Chapter 1

Society and Culture

how we came to love our machines more than each other

> Computers make it easier to do a lot of things, but most of the things they make it easier to do don't need to be done.
>
> Andy Rooney

A few years ago, I had a delicious discussion with Lavie Tidhar, a science fiction writer, about the meaning of the word 'future'. Was there, for the practical purpose of writing, a point at which the future was clearly delineated from the present? How far into the future need a writer travel to separate fragile fantasy from rigorous reality? For him, the future is when things 'start to get weird'. For me, it's when fact becomes more fantastic than fiction.

I was living in Australia when news flashed through that Kim Yoo-chul and Choi Mi-sun, a couple who had met online, had allowed their baby daughter to starve to death. They had become obsessed with raising an avatar child in a virtual world called Prius Online — their virtual baby was apparently more satisfying than their real-life one. According to police reports, the pair, both unemployed, left their real daughter at home, alone, while they spent 12-hour sessions caring for their digital daughter, cutely named Anima, from a cyber cafe in Seoul.

It's easy to dismiss this story as being about people taking their love of computer games too far. But this reading of the tale as a kind of teary technological fable could be more misleading than we imagine. A more careful reading would see that it's about identity, purpose, and intimacy in an age of super-smart, emotionally programmed machines. It is also about social interaction, addiction, displacement, and how some people can only deal with so much reality. Most of all, it's about how our ancient brains are not well equipped to distinguish between real relationships and parasocial, or imagined, ones.

Seoul itself is fascinating because it gives us an indication as to where the rest of the world may be heading. Being the most wired city on Earth, it has a veneer of the future, but deeper down it is stuck in the 1950s. The country has the fastest average broadband speeds in the world, and there are plans for a 5G network that will make things 1,000 times faster. On the other hand, you need a government-issued identity number to use the internet in Starbucks, and censors cut out chunks of content from the internet each week.

It's possible that more governments will seek to limit what people can access online, and that the open, participatory, and libertarian nature of the internet will be tamed via censorship and regulation. But it's equally possible that weakly regulated companies will create virtual experiences so compelling that people withdraw from meaningful relationships with other humans and no longer profitably participate in society.

Some screen-based gambling machines are already designed to monitor how people play and to deliberately attack human vulnerabilities so that users will gamble for as long as possible. The aim, in industry parlance, is to make people play to extinction. In the case of Kim Yoo-chul and Choi Mi-sun, this is exactly what happened.

More or less human

South Korea's neighbour Japan is another country where the past competes head-on with the future. Ancient cherry-blossom festivals exist alongside robots in kindergartens and care homes. This automation fills the gaps where demographics, community, and compassion have fallen short.

One such robot is Paro, a therapeutic care-bot in the form of a furry seal. The aim is companionship, and the seal modifies its behaviour according to the nature of human interaction.

Used alongside human care, Paro is a marvellous idea. There are tug robots that autonomously move heavy hospital trolleys around, too. These save hospital porters from back injuries, but being faceless and limbless they aren't especially charismatic. They don't smile or say hello to patients either, although they could be made to do so. Looked at this way, both are examples of technology reducing our humanity. What's needed is

not more efficiency-sparking electronics, but more human kindness and compassion.

Sherry Turkle, a professor of the social studies of science and technology at MIT, believes that it's dangerous to foster relationships with machines. She says there's 'no upside to being socialised by a robot'. Vulnerable groups such as children and the elderly will bond with a robot as if it were human, creating attachment and unreasonable expectations. Her unsettling conclusion is that we 'seem to have embraced a new kind of delusion that accepts the simulation of compassion as sufficient'. The subtitle of her book *Alone Together* says it all: *why we expect more from technology and less from each other*.

In some ways, creating a caring robot is more of an intellectual or scientific challenge than a practical necessity. But if there are people who cannot relate to others, who don't mind or even prefer sharing life with a robot, perhaps there is some benefit, as anyone who has watched the science fiction film *Bicentennial Man* might attest. Maybe physical presence and human contact don't matter, or they matter much less than we currently think.

Eventually, we will create robots and other machines that become our close friends by simulating reciprocity and personality. We will probably program fallibility, too. And perhaps we won't care that these traits aren't authentic.

