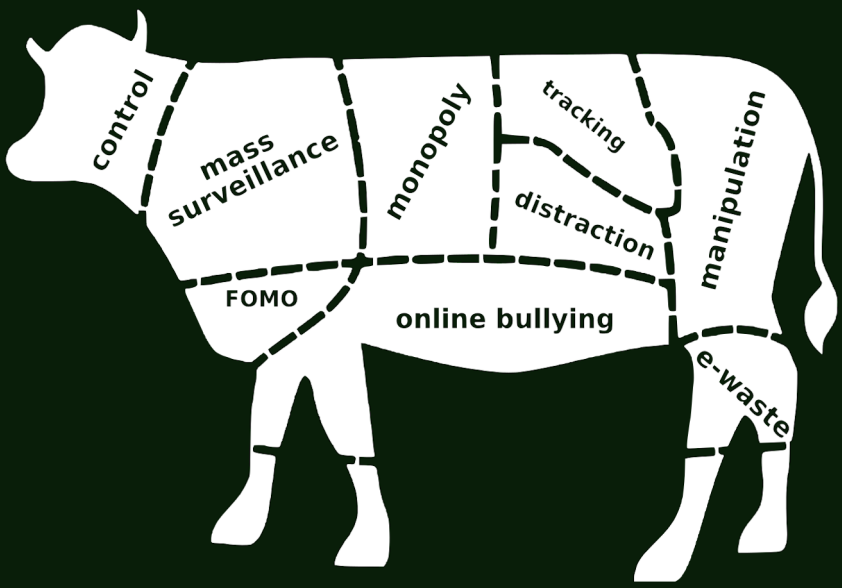
Digital Vegan

Healthier technology
for a happier planet



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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.

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1 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 light-hearted 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.

2 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.

3 Why I am not a vegan

TLDR; Weakness.

I am *not* a vegan. Maybe I wish I had the courage or self-discipline 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 planet-wide 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.

4 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...

5 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.

6 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*?

7 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.

8 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 civilian[1] 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 passers-by 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

[1] But 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 cyber-security 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.

9 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] [1], 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.

[1] These don't actually exist, yet.

10 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 self-creative 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.

11 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.

12 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.

13 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 Conviviality* [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.

14 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" [1].

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

[1] 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 'non-essential' 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 self-governed 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 self-determination. 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.

15 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.

16 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.

17 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-a-year 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 easily-replaced 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.

18 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 self-

medicate 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' [1]. 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.

[1] https://www.cl.cam.ac.uk/~rja14/Papers/cost_of_cybercrime.pdf

19 More Information

This is an excerpt from the full book Digital Vegan. If you enjoyed this visit `https://digitalvegan/net` for more information on printed, audio and ebook versions of the full text.

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Are you tired of being spied on, manipulated and mistreated by technology that was supposed to make your life better? Are you dependent on devices and apps you wish you could live without?

Social media and smartphone surveillance make us sick and unhappy, but what can we do? This book will help you find remedies for digital disorders, and reduce dependency and anxiety by making better technology choices.

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