But computers do not get slower. Software gets slower. Software is the only industry whose product gets less efficient each year. The 'need' for ever more processing power is an illusion. Moore's law provides a glut of processing power, so programs that perform simple tasks like editing a document or playing a sound file are rewritten to use more processing power as part of a marketing spiral that feeds interlocking hardware and software industries. If this didn't happen people would simply notice their computers were 'good enough', and buy no more.

A friend of mine was amazed when trying a 1996 Amiga computer. "How can it run so fast?" he asked. It's because its

software is matched in simplicity and efficiency to its hardware. Many features found on older computer systems like 'instant on' ROM and unbelievable systematic integration found in RISC-OS and LISP Machines are buried and forgotten in the 2020's. I am a firm believer that Microsoft set back computing by 20 years with their Windows operating system. It is a textbook counterexample to the mythology of efficient market capitalism, proving that "where there's money there's mediocrity".

Top-end systems from 30 years ago, made by companies like Atari, Amiga, and Sun Microsystems, can be bought for almost nothing in junk shops, and with USB adaptors you can modernise them by attaching hard disks filled with thousands of incredible programs freely downloadable from the internet. Professional writers around the world still use the *Wordstar* program, and love it. My personal preference for writing is Emacs, a program first written in 1976. There are programmers who still write new applications for old hardware, and even in 2020 new peripherals were sold for the Amiga computers. Unless some capacitors need replacing, a job that any electronics engineer can do for you, the hardware is built so well it will keep going. If it has lasted 30 years, it might last another 30.

The trick here is to know a bit about computers, and be realistic about what a vintage computer can do. It will not play YouTube videos or run a Google Chrome web browser. Consider those features. On the other hand, neither will it run mountains of crapware that spies on your every move. Programs tend to be simpler, and therefore more usable. They also tend to be modifiable, and on deeper inspection are more versatile and flexible for a user who wants to learn how to adapt them.

A similar thing can be said for older peripherals. Laser printers and scanners from 20 years ago just keep on rocking and rolling. And if you are honest with yourself, the quality is good enough. If you can find help setting up and servicing older equipment it will outperform and outlast anything available as new today. Classic monochrome laser printers use cheap powdered toner and can print in awesome quality at fractions of a penny per sheet. They will not break when instructed over the internet, or leak your sensitive documents to a 'cloud printing service' you didn't know was enabled.

Sadly, perfectly good old hardware vanishes because we have a culture of gratuitous replacement and little patience. Changing economics of Chinese made goods plus 3D printing and rapid FPGA design has turned the myth that "It's cheaper to replace than to fix" on its head. A burgeoning 'repair and mend movement' has emerged, building information networks, sharing service manuals, and 3D printed parts, to keep hardware running for decades.

Terrified of this, the electronics industry has abused copyright and patent laws. We can beat them. Around the world, a vibrant *Right to Repair* culture is overturning laws bought by tech lobbyists. Opinion is tipping in favour of environmentalism. In response they try to shift the debate towards safety issues, and opine, without irony, that older equipment poses a cyber-security threat. On the contrary, with a little care, and perhaps a Raspberry Pi for a firewall, older equipment can be made safer than modern devices which have hidden security holes.

This book, a PhD thesis, a dozen journal papers, hundreds of student lessons and three other books since 1991 have all been typed on a my Lexmark RS232 keyboard. It's survived four house moves, 2 dogs, 3 cats, multiple spilled coffees and I intend to still be using it in 40 years. It is now connected to a Raspberry Pi4 running BSD. Old and new technology in perfect harmony.

Digital vegan restaurants

TLDR; Potlatch banquet.

What is a restaurant? It is a place people come to eat. But without a chef and waiters, or with no farmer to deliver ingredients, what would a restaurant be? A restaurant is a kind of 'platform'. A meeting place. Platforms are a way of thinking about services that bring together different interested parties. A street market is a platform that brings together traders and casual shoppers. In its original form the market was a cooperative venture, organised by all parties in a public square. In our digital world, these have been replaced by business platforms like eBay and Amazon. A nice introduction to business platforms can be read in Nick Srnicek's 2016 book on *Platform Capitalism* [147]. Platforms have the problem that some person, company or group owns and controls them. Digital Landlords can exclude users. One route to more ethical computing is to make better platform choices. Another is to prefer protocols over platforms.

'Cyberspace' is infinite, yet humans have found ways to create private property and thus scarcity value to exploit. Platforms as businesses build value from network effects, and extract a commission or rent. They sell people to people. Google is a platform that connects advertisers with people seeking information. Uber connects car drivers to people needing a ride. Both extract rent in the form of data or fees. WhatsApp connects people who can't use email. However, two other forms of platform exist, cooperative and governed. Cooperative platforms have no central point of control. Governed platforms are literally run or subsidised by governments. Email is an example of the former. It is federated and distributed. Despite the power of Google's Gmail and Microsoft's Hotmail, the email ecosystem is open and vibrant. Anyone can run an email server on their own domain. All email systems connect together because they share a simple open standard – a protocol.

An example of a governed platform is Minitel, a reliable, curated, official information service run by the French government. Both have unique advantages and disadvantages compared to commercial platforms.

Game-theoretical forces in neoliberal capitalism favour defectors against the commons and long term good. So cooperative platforms have a tendency to degenerate unless governed by strong 'articles' of operation. They get hijacked and become a race to the bottom of quality in order to maximise profit for the few. They also tend to agglomerate into larger single entities. Unless they are carefully designed, small, informal cooperative platforms mutate into business platforms, or must be protected by governments and become regulated platforms.

As platforms change their nature, they change their ethics. For example, universities used to be state subsidised platforms that brought together professors, researchers and students for mutual academic benefit. In those days, learning was the most important activity. That changed in the 1990's and, as discussed earlier, the direction is now toward Big-Tech education platforms. Western education became an 'industry' where the most important values are certificates, ease of access, and cost.

Ethical platforms are immutably distributed cooperative, loose federations or entirely dispersed (and often anonymous) resources. Open, international protocols allow this. Commercial colonisation of the internet was as much to stamp out disintermediation as to make a buck. The future of the free internet is therefore 'serverless' systems that gain resources as the number of users increase. Examples are IPFS and Matrix as storage and social media platforms respectively. A good example of a protocol that challenges private platforms is *WebRTC* video conferencing. Presently, the closest you can get to a Digital Vegan restaurant is open, distributed and serverless platforms built on open protocols.

Although open protocols permit distributed ownership, freedom is not free. To work, these systems require *participants* not *users*. If you do not offer to share something, computing or financial resources, you do not have a stake in the platform itself. If there are not enough stakeholders then the community loses control (to either government or business). Immutably distributed cooperative platforms are a hot area of research. Trebor Scholz has written accessible papers and a book *Uber-Worked and Underpaid* on the problems of maintaining cooperative platforms. An excellent article on the issue is *Protocols, Not Platforms: A Technological Approach to Free Speech* by Mike Masnick (2019).