We do not currently seem to care that much of what we readily accept about other people online is an edit of reality. The digital identities and narratives we weave rarely include elements of fear, doubt, or vulnerability. We photoshop ourselves to appear happier, prettier, and more successful than we really are. Because we favour pixelated perfection, not analog ambiguity. (The daily news is a similar edit of reality, also opposed to ambiguity, but tends to operate in the opposite direction, generally exaggerating human misery and conflict while ignoring humility and happiness.)

But before we build emotional relationships with machines, shouldn't we be asking ourselves what we might be doing this for? Shouldn't we be delving into debates about what it means to be human, and then measure whether new technologies have a positive or negative impact? Technology, after all, is an enabler, not an end in itself. This doesn't mean travelling backwards, however it does mean that technologists should sit alongside philosophers, historians, and ethicists. We need wisdom alongside knowledge, a moral code alongside the computer code.

Looking back at the origins of modern machines, the purpose of technology was either to do something that humans couldn't do or to remove human drudgery. The word 'robot' comes from the Czech word 'robota', meaning 'forced labour'. Using machines to replace people in dull or dangerous jobs is entirely reasonable. Using machines to enhance human interactions and relationships is sensible, too. But I suspect that in many instances, the aim nowadays is simply to reduce human costs, and we accept this because we're told that it's efficient or because we're given no choice.

As to what the human costs might be in a broad societal sense, this isn't accounted for. The dominant narrative of the early 21st century is therefore machine-centric. It is machines — not people — that are revered, when surely it should be the reverse.

I was watching a BBC television programme recently, and there was a report about a study by Oxford University, saying that around half of current occupational categories may be lost to automation over the next 20 years. This won't be a problem if new and better jobs are created, which is what's happened historically. The industrial revolution destroyed many professions, but created others, increased wages, and ushered in a new era of productivity and prosperity. Yet the internet could be doing the total opposite. According to the computer scientist and author Jaron Lanier, the internet is destroying more jobs and prosperity than it's creating. Amazon might be one example of such destruction; others can be found in industries ranging from music and photography to newspapers and hotels.

What's interesting is how fatalistic most people are about this. One person interviewed by the BBC commented: 'It's just progress, I guess.' But progress towards what?

The illusion of progress

Looked at with a long lens, progress does appear to be on a sharp upward curve, yet this is partly an illusion of perspective. Using a magnifying glass, the curve fragments into a series of advances, frantic retreats, and further advances. Robert Gordon, a professor of macro-economics at Northwestern University in America, claims that many of our so-called revolutionary technologies are nothing of the sort. The impact of older

technologies such as running water, sewerage, electricity, automobiles, railways, postage stamps, and telephones was far greater than any of the digital technologies we have today. The internet, as technology writer Evgeny Morozov summarises, is 'amazing in the same way a dishwasher is amazing'. One anonymous wag appears to agree, claiming San Francisco–based 'tech culture is focused on solving one problem: what is my mother no longer doing for me?'

By and large, digital technologies represent incremental change. Above all, they are symbolic of our quest for convenience and efficiency.

Nevertheless, there are some who worship at the shrine of such progress. Martha Lane Fox, a founder of lastminute.com, argues that anyone who is against the digital revolution is a heretic. There are no excuses — everyone must be online. Those who resist, regardless of age, must be given a 'gentle nudge' because being offline is 'not good enough'.

Fox appears to equate any digital resistance to that of the Luddites. But what she might be missing — as Andrew Keen, author of *The Internet is Not the Answer*, points out — is that while the internet does indeed liberate, inform, and empower, there's a danger of being fooled again. Our new boss is the same as our old boss: 'The error that evangelists make is to assume that the internet's open, decentralised technology naturally translates into a less hierarchical or unequal society.'

Moreover, what are the consequences if individuals no longer interact with other human beings as much as they once did, and what might happen if people are replaced with unseen machines in a growing number of roles and relationships?

Is it a problem, for instance, that four-year-old children are having therapy for compulsive behaviour concerning iPhones, or that training potties can now be bought with iPad stands? Would it be acceptable for robots to raise children or for a closure avatar to be the last face that an individual sees before they die — and if not, why not? Will we be forced to get used to such things, or will we fight back, redefining progress and dismantling this dystopia with a simple screwdriver?

For me, the relationship and balance of power between humans and machines is a fundamental one for both current and future generations to figure out. So why is there so much silence? Perhaps it's because most of us are tethered to mobile devices that

constantly distract us and prevent us from thinking deeply about the impact of these technologies.