When choosing platforms, a Digital Vegan asks;

- Who owns it?
- How do I contribute?
- Is it open?
- What is its structure?
- Entrance cost?
- Dress code?

The ideal answer to the first question should be "you do", at least partly. If you have a stake in a platform you have a piece of democratic control. The next best owner is any small group or individual you trust to administrate a service. Modern cryptography means that ownership, access to your data, and control can be decoupled. The worst kind of platform is something like Twitter or WhatsApp. They are dictatorships in which you are the equivalent of a peasant, a freeloader and useless mouth to feed, who is allowed speak at the arbitrary discretion of your digital landlord and master.

The second question is about how you pay. In accordance with the 'no free lunch' principle, you always pay somehow. With 'free' services like Google and Facebook you pay with your privacy and freedom. With federated or fully distributed cooperatives you can pay by contributing computer power, storage, and bandwidth. Or you may actually pay a fee – usually via cryptocurrency micropayments. A recent example is the *Brave* browser which integrated the Interplanetary File System (IPFS) which creates a distributed storage network for the common good. You share a little of your disk space for storing infinitesimal fragments of everyone elses files, and they extend the same courtesy to you. As a result everyone gets a more reliable, and censorship resistant system.

The questions of openness and structure are also important. Closed systems, and locked-in walled gardens must be avoided. Open systems use interoperable, published, free standards. They use Libre open source software. This means anyone can join to expand the network as a peer. Equally it means anyone can leave to join another provider, or host their own, because there is no impediment to data mobility. Structure determines whether other, different flavours of systems can interconnect. Loose heterogeneous federations tend to avoid a 'tyranny of the majority'. It also makes some sense to join interoperable services that are not *too successful*. If an organisation becomes too big, the currently broken laws of capitalism mean it is vulnerable to being taken over and ransacked by a large corporation.

Many platforms require some entrance fee, to stop them being abused. This may take the form of donating computer resources, or renting an online computer called a virtual private server (VPS). More commonly a reputation system that is not tied to you personally, but to an avatar or hostname, is used so that you can gain good community standing by your actions.

Bear in mind that all networks are made of people. Being abusive, offensive, entitled, and not pulling your weight, can get you thrown out of a restaurant, even in a neighbourhood of independent federated platforms.

One difference is that rules are not arbitrary and opaque. If you are making trouble, your community will let you know, unlike Facebook or Twitter where people are silently banned without reason or recourse. On the other hand you may still find like minded users to build your own corner of the platform, free from interference by any 'authority'. Because of that, colourful margins and bland main-streets can coexist. If you don't like a neighbourhood, don't go there. If you can't find a neighbourhood that suits you, build your own. Later you may find it connects up with other niche neighbourhoods to form larger ones.

Resources and actions

TLDR; An infinite list.

It is hard to include resources in a book. They will date quickly. Besides, there are an infinite number. When faced with the challenge of *not* doing a harmful behaviour, and we ask ourselves... "But what can I do?", the answer is always;

All other things but that one.

Resources better belong in a website or discussion forum. Many readers suggested including a "resources and actions" list. Sure, I could say "Ditch *WhatsApp* for *Signal*". But maybe next week Brian Acton, the programmer who designed WhatsApp *and* Signal decides to sell his second company to Facebook, or to cave in to pressure to install back-doors in Signal's encryption, causing it to be as worthless as WhatsApp. So I will mention only a few things, relevant at the time of writing, that may represent enduring principles.

Perhaps the most important resource is other people. During the writing of this book I have discovered and corresponded with many researchers, writers and speakers who share a vision of more humane technology. Likewise your best resource is other people in your community and circle of friends with whom you can coordinate.

Although not all these 'digital rights' ideas fully overlap, together we constitute an *enormous* movement working on privacy, anonymity, fighting digital stalking and domestic abuse, thwarting tracking, cyber-bullying, standing up for workplace rights, diversity and choice, gender equality, and taking on important issues of monopoly, anti-trust, network neutrality, censorship, surveillance, democracy and voting, government, transparency, copyright and patent reform, Libre software, and distributed digital communities.

As we have discussed, the numerous approaches to change span everything from fundamental research on cryptography and protocols, creating new startup companies, consultancy, lobbying, direct and protest actions, education and talking to others. In this book, individual change is advocated, by means of noncooperation, non-participation, abstinence, and mindful selection of ethical technologies.

Let's recap on the sustainable principles of thinking like a Digital Vegan:

Always retain control over your technology. Use Libre software that does not impose unjust control or disrespect your privacy, dignity and agency as its owner. Do not use software or hardware products from Big Tech companies who treat you as a resource to be exploited, instead of as a customer.

Avoid IoT devices. Their so-called 'smart efficiencies' are mostly smoke. Never buy IoT devices 'off the shelf' without understanding exactly what they do. Understand the need to block or encrypt traffic, and properly firewall your network from any 'smart' devices in your home.

Buy hardware that is transparent (open source), repairable, maintainable, modular, generic and standards compatible. If you need a mobile phone, get a freedom respecting and recyclable phone. Such devices are built with anti-tracking and anonymity features as their basis, with transducer kill switches, user selectable operating systems, removable and recyclable batteries and SIM cards. Hardware based on RISC-V CPUs is preferable to other manufacturers because it is freely licensed.

Boycott stores and services that use unethical digital products and algorithms. Avoid places that track their customers using phone IMSI catchers, Bluetooth and WiFi tracking and face recognition technology. At the time of writing this includes some major supermarkets, so good advice is to use local, small shops.

Use online resources created by whistle-blowers and good hackers to find which stores or institutions in your area engage in unethical digital behaviours. Offenders may include your local schools, libraries or police departments as digital abuse and widespread ignorance of it proliferates. If you have time, use the law to make life difficult for technology abusers. Filing GDPR and FOI requests forcing them to turn over data to you can make surveillance unworkable for them if enough people do it.

Think about who makes and disposes of your technology. Do not buy products online from large companies that use slave labour and abuse their workers' rights. Pay more for technology manufactured locally if you can. As an example the Raspberry Pi Foundation switched production from China to the UK, because customers were quite happy to pay a little extra for a more ethical product.

Use cash and anonymous payment methods. Insist that your local stores take cash and give you paper receipts (paper is sustainable, has negligible environmental impact compared to even the smallest piece of packaging, and much more empowering to you as a customer). Do not be fooled by silly but seductive arguments like "contactless payment is better for the environment".

In general, try to reuse older hardware and software which is simpler, time tested and security audited by many millions of hours of use and eyes on its source code.

Experiment with digital detox. Try a few days or weeks at a time. Practice defending yourself against peer pressure, work pressure and socially negative attacks against your honourable choices toward a better world. Practice being polite, firm, resolute and informed, in refusing forms of digital enslavement, waste and abuse.

Most of all, educate yourself. Understand the value of your data. Think about the myriad ways you are swindled out of it every day by companies, and start acting to defeat them. Find out more about the environmental cost of your digital actions. Research the negative effects on your physical and mental health of digital technology and social media use. Be honest with yourself about how you feel and make a plan to change to a better life. Explore ways to make your digital life more sustainable, slower, thoughtful and purposeful.

As a political position, any supporter of sane societal technology should defend unbreakable end-to-end encryption and the absolute right to build private communication systems. No matter what fear-mongering and catastrophising, by frightened authoritarians and bullying governments, we must assert and defend rights to free speech and private political organisation. Too many good people died defending those rights in world wars and we dishonour them by failing to defend the freedom that cost their lives. Backdoors in any private communication system, however well meaning, are simply unacceptable in a democratic society.

The reasoning around 'law enforcement keys' is utterly unsound, as would be giving the police keys to your house in case they feel like randomly popping in to check you aren't doing anything illegal. Backdoor keys cannot be contained, and will with absolute certainty end up in the hands of the very cybercriminals and terrorists proponents are hoping to thwart. Giving digital back doors to police and intelligence snoops is an extraordinarily stupid and dangerous idea, and you should help your politicians understand this.

Build robust values. Ultimately we want to change our behaviours toward a better world. But behaviours are fickle. Today we feel totally committed to giving up the smartphone and put it in a drawer. Tomorrow, a desirable trinket, a nagging child, a pushy boss or peer pressure can convince us to install "just one little app", and we throw yesterday's resolution out the window. As all addicts know, every inch costs a mile.

Robust agents have coherent value systems and make decisions according to long term goals. One can still be curious, open to the new, lightly relinquish false beliefs, be even-handed with arguments and evidence, but none of these tenets of rationality should become tails that wag the dog of heartfelt values. The mind must serve the heart. The more our values align with each other the stronger they are as a whole. Exceptional thinking like "I'll just use my smartphone on work days" or going back on Facebook "just to talk to one person", work against robust value systems.

Find a buddy to go Digital Vegan with. Pairing up really works in applied activities, to become mutual supporters, antagonists, fact-checkers, and confidantes. Someone who is always just agreeing with you when you're complaining about how awful things are might not be the best partner. Often we fall into mutually avoidant cycles with people like that. Instead, pick someone who you share goals and values with but perhaps disagree with on some points. Make a slightly competitive adventure of life transformation with them.

Let's briefly mention some contemporary writers and speakers;

Dr. Kimberly Young is a prominent figure and longstanding researcher in the psychology of internet addiction. She was amongst the first psychologists to identify addictive properties of online technology and has published many books and articles including *Caught in the Net* [148] and *Internet addiction: A Handbook* [149]. She leads several internet sites and groups dealing with online harms.

Sam Vaknin, expert on narcissistic behaviours [150] and Richard Grannon, a 'spartan life coach' explore many facets of online harm and provide self-help on their respective sites. In their most recent documentary *Unplugged* Vaknin posits online over-connection as an irreversible social epidemic. I think these perspectives are interesting because social narcissism, although only one of many models of technological harm, seems strong. It aligns with many of my own teachings in *Digital Self Defence* adapted from Mary Shelley and William Blake.

Bailey Parnell runs an organisation called #SafeSocial at safesocialmedia.co, where her focus is on unhealthy social media use, which she defines as a "risky behaviour". Her approach, "practising #SafeSocial" offers practical and friendly guides that appeal to a diverse range of needs, including people wanting to understand the risks of using, cut down slowly, or totally abstain from social media.

Jonathan Bertrand runs educational programmes under the banner of "Social media awareness" and is a *Social Media Dependency Disorder* and *Social Media Addictions* advisor. Bertrand advances an approach based on the 'Double consciousness' theory of American sociologist William E. B. Du Bois. He suggests that social media *immanently* harms our mental health by splitting our psyche into irreconcilable 'triple consciousness', which places too much burden on the human soul.

Two writers, Nathan Driskell and Catherine Price both offer short books with "30 day plans" to separate from over-connection. And as mentioned in earlier chapters Cal Newport takes a slightly different, and deeper approach of *digital minimalism* [109] which I find accordant with my own Epicurean principles of Digital Veganism.

This short list does no justice to the many insightful and courageous voices now calling-out emerging technofascism and societal harms caused by Big Tech and over-systematisation. Many academics and independent researchers, working on domestic and workplace technological abuse, do not attempt to popularise their findings. For example, my work in cybersecurity brings me into frequent contact with the writing of Ross Anderson [151], at the Cambridge University UK Cybercrime Centre, and the work of Bruce Schneier [48], both of whom write in a beautifully accessible style. However, while all of us are affected by the complex security and trust issues raised in their texts, it remains for their warnings to reach a wider audience.

Seeking out and building bridges to groups with common goals is vital. After Israeli researchers found direct links to poor health in smartphone users, it was reported by The Times of Israel that ultra-Orthodox Haredi's began to share a practice of "Kosher phones" [152]. Maybe you are already part of an existing community, like a parents group, where you can begin to help others separate from harmful technology.

We may ask, do Digital Vegans have anything in common with other groups? Is the Digital Vegan just an expression of insularity that doesn't have the courage to be on a more active warpath? Or is there enough of a shared idea here to embrace, and be embraced by, other movements? Are 'Black Lives Matter' protesters who are harassed by face recognition drones, or women in tech whose voices are systematically ignored because they think 'too ethically' part of our wider challenge to technofascism? What about Climate Crisis activists who are being systematically infiltrated and spied on through untrustworthy platforms?

You won't find answers on Facebook. There is no profit in connecting and unifying people who quietly or anonymously get along. Conflict makes clicks. Narcissists nudge. And there is no profit in allowing simple, sound marginal ideas and voices to be heard, as they don't appeal to, or antagonise, existent groups of followers.

We must actively try to see and connect things differently. It helps to think about technology through lenses that challenge the dominant narrative. As I said earlier, in Digital Self Defence we use all kinds of alternative tools from literature, science fiction, film, theatre and games, to re-frame and make accessible difficult concepts from system theory and cybersecurity. Anyone who gains a long view of technology and philosophy of science will naturally start to feel uneasy with smartphones and social media. That unease will soon give way to a sense of absurdity, and eventually laughing out loud at the everyday behaviours of technology addicts and the stupid assumptions all around us.