Information is now captured and disseminated 24/7, so there's little time to clear one's head. Or perhaps we prefer to be busy, because slowing down and reflecting about who we are and where we're going — or whether we're achieving anything of enduring substance — is too terrifying to think about.

Me, my selfie, and I

I was in a coffee shop recently, although it was more of a temporary workspace and substance-abuse centre than a cafe. Power cables were strewn across the floor, and almost everyone in the cafe was on a mobile device — unable, it seemed, to be alone with their own thoughts or without caffeine for more than 60 seconds. Peoples' personal communications appeared to be thwarting personal communication. These people clearly had hundreds of digital friends, but they were absorbed with their own tiny screens in the company of real people, all of whom had been abandoned.

The cafe was full, but people were texting, not talking. Consequently, there was no noise. No chatter. No laughter. The atmosphere was both vacuous and urgent, which was an odd combination.

Were these neurotically self-aware people really thinking? Were they feeling the sensation of time slowly pressing against their skin? Not as far as I could tell. They were writing pointless PowerPoint presentations, were glued to Facebook and Twitter, or were sending desolate photographs of their over-sized biscuits to their acquaintances on Snapchat and Instagram. Most seemed set on broadcast rather than receive, and were engaged in what the informed and bewildered writer Christopher Lasch once described as 'transcendental self-attention'.

This was the same month that Russian separatists had shot down a passenger plane, Syria was soaked in blood, and Palestine and Israel were throwing retributions at each other.

A while earlier, articles had appeared questioning the digital revolution that wasn't, especially the way in which the lethargy of productivity growth in the US appeared to coincide with the widespread adoption of personal computing. As the

American economist Robert Solow commented, computers were everywhere except in the numbers.

There was clearly much to discuss. I felt like standing up and shouting, 'I'm mad as hell, and I'm not going to take this anymore', but the film reference would have been lost among the ubiquitous network coverage.

Perhaps this inward focus explains how we are outraged by a South Korean couple starving their daughter to death one minute and then forget about them the next. Our memory erased by the mundane minutiae of our daily digital existence.

Another reason we might not be asking deep questions about why we're here and what we're for — and how technology might fit into the equation — could be that many of the people pushing these new communication technologies are on the autistic spectrum and, paradoxically, have problems communicating with and relating to other people. As the novelist Douglas Coupland comments in *Microserfs*: 'I think all tech people are slightly autistic.' The reason that so many silicon dreamers want to lose contact with their physical selves and escape into a shining silver future might be that, due to their meticulous minds, their burdensome bodies have never been wanted. This dichotomy between autistic technologists and everyone else is reminiscent of *The Two Cultures* by C.P. Snow. A scientist and novelist himself, Snow described in 1959 how the split between the exact sciences and the humanities was a major encumbrance to solving many of the world's most pressing problems.

Or perhaps the whole human race is becoming somewhat autistic, preferring to live largely alone, interacting only reluctantly and awkwardly with others. One thing I have certainly observed first-hand is the way in which an increasing number of people are finding real-life interactions onerous — not only in Silicon Valley, Tokyo, and Seoul, but elsewhere, too. Carbon-based bipeds have illogical needs, and our impulses can be a source of irritation to others.

Human beings are therefore best dealt with through digital filters or avoided altogether. If you doubt this, and you have a spare teenager to hand, try phoning them without warning. This doesn't always work — often because they won't answer your call — but if you do get through, the immediacy of a phone call can be unsettling. A phone call is in real time. It demands an instant reaction and cannot be photoshopped or

crowdsourced to ensure an optimum result.

Better still, see what happens when the teenager's phone is lost or withdrawn for 24 hours. It's as though their identity has collapsed, which in some ways it has. As British scientist, writer, and broadcaster Susan Greenfield points out, 'Personal identity is increasingly defined by the approbation of a virtual audience.' Staying connected is also about protection: when a teenager isn't online, they are unable to manage what others are saying about them. None of this is a criticism of younger people. It is merely to say that they could be a harbinger of things to come — and according to some observers, the American psychologist Susan Pinker for instance, technology is pushing humanity towards crisis point.

Yet the success of mobiles and social media is no surprise given how difficult we've made it for younger people to get together in the real world. Yes, there are questions around exhibitionism, narcissism, and hatred online, and as George Zarkadakis, a computer scientist and science writer, has shown, 'social networks erode previous social structures and reintroduce tribalism into our post-industrial societies'. But in my experience, social networks also fulfil a basic need for friendship and human contact.