In particular, feminist treatments of technology and security offer refreshing perspectives that can cut through the breathless claustrophobia of our parochial techno-culture. Thinkers from Mary Shelley to Eve Ensler have far more interesting things to say about the relation of humans to technology than our pedestrian, one-dimensional corporate executives. Ursula Le Guin, in her 2004 *Rant About Technology* reminds us what technology really is, the "Active human interface to the material world", in whatever manifest, symbolic or cultural form it may take. Maybe we could stop calling the giant corporate monopolies that run our world Big "*Tech*" companies. What they do is only incidental to, indeed parasitical upon, technology.

Behind the curtain

TLDR; I'm not a bad person. I'm just a bad wizard.

It isn't that smartphones and gadgets, or giant technology companies are borne of malice. Stood alone, they are not immanently wicked. Yet they are deadly to human affairs in the same way that an elephant has no malice towards the ants it crushes. An elephant wishes to squash ants no more than the ants wish to be under the elephant's feet, but though they occupy the same space, neither really thinks of the other until harm is done.

To technological behemoths and new Sultans of Silicon, people are just data points in their money-making algorithms, not human lives with stories and meaning. To people, the giants are mere infrastructure and invisible furniture to take for granted. It is a feudal pact, mutual abuse, rooted in our disrespect for each other, in fear, laziness and greed.

Big Tech is a tragedy in the fullest sense of the word. Though I would pause to call them 'victims' of it, they are dangerous because of their success. If change is the only measure, then success is the default. It is not a 'happy' success to celebrate. We should not lionise, or compare it to the great industrial period. Digital technology has been a tsunami. For a few billionaires it's been a wave to surf.

While we cannot control tsunamis and earthquakes, we can plan for them. But government and corporate surveillance grew in the absence of care, responsibility and civic intellectual defence. It is what our complacent civilisation got for failing to attend to the critical civic function of technology.

The sentiment that we 'depend on technology' is a dangerous slip of language. We depend on others. We disproportionately depend on others who use technology as their proxy for power. In fact we *choose* not to see beyond the smoke and mirrors or care what is done behind the curtain. Ignorant of its true simplicity, we do not see that technology for communication, storage and automated processing has been a part of human life for centuries and that we can all understand, participate in, and have ownership of it. We have allowed computers to become 'otherly', and fallen for the false dilemma that digital technology is a Faustian bargain where we must pay for indulgences with torments. But there is nothing magical about what companies or governments do with it. Scale and brutality is a poor substitute for beauty.

Our problem today is not just that the Wizard is "all too powerful". It is also that the Wizard is a fake. Once you get close to the levers of power, what is terrifying is not the noisy scrum vying for control, but the eerie silence surrounding the machinery. Nobody wants to touch it. Nobody really knows how it works. Everyone hopes someone else has it figured, and hopes that nobody notices the sham. Behind the curtain is a little sign that says "gone to lunch". We are all victims of the illusion. Eventually the Wizard believes in himself and the illusion of necessity, that the 'show must go on' is what keeps it running.

Culture is shaped by the many *Wizard of Oz* type tropes and apocryphal maxims, like "Computers never make mistakes" (misplaced confidence), "Computer says no" (misplaced deference), "Technology will save us" (misplaced hope), "We depend on computers" (abrogation of responsibility). We urgently need to shake these off. Language about technology is a curtain. It hides the truth about how society can use technology better. It protects toxic technology from scrutiny. Changing language must be the first revolutionary step towards better technological living.

Instead of propagating the trope that "Computers never make mistakes" we should learn from the software engineers who know that "There is always one more bug" to embrace the fact that "Computers always make mistakes, but we just don't see them". Instead of investing hope and *belief* in technology, we need to rediscover belief in ourselves, as humans and all that we do, but most of all in ourselves as commanders and masters of technology.

We still have a choice. We can fight technology and try to stall or reverse its effect on human affairs. We can submit to technology and renounce our humanity. Or we can take control of technology and our future. To me, only the last option seems acceptable, and both of the others are disasters.

In the story of Oz, the Wizard was humbled by the courage, wisdom and love of those supplicating his supposed power. Embarrassed, he renounced his fraudulence and took to a balloon. Facebook, Google, and the techno-bling of the early 21st century are our childish fixations. Out of ignorant meekness we all expect too much from Big Tech. Likewise, they exceed themselves, out of over-reaching grandiosity and arrogance. We keep feeding the machine because it is easier to believe in the Wizard than in ourselves. I hope this book, like Toto ripping at the curtain, has done something to disabuse you of the tragic theatre beneath your fingertips.

Objections

It would be unfair to conclude without entertaining some objections to Digital Veganism and tech minimalism, with some fair points, and some that are easily knocked down.

One objection I encounter often is:

It's your choice. You choose to be awkward, to marginalise yourself and then blame others.

To explain my response to this whole way of thinking, I would like to quote one of John Sayles' [153] characters from Matewan (1987) through the words of philosopher Rick Roderick (his emphasis): [154]

"You speak of us *being* poor. But poor is not something we are. It's just something that has *happened to us*."

I don't think choice comes into it any more than choice came into Martin Luther King being black. What I mean is, who we are and what happens to us can *seem* like our choices. But the relation between identity, what has befallen people, and the choices we make is complex. To me, being Digital Vegans is about something we *are*, which is *dignified*. What happened to me, like everyone, is that I found myself in a particular place in history and geography. In a life straddling the last of the 20th, and first half of the 21st centuries, I experienced a childhood of immense technical optimism. Humans landed on the Moon and the Internet was born in my birth year of 1969. Later I quite accidentally found myself in world of corporate psychopaths, and surrounded by technology of which we have completely lost control.

So, if someone wants to make it an issue of 'choice', then I'll say it's equally they who chose cowardly conformity. If they would rather cast it in terms of identity, then let us just say that what they *are*, is weak, or perhaps ignorant of their *milieu*.

A more common objection is:

It's a fair trade. I am prepared to sacrifice freedom, privacy, dignity and self determination for convenience.

The problem with this position is that it's not universalisable. Philosophically it's not a Kantian prospect. In other words, you're saying "I'm alright Jack, but sod you!". But you are not an island. Speak for yourself, however your actions have consequences for others. Do you want your children to grow up in a technofascist world? Do you care that your choice to use intrusive social media that also spies on your friends may mean *they* are persecuted? As comedian Stuart Lee describes Twitter, it is a "State security service run by gullible volunteers."

Another objection is the 'inevitability' claim:

Why bother to go against the *inevitable*? Corporations are too big and powerful.

As I have already laid out, technological determinism is an error made by unimaginative fools and defeatists. Their lack of imagination is a burden on us all, but fortunately they're oblivious of what those with a whiff of historical perspective might refer to as "Events, dear boy. Events."

So for those with a modicum of human spirit in them;

Sartre said, of Good Faith, that "One always has a choice". Even when you are on your knees with a gun to your head, you can choose to die. He saw this as the burden of Rousseau 'condemning us to be free'. The essence of Bad Faith is shrugging that human burden. Soren Kierkegaard, in the extraordinary Sickness Unto Death [155], speaks of the purity of heart and the *power of one*

as the noblest of all things, far beyond petty stubbornness – "to stand as a counterexample, to be counted as an error written into a text that refuses to be erased", even unto death.

Kierkegaard's philosophy is some of the deepest in Western thought. It comes alive in the essence of Orwell's character Winston Smith and his battle of will, up to total annihilation, to maintain that two plus two equals four. That simple truth is what defines his being, and when two plus two equals five, Smith is no more.

A final thought on fighting the 'inevitable' is that in all movie tropes the evil overlord spells out his fiendish plan, just before it all unravels. Everything is inevitable, until it isn't.

A final objection to entertain is the fallibilist's position.

What if we're just wrong.

What if, contrary to everything in this book, the future is glorious if and only if we uncritically embrace the total domination of technology? What if other critiques of totalitarian systematisation, technopoly, cybernetic domination and total legibility of all human life, are just wrong? I think we have to entertain that idea, and see what that means.

For a start, we would need to dismiss as rubbish practically every science fiction book written since H.G Wells' *The Time Machine* [156] and Mary Shelley's *Frankenstein* [128], including Yevgeny Zamyatin's *We* [157], George Orwells *Nineteen Eighty Four* [106], Ray Bradbury's *Fahrenheit* 451 [158], Edward Morgan Forster's *The Machine Stops*, and Aldous Huxley's *Brave New World* [90]. Along with that we had better throw out the techno-social critique of Aristotle, Martin Heidegger, Frederick Nietzsche, Neil Postman, Jaques Ellul, Lewis Mumford, Ivan Illich and a couple hundred other philosophers and political thinkers.

But the main problem here is one of unfalsifiability. We do not get to run a parallel reality to compare, one world in which technology advances unchecked, and one in which we exercise restraint. The promised benefits of utopian immortality will not accrue in our lifetimes. However, likely negative outcomes would damn all future generations to enslavement, or wipe out humanity entirely. We are therefore faced with a best case choice much like *Pascal's Wager*. It is better to err on the side of caution with technology. Giving up a little convenience seems a small price to pay in this scheme.

My Conclusions

I am a fifty-year-old computer scientist and sceptical humanist who has never used a smartphone or social media for my daily needs, and I don't think I ever will. Because of, not despite that fact, I am happy, well off enough, fulfilled, socially connected, and active in my community. I also enjoy a deep lifelong relationship with technology, and hope with all my heart that one day we will look back at these days as a dark and regrettable aberration in the history of computing.

The Digital Vegan may be a joke to your mind. I'm not sure it is much more than a joke in my mind. But it is one of the best containers, the best analogical structures, to reason about and respond to multiple problems of deadly importance in our world today.

You may laugh at those 'swimming against the tide' – but you might be part of the tide floating helplessly the other way, and as Gandhi said, "First they laugh at you..." This self-deception is the *original fraud*, now manifest as addictive escapism and narcissistic supply obtained via mobile social media.

A new faction of the Fourth Estate is reinventing its role, turning from truth-seeking to 'truth management'. It creates parallel worlds, Wonderlands, or rather a tar-baby, for warehousing a generation that would threaten real change. This sideshow distracts those who are capable of changing the world from actually doing so. As technologists, we have been complicit in this sad little deceit. I feel ashamed as a computer scientist. I have let down future generations by not having the courage to speak out louder and sooner in denouncing Big Tech and Surveillance Capitalism. It is a cruel and degrading debasement of science, about which I think other psychologists and computer scientists ought to be more vocally disgusted.

As educators and parents also, we are failing our youth, allowing them to be corralled into the mental concentration camps called social media. Not because we didn't recognise the danger, but because we lacked, and still lack the courage to act on that instinct.

But it is not too late. To face climate emergency and rising technofascism we must reverse this mess. The first groups, universities and schools to declare themselves strictly social media and smartphone-free, and who turn their backs on Big Tech companies, will be at the epicentre of a revolution to take back technology for the people.

Bibliography

- [1] T. Schep. Design my privacy. BIS, 2016 (cit. on p. 4).
- [2] C. K. Chumley. "Donald Trump on Edward Snowden: Kill the traitor". In: *The Washington Times* (2013) (cit. on p. 8).
- [3] NBC News. "Assange lawyer condemns calls for assassination of WikiLeaks' founder". In: MSNBC News Services (2013) (cit. on p. 8).
- [4] R. Carson. Silent Spring. Houghton Mifflin, 1962 (cit. on p. 8).
- [5] D. H. Meadows et al. *The Limits to Growth*. Potomac Associates, 1972 (cit. on p. 8).
- [6] E. Snowden. *Permanent Record*. Metropolitan Books, 2019 (cit. on pp. 9, 83).
- [7] J.-J. Rousseau. (Second) Discourse on Inequality. Marc-Michel Rey, 1755 (cit. on pp. 10, 122).
- [8] O. Sacks. Awakenings. Duckworth, 1973 (cit. on p. 13).
- [9] H. Pinter. Other Places: Three Plays (A Kind of Alaska, Victoria Station, and Family Voices). Grove Press: Evergreen Impression, 1983 (cit. on p. 13).
- [10] W. Herzog. From one second to the next. Saville Productions, 2013 (cit. on p. 14).
- [11] Y. Hu et al. "Alterations in White Matter Integrity in Young Adults with Smartphone Dependence." In: *Frontiers in Human Neuroscience* 11 (2017) (cit. on p. 15).
- [12] A. Enez Darcin et al. "Smartphone addiction and its relationship with social anxiety and loneliness." In: *Behaviour and Information Technology*, 35.7 (2016) (cit. on p. 15).
- [13] M. A. Lapierre, P. Zhao, and B. E. Custer. "Short-Term Longitudinal Relationships Between Smartphone Use/Dependency and Psychological Well-Being Among Late Adolescents". In: *Journal of Adolescent Health* (2019) (cit. on p. 15).
- [14] M. Pittman. "Phoneliness: Exploring the Relationships Between Mobile Social Media, Personality and Loneliness". In: University of Oregon. PhD Dissertation (2017) (cit. on p. 15).
- [15] M. K. Swingle. i-Minds: How cell phones, computers, gaming, and social media are changing our brains, our behavior, and the evolution of our species. New Society Publishers, 2016 (cit. on p. 15).