We've convinced ourselves that the real world is full of physical dangers, especially for children. So while we protest about children being addicted to screens, we are reluctant to let them out of our sight outside unless they are tethered to a mobile device or wearing clothing that emits a tracking signal.

How long, one wonders, before parents program drones with cameras to hover above their children's heads when they are outside or on their own. In this context, it's easy to see how social media is a direct reaction to parental paranoia.

Of course, what we don't realise is that incorrect assessments of risk might be destroying the one thing we value above all else. The emotional shorthand of the digital world could be diminishing human relationships, as might our lack of presence, even when someone is sitting right next to us.

I, too, can feel uncomfortable in the presence of others, but a coffee shop full of people that are physically in attendance yet mentally elsewhere is worse. As the philosopher Alain de Botton has said, it's not so much peoples' absence nowadays that hurts as much as peoples' indifference to their absence.

With well over a billion people on Facebook, you might think that friendship would be suffering from oversupply. But according to the US General Social Survey, it's not. Between 1985 and 2004, the average number of close friends (people you can really rely on in a crisis) per person fell from three to two, while the number of people with no such friends increased from 8 per cent to 23 per cent. This finding has been criticised, yet other surveys have similarly linked rising internet use with increasing isolation.

Facebook may even be making people angry and frustrated, according to a 2013 study by Humboldt University's Institute of Information Systems in Germany. Meanwhile, a 2013 University of Michigan study suggests that Facebook might be making people more envious of others and hence less happy.

There are now websites (e.g. rentafriend.com) that will find you a physical friend. Such websites may have more to do with a desire for companionship than loneliness per se. But if you factor in weakening community ties, ageing populations, and the rise of people living alone, one does wonder whether Theodore Zeldin, the provocative Oxford University thinker, might be right in suggesting that loneliness might be the single biggest problem in the 21st century.

According to a recent Relate survey, 4.7 million people in the United Kingdom do not have a close friend. A poll for the BBC found that 33 per cent of Britons, including 27 per cent of 18-to-24-year-olds felt 'left behind' by digital communications, while 85 per cent said they preferred face-to-face communication with friends and family.

Viktor Mayer-Schonberger, the author of *Delete: the virtue of forgetting in the digital age*, says that our increasing desire to record every aspect of our lives is linked to our declining number of close relationships, caused notably by falling fertility rates and smaller households. Because we no longer have the context of traditional intergenerational sharing, we are relying on digital files to preserve our memory and ensure that we're not forgotten.

The stability of these files is, of course, a problem. Vint Cerf, one of the early pioneers of the internet, recently said that technology was moving so fast that data could fall into a 'black hole' and one day become inaccessible. His advice was that we should literally print out important photographs on paper if we wished to keep them.

Connected to our sense of such digital instability might be recent events ranging

from WMD and Enron to GFC and Libor. Such scandals mean that we have lost faith in the ability of our leaders and institutions to tell us the truth or give us moral guidance. A few years ago, US social scientists suggested the collective trauma of 9/11 might create a sense of cooperation, but indications are that what happened is the reverse.

According to a study of 37,000 Americans over the period 1972–2012, trust in others, including trust in government and the media, fell to an all-time low in 2012. A Pew report, meanwhile, says that only 19 per cent of Millennials trust others, compared with 31 per cent of Generation X and 40 per cent of Baby Boomers. The decline in trust means that we no longer know whom or what to believe and end up turning inwards or focusing on matters close to home.

Overall, the effect is that we end up with an atomised society where we crave elements of stability, certainty, and fairness — but where the individual still reigns supreme and is more or less left to their own devices.

Another example of declining real-life interaction is shopping. Many people now try to avoid eye contact with checkout assistants because this requires a level of human connection. Better to shop online, use self-scanning checkouts, or wait until checkouts and cash registers eventually disappear, replaced by sensors on goods that automatically remove money from your digital wallet as you exit the shop.

This could be convenient, but wouldn't it make more sense if we thought of our shopping as being someone else's job, or of shops as being communities? Doing so would mean giving others more recognition and respect.

As Jaron Lanier asks in *Who Owns the Future?*, 'What should the role of "extra" humans be if not everyone is still strictly needed?' What happens to the people that end up being surplus to the requirements of the 21st century? What do we ask of these people who used to work in bookshops, record shops, and supermarkets? What is their purpose?