- [16] M. Schulson. "User Behaviour: Websites and apps are designed for compulsion, even addiction. Should the net be regulated like drugs or casinos?" In: *Aeon* (2015) (cit. on p. 15).
- [17] S. Goncalves, P. Dias, and A.-P. Correia. "Nomophobia and lifestyle: Smartphone use and its relationship to psychopathologies." In: *Computers in Human Behavior Reports* (2020) (cit. on p. 15).
- [18] N. Postman. Technopoly: The Surrender of Culture to Technology. Vintage Books. N.Y., 1993 (cit. on p. 16).
- [19] P. Oakey, M. Ware, and I. C. Marsh. Circus of Death (Being Boiled B-Side). Fast Product FAST4, 1978 (cit. on p. 17).
- [20] R. Bradbury. Something Wicked This Way Comes. Simon and Schuster, 1962 (cit. on p. 17).
- [21] T. Harris. *How Technology is Hijacking Your Mind from a Magician and Google Design Ethicist*. Medium, 2016 (cit. on p. 17).
- [22] A. D. Tocqueville. Democracy in America 1835 (trans. Harvey C. Mansfield and Delba Winthrop). Ed. by Mansfield. University of Chicago Press, 2000 (cit. on pp. 18, 110).
- [23] N. Postman. Amusing Ourselves to Death. Penguin Books, 1985 (cit. on p. 19).
- [24] A. Phillips. Missing Out: In Praise of the Unlived Life. Farrar, Straus and Giroux, 2013 (cit. on p. 19).
- [25] S. L. Buglass et al. "Motivators of online vulnerability: The impact of social network site use and FOMO". In: *Computers in Human Behavior* 66 (2016) (cit. on p. 19).
- [26] E. Bernays. *Propaganda*. New York: H. Liveright, 1928 (cit. on pp. 19, 93).
- [27] W. Lippmann. Public Opinion. New York: Harcourt, Brace and Co, 1922 (cit. on p. 19).
- [28] P. K. Dick. Ubiq. Doubleday, 1969 (cit. on p. 23).
- [29] D. Koontz, D. Cammell, and H. Jaffe. Demon Seed. Metro-Goldwyn-Mayer, 1977 (cit. on p. 23).
- [30] S. Esmail. *Mr. Robot*. Universal and Anonymous Content, 2015 (cit. on p. 23).
- [31] C. Donald. "The Bottom Inspectors". In: Viz Comic (1979) (cit. on p. 24).
- [32] T. Mali. Speaking with conviction. 2009 (cit. on p. 25).
- [33] Department of the Army. Ch. 20: Writing and Speaking in The Armed Forces Officer: a manual on leadership. U. S. Department of Defense, 1950 (cit. on p. 25).
- [34] P. Lewis. "Our minds can be hijacked: the tech insiders who fear a smartphone dystopia". In: *The Guardian* (2017) (cit. on p. 26).
- [35] M. Heidegger. The Question Concerning Technology (Die Frage nach der Technik). Ed. by trans: Lovitt. Garland, 1954 (cit. on p. 26).
- [36] F. Nietzsche. The will to power. An attempted transvaluation of all values. Kaufmann with Hollingdale, 1910 (cit. on p. 26).
- [37] G. Lucas. The Phantom Menace. LucasArts, 1999 (cit. on p. 26).
- [38] W. Golding. Lord of the Flies. Faber and Faber, 1954 (cit. on p. 27).
- [39] R. Bregman. "The real Lord of the Flies: what happened when six boys were shipwrecked for 15 months". In: *The Guardian* (2020) (cit. on p. 27).

- [40] M. Sugata et al. "Acquisition of Computer Literacy on Shared Public Computers: Children and the Hole in the wall". In: *Australasian Journal* of Educational Technology 21 (2005) (cit. on p. 28).
- [41] A. Forte, N. Andalibi, and R. Greenstadt. "What is the value of anonymous communication?" In: 32C3 Chaos Computer Congress (2015) (cit. on p. 29).
- [42] A. Knott-Craig. "The power of anonymity". In: *TEDx Cape Town 2012* (2012) (cit. on p. 29).
- [43] C. M. Poole. "The case for anonymity online". In: *TED 2010* (2010) (cit. on p. 29).
- [44] N. Carr. The Shallows: What the Internet Is Doing to Our Brains. W. W. Norton and Company, 2011 (cit. on pp. 34, 61).
- [45] E. Morozov. *The Net Delusion: the Dark Side of Internet Freedom*. PublicAffairs NY., 2011 (cit. on p. 35).
- [46] C. Darwin. On the Origin of Species. John Murray, 1859 (cit. on p. 36).
- [47] T. Parker. "Of Justice and Conscience". In: Ten Sermons of Religion (1853) (cit. on p. 39).
- [48] B. Schneier. Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World. W. W. Norton and Company, 2015 (cit. on pp. 39, 83, 190).
- [49] L. Mumford. *Technics and Civilization*. Routledge, London, 1934 (cit. on p. 39).
- [50] I. Illich. "Vernacular Values". In: *Tools for Convivality* (1980) (cit. on p. 39).
- [51] H. Meadows Donella. "Places to Intervene in a System". In: *Whole Earth* (1997) (cit. on p. 39).
- [52] P. Research. "Social networking fact sheet". In: *Pew Research Center* (2014) (cit. on p. 42).
- [53] S. Levy. Hackers: Heroes of the Computer Revolution. Doubleday, 1984 (cit. on p. 42).
- [54] B. Sterling. The Hacker Crackdown: Law And Disorder On The Electronic Frontier. Bantam Books, 1992 (cit. on p. 42).
- [55] L. Green. Technoculture: From Alphabet to Cybersex. Allen and Unwin, 2002 (cit. on p. 42).
- [56] R. Williams. Notes on the Underground: An Essay on Technology, Society, and the Imagination. MIT Press, 1990 (cit. on p. 42).
- [57] J. McNeil. Lurking: How a Person Became a User. MCD, 2020 (cit. on p. 42).
- [58] B. Fung. Darrell Issa: James Clapper lied to Congress about NSA and should be fired. Washington Post, 2014 (cit. on p. 44).
- [59] L. Sullivan. "How Big Oil Misled The Public Into Believing Plastic Would Be Recycled". In: NPR (2020) (cit. on p. 51).
- [60] P. Mozur. "Life Inside Foxconn's Facility in Shenzhen". In: *The Wall Street Journal* (2012) (cit. on p. 56).
- [61] D. Reisinger. "Foxconn admits to child labor law breach with underage intern hires". In: CNN (2012) (cit. on p. 56).
- [62] C. Newton. "The Trauma Floor: The secret lives of Facebook moderators in America". In: *The Verge* (2019) (cit. on p. 56).
- [63] A. Hochschild. *The Managed Heart*. Berkeley: University of California Press, 1983 (cit. on p. 57).

- [64] R. Putnam. Bowling alone: America's declining social capital. Palgrave Macmillan, 2000 (cit. on p. 60).
- [65] D. L. Schacter et al. *Skinner: The Role of Reinforcement and Punishment. In Psychology (3rd ed.)* Macmillan, 2014 (cit. on p. 61).
- [66] S. Furr. *Millennials would rather lose a finger than smartphones*. Tappable, 2018 (cit. on p. 62).
- [67] H. Heiber. *Goebbels*. Hawthorn. NY., 1972 (cit. on pp. 63, 75).
- [68] A. Kimbrell. "Problem of Cold Evil". In: Schumacher Lecture, Salisbury, CT. (2000) (cit. on pp. 63, 104).
- [69] H. Leon. "Eight Ways Facebook Is a Cult Just Like Scientology". In: Alternet (2014) (cit. on p. 63).
- [70] C. Hitchens. The Portable Atheist: Essential Readings for the Nonbeliever. Da Capo, 2007 (cit. on p. 63).
- [71] K. Pynnoniemi. *Surkov and the three pillars of Putinism*. Aleksanteri Institute, Helsinki University, 2019 (cit. on p. 66).
- [72] A. Curtis. "HyperNormalisation". In: *BBC documentary* (2016) (cit. on pp. 66, 91).
- [73] B. Quinn. "US intelligence sources discussed poisoning Julian Assange, court told". In: *The Guardian* (2020) (cit. on p. 71).
- [74] A. W. McCoy. In the Shadows of the American Century: The Rise and Decline of US Global Power. Haymarket Books, 2017 (cit. on p. 71).
- [75] D. D. Eisenhower. The Military-Industrial Complex; The Farewell Address of President Eisenhower. Eisenhower Presidential Library, 1961 (cit. on p. 72).
- [76] L. Fang. "The CIA Is Investing in Firms That Mine Your Tweets and Instagram Photos". In: *The Intercept* (2016) (cit. on p. 72).
- [77] D. Guérin. *Fascisme et grand capital*. Italie-Allemagne, 1936 (cit. on p. 72).
- [78] N. Chomsky. Terrorizing the Neighborhood: American Foreign Policy in the post-Cold War Era. AK Press, Stirling, Scotland, 1991 (cit. on p. 73).
- [79] W. Brown, P. Gordon, and M. Pensky. Authoritarianism: Three Inquiries in Critical Theory. University of Chicago Press, 2018 (cit. on p. 73).
- [80] J. P. Chretien. RTLM Propaganda: The Democratic Alibi in Media and The Rwanda Genocide. IDRC, ProQuest Ottawa, CA, 2016 (cit. on p. 75).
- [81] M. De Fleur and S Ball-Rokeach. *Theories of Mass Communication*. David McKay. New York, 1975 (cit. on p. 76).
- [82] E. Black. IBM and the Holocaust: The Strategic Alliance between Nazi Germany and America's Most Powerful Corporation. Crown Books, 2001 (cit. on p. 77).
- [83] S. Spielberg, S. Zaillian, and T. Keneally. *Schindler's List*. Amblin/Universal, 1993 (cit. on p. 77).
- [84] H. Simon. Designing organisations for an information rich world. Carnegie Mellon, 1971 (cit. on p. 83).
- [85] J. Odell. How to Do Nothing: Resisting the Attention Economy. Melville House, 2019 (cit. on p. 83).
- [86] N. Eyal. Indistractable. Bloomsbury Publishing, 2019 (cit. on p. 83).
- [87] R. McNamee. Zucked. Penguin Press, 2019 (cit. on p. 83).
- [88] Y. Bezmenov. Soviet Subversion of the Free-World Press: A Conversation with Yuri Bezmenov. Edward Griffin, 1984 (cit. on p. 84).
- [89] Plato. The Republic. Hackett, 2004 (cit. on p. 85).

- [90] A. Huxley. Brave New World. Chatto and Windus, 1932 (cit. on pp. 86, 163, 197).
- [91] S. W. Raudenbush. "Magnitude of teacher expectancy effects on pupil IQ as a function of the credibility of expectancy induction: A synthesis of findings from 18 experiments." In: *Journal of Educational Psychology* 76 (1984) (cit. on p. 87).
- [92] J. Elliott. "Does dyslexia exist?" In: *Journal of Philosophy of Education* 42 (2008) (cit. on p. 87).
- [93] P. England. The Separative Self: Androcentric Bias in Neoclassical Assumptions". Beyond Economic Man: Feminist Theory and Economics. Univ. of Chicago Press, 1994 (cit. on p. 87).
- [94] E. Durkheim. Sociology and Philosophy. The Free Press Toronto, 1953 (cit. on p. 88).
- [95] M. S. Peck. *The Road Less Travelled*. Simon and Schuster, 1978 (cit. on p. 89).
- [96] R. Bradbury. *The Martian Chronicles*. Doubleday, 1950 (cit. on p. 90).
- [97] H. Arendt. *The Origins of Totalitarianism*. Schocken Books, 1951 (cit. on p. 90).
- [98] A. Curtis. The Power of Nightmares. 2004 (cit. on p. 92).
- [99] S Lazoritz. "Munchausen by proxy or Meadow's syndrome?" In: The Lancet 330.8559 (1987), p. 631 (cit. on p. 92).
- [100] E Ensler. Insecure at last. Villard, 2006 (cit. on p. 92).
- [101] C. Derber. *Moving Beyond Fear: Upending the Security Tales in Capitalism, Fascism, and Democracy.* Taylor and Francis, 2018 (cit. on p. 92).
- [102] B. Schneier. "Cybersecurity for the Public Interest". In: *IEEE Security and Privacy Magazine* (2019) (cit. on p. 93).
- [103] B. Brown. The Power of Vulnerability: Teachings on Authenticity, Connection and Courage. Sounds True, 2012 (cit. on p. 93).
- [104] M. Horkheimer and T. W. Adorno. *Dialectic of Enlightenment*. Ed. by J. Cumming. Continuum International Publishing, 1983 (cit. on p. 93).
- [105] D. Rushkoff. The Privileged Have Entered Their Escape Pods. OneZero, 2020 (cit. on p. 95).
- [106] G. Orwell. Nineteen Eighty-Four. Secker and Warburg, 1949 (cit. on pp. 101, 103, 197).
- [107] Z. Tufekci. "Engineering the public: Big data, surveillance and computational politics". In: *First Monday* 19 (2014), p. 7 (cit. on p. 104).
- [108] C. Newport. Deep Work: Rules for Focused Success in a Distracted World. Grand Central, 2016 (cit. on p. 106).
- [109] C. Newport. Digital Minimalism: Choosing a Focused Life in a Noisy World. Portfolio, 2017 (cit. on pp. 106, 190).
- [110] C. Price. Breaking up with your phone. Ten Speed Press, 2018 (cit. on p. 106).
- [111] D. Consulting. "Deloitte Global Mobile Consumer Survey 2017: The UK cut". In: *Deloitte Online* (2017) (cit. on p. 107).
- [112] D. Adams. Dirk Gently's Holistic Detective Agency. Simon Schuster, 1987 (cit. on p. 108).
- [113] M. Weber. *General Economic History*. George Allen and Unwin, 1927 (cit. on p. 109).
- [114] C. N. Parkinson. Parkinson's Law. The Economist, 1955 (cit. on p. 109).