Current accounting principles mean that such people are primarily seen as costs that can be reduced or removed. But for older people in particular, sales assistants might be the only people that they talk to directly all week. Furthermore, getting rid of such people can cost society far more than their salary if long-term unemployment affects relationships, schooling, and health.

Are friends electric?

Personal relationships can be frustrating, too. In San Francisco, Cameron Yarbrough, a couples therapist, comments that 'People are coming home and getting on their computers instead of having sex with their partners.' This could be an early warning sign of a decline in deep and meaningful relationships, according to Susan Greenfield, who also says that we may be developing an aversion to sex because the act is too intimate: it requires trust, self-confidence, and — above all — conversation.

In Japan, some men have now dispensed with other people altogether, preferring to have a relationship with a digital girlfriend in games such as Nintendo's LovePlus. A survey by the Japanese Ministry of Health, Labour, and Welfare in 2010 found that 36 per cent of Japanese males aged 16–19 had no interest in sex — a figure that had doubled in the space of 24 months. To what extent this might be due to digital alternatives is unknown, but unless Japanese men face reality and show more of an interest in physical connection, the Japanese population is expected to decline by as much as a third between now and 2060.

Nicholas Eberstadt, a demographer at the American Enterprise Institute, claims that Japan has 'embraced voluntary mass childlessness', with the result that Japan not only has the fastest-ageing population in the world, but also has one of the lowest fertility rates. This is especially the case in Tokyo, the world's largest metropolis. Commentators have linked the rise of digital partners to a sub-culture known as 'otaku', whose members engage in broadly obsessive geek behaviour associated with fantasy themes.

In the opening pages of *Future Files*, I referenced another Japanese phenomenon, called 'hikikomori', which roughly translates as 'withdrawal' and refers to mole-like young men retreating into their bedrooms and rarely coming out. This can't be good for birth rates either, although in the Japanese case another culprit for low fertility and low self-esteem might be economic circumstances: the Japanese economy has been in the doldrums for decades.

In the 1960s, 70s, and 80s, young people in Japan could reasonably expect a better life than their parents. Job prospects were excellent, work was secure, and the future smelt good. I even have a book, buried in a bookshelf, called *Japan, Inc*. (worryingly, perhaps, located next to *China, Inc*.), about the domination of the Japanese

economy and the resultant obliteration of US competiveness. But such optimism has gone, and many Japanese feel that they no longer have a future.

You might reasonably expect that the hyper-connected young in Japan and elsewhere would have a strong sense of collective identity, even a level of global synchronicity in emotions. That they would create a vision of a better tomorrow and then fight for it. But instead of a global village, we've just got a village. Social media is facilitating a narrowing, not a broadening, of focus.

Demonstrations and revolts do happen, and online campaigning organisations such as GetUp and Avaaz have an impact, but it remains to be seen whether such protest will change the direction of mainstream politics. Similarly, in the UK, the singer Jason Williamson of the Sleaford Mods belts out intense invectives for the cornered working classes, however most young eyes and ears seem to be elsewhere.

According to *The Economist* magazine, around 290 million 14-to-15-year-olds globally are neither in education nor working — that's around 25 per cent of the world's youth. In Spain, youth unemployment skyrocketed from 2008, spending years at over 50 per cent. But instead of a strong sense of collective action, we have individualism and atomisation. Instead of revolutionary resolve, we have digital distraction. Instead of discontent sparking direct action, it generally appears to be fuelling passivity.

This lethargy is summed up by an image on the internet of a young man sitting in front of a computer in a suburban bedroom looking out of the window. The caption reads: 'Reality. Worst game ever.' This echoes a comment made by Palmer Luckey, the 23-year-old inventor who sold Oculus Rift, a 3D virtual-reality headset, to Facebook for $2.3 billion in 2014. Palmer has said that virtual reality 'is a way to escape the world into something more fantastic'. This is a statement that's both uplifting and terrifying.

Richard Eckersley, an Australian social commentator, describes young people as 'the miners' canaries of society, acutely vulnerable to the peculiar hazards of our times'. He notes that detachment, alcohol, drug abuse, and youth suicide are signs that the felt experience of the modern age lacks cohesion and meaning. Nicholas Carr, the author of *The Glass Cage*, makes a similar point: 'Ours may be a time of material comfort and technological wonder, but it's also a time of aimlessness and gloom.'

Maybe the two are correlated. Most peoples' lives around the world have

improved immeasurably over the last 50 years, but most improvements have been physical or material. As a result, life has become skewed. An imbalance has emerged between work and life, between individuals and community, between liberty and equality, between the economy and the environment, and between physical and mental health — the latter barely captured by traditional economic indicators.

The shock of the old

In the UK, half a million sick days were taken due to mental-health problems in 2009. By 2013, this had risen to a million. Similarly, in 1980, when anxiety disorder became a formally recognised diagnosis, its US incidence was between 2 per cent and 4 per cent. By 2014, this had increased to almost 20 per cent — that's one in five Americans. And the World Health Organisation forecasts that 25 per cent of people around the world will suffer from a mental disorder during their lifetime. Why might this be the case?

One argument is that unhappiness is a result of self-indulgent navel gazing by people who no longer face direct physical threats. There's also the argument that we're increasingly diagnosing a perfectly natural human condition, or that commercial interests have appropriated anxiety to sell us more things we don't need. Why simply sell a smartphone when you can be in the loneliness business, selling enduring bliss to people seeking affirmation, validation, and self-esteem?

Digital fantasy and escape can therefore be seen as logical psychological responses to societal imbalances, and especially to the sense of hopelessness caused by stagnating economies, massive debt burdens, and ageing workforces that are reluctant to retire. While Japan has been pessimistic since the 1990s, there's an argument that Europe is now heading in the same direction as slow economic growth converges with rising government debt, a declining birth rate, and increased longevity.

Even in the US, that cradle of infinite optimism, some members of the Millennial generation are losing faith in the future, believing that decline is inevitable and that living standards enjoyed by their parents are unattainable. This is the polar opposite to the boundless belief in the future that can still be found in enclaves such as Silicon Valley, where there's a zealous belief in the power of technology to change the world, even if the technology ends up selling us the same product — convenience.

Yet thoughts of decline aren't the preserve of the young. I was at a dinner organised by a large firm of accountants not so long ago, when one of the partners recounted a conversation he'd had with the mayor of a large coastal town in the UK. The mayor's biggest problem? 'People come to my town to die, but they don't.'

Over the next two decades, the number of people worldwide aged 65 and over will nearly double. This could create economic stagnation and generational angst on a scale we can't comprehend. The author Fred Pearce has suggested that 50 per cent of the people who have ever reached the age of 65 years of age throughout human history could still be alive. This is a dramatic statement, but it might be true, and suggests that every region except parts of Africa, the Middle East, and South Asia might be on course for lower productivity and greater conservatism in the future.

This demographic deluge could stifle innovation, fuel pastoral nostalgia, and exchange society's twin obsessions of youth and sex for a growing interest in ageing and death. It could also wreak havoc with savings and retirement because the longer we live, the more money we need. In a bizarre twist, we'll need life insurance not in case we die, but in case we don't.

Many pessimistic commentators have equated ageing populations with lower productivity and growth rates, although we shouldn't forget that expenditure on healthcare still boosts the economy. Those aged 65 and over also hold most of the world's wealth, and they might be persuaded to part with some of it. Other positive news includes the fact that older populations tend to be more peaceful (more on this later).

Let's also not forget that globalisation, connectivity, and deregulation have lifted several billion people out of poverty worldwide, and according to a report by the accountancy firm Ernst & Young, several billion more will soon follow suit. One billion Chinese alone could be middle class by 2030. These are all positive developments, but the forces that are lifting living standards are also creating risks that are a threat to continuing progress.

If we add to this the uncertainty caused by rapid technological change, political upheaval, environmental damage, and the erosion of rules, roles, and responsibilities, it looks like the Tofflers were right and that the future will just be one damn thing after another. Anxiety will be a defining feature of the years ahead. One psychological

response to this is likely to be misty-eyed nostalgia, but there could also be dangerous attempts to go backwards economically or politically.

We are already seeing some right-wing groups, such as Golden Dawn in Greece, favouring extreme solutions. These can be attractive because, as George Orwell reminds us, fascism offers people struggle, danger, and possibly death. Socialism and capitalism, in contrast, merely offer differing degrees of comfort and pleasure. The promotion of localism as a solution to the excesses of globalisation can also be attractive, but while cuddly on the outside, localists have an affinity similar to that of the fascists for closing minds and borders. There's nothing inherently wrong