- [115] J. Gall. General Systemantics. General Systemantics Press, 1975 (cit. on p. 109).
- [116] R. Jones. Against Transhumanism. Soft Machines, 2016 (cit. on p. 109).
- [117] A. Mathur et al. "Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites". In: *Proceedings ACM CSCW Human Computer Interaction* 3 (2019) (cit. on p. 111).
- [118] B. Fogg. Persuasive Technology: Using Computers to Change What We Think and Do. Morgan Kaufmann, 2002 (cit. on p. 112).
- [119] H. Marcuse. One-Dimensional Man. Beacon Press, 1964 (cit. on p. 115).
- [120] P. Feyerabend. Against Method: Outline of an Anarchistic Theory of Knowledge. New Left Books, 1975 (cit. on p. 115).
- [121] S. Turkle. Alone Together: Why We Expect More from Technology and Less from Each Other. Basic Books, 2012 (cit. on p. 120).
- [122] J. Huizinga. Homo Ludens. Wolters-Noordhoff, 1938 (cit. on p. 122).
- [123] D. Graeber. What's the Point if We Can't Have Fun? The Baffler, 2014 (cit. on p. 122).
- [124] J. Ellul. The Technological Society. Vintage Books, 1964 (cit. on p. 122).
- [125] S. Vaidhyanathan. Antisocial Media: How Facebook Disconnects Us and Undermines Democracy. Oxford University Press, 2018 (cit. on p. 123).
- [126] L. Lessig. Free Culture. Penguin Press (cit. on p. 123).
- [127] I. Committee. "To Our Friends". In: ed. by R. Hurley. The MIT Press, 2014. Chap. F–k off, Google!: Analysis of Cybernetics and the Internet (cit. on p. 124).
- [128] M. Shelley. *Frankenstein; or, The Modern Prometheus*. Lackington, Hughes, Harding, Mavor and Jones, 1818 (cit. on pp. 126, 197).
- [129] W. James. The Principles of Psychology. Holt, N.Y, 1890 (cit. on p. 127).
- [130] S. Alinsky. *Rules for Radicals: A Pragmatic Primer for Realistic Radicals*. Random House, 1971 (cit. on p. 132).
- [131] T. S. Barrister. *Stories of the Law and How It's Broken*. Macmillan, 2018 (cit. on p. 134).
- [132] A. Buncombe. "UN torture official says persecution of Assange threatens journalists worldwide". In: *The Independent* (2021) (cit. on p. 134).
- [133] K. Elazari. Hackers: the Internet's immune system. TED, 2014 (cit. on p. 138).
- [134] M. Seligman. "Learned helplessness." In: Annual Review of Medicine 23 (1972), pp. 407–412 (cit. on p. 138).
- [135] J. Schmidt. *Disciplined Minds*. Rowman and Littlefield, 2001 (cit. on p. 139).
- [136] J. P. Barlow. *A Declaration of the Independence of Cyberspace*. Electronic Frontier Foundation, 1996 (cit. on p. 145).
- [137] L. Rainie and J. Anderson. "The Internet of Things Connectivity Binge: What Are the Implications?" In: *PEW Research* (2017) (cit. on p. 147).
- [138] J. L. Herman. Trauma and Recovery. Basic Books, 1992 (cit. on p. 147).
- [139] S. Lee. Stewart Lee's Comedy Vehicle, Series 3 Episode 1. BBC Television, 2019 (cit. on p. 157).
- [140] L. Kuehn. "Monopoly Technology Platforms are Colonizing Education". In: Institute for Public Education of British Columbia (2020) (cit. on p. 157).
- [141] B. Ginsberg. *The Fall of the Faculty*. Oxford University Press, 2013 (cit. on p. 159).

- [142] W. Brown. Undoing the Demos: Neoliberalism's Stealth Revolution. Zone Books, 2015 (cit. on p. 159).
- [143] H. Mann. The Case for Public Schools. Cambridge, 1850 (cit. on p. 160).
- [144] J. Naughton. "Aaron Swartz stood up for freedom and fairness and was hounded to his death". In: *The Guardian* (2015) (cit. on p. 165).
- [145] A. Elbakyan. "Sci Hub". In: onion networks, darkweb (2011) (cit. on p. 165).
- [146] R. Stallman et al. Free Software, Free Society: Selected Essays. Free Software Foundation, 2002 (cit. on p. 168).
- [147] N. Srnicek. Platform Capitalism. Polity, 2016 (cit. on p. 180).
- [148] K. S. Young. Caught in the Net: How to Recognize the Signs of Internet Addiction. Wiley, 1998 (cit. on p. 189).
- [149] K. Young and C. N. de Abreu. Internet Addiction: A Handbook and Guide to Evaluation and Treatment. Wiley, 2010 (cit. on p. 189).
- [150] S. Vaknin. Malignant Self-Love: Narcissism Revisited. Narcissus Publications, 2015 (cit. on p. 189).
- [151] R. Anderson. Security Engineering: A Guide to Building Dependable Distributed Systems. Wiley, 2008 (cit. on p. 190).
- [152] N. Jeffay. Kosher phone contrast makes study possible. The Times of Israel, 2021 (cit. on p. 190).
- [153] J. Sayles. Matewan. Cinecom, 1987 (cit. on p. 195).
- [154] R. Roderick. "Philosophy and Human Values". In: *The Teaching Company* (1990). Lecture 8, Philosophy and Postmodern Culture (cit. on p. 195).
- [155] S. Kierkegaard. The Sickness Unto Death: A Christian psychological exposition for edification and awakening. Copenhagen, 1848 (cit. on p. 196).
- [156] W. H. G. The Time Machine. Henry Holt, 1895 (cit. on p. 197).
- [157] Y. Zamyatin. We. Avon Books, 1920 (cit. on p. 197).
- [158] R. Bradbury. Fahrenheit 451. Ballantine, 1953 (cit. on p. 197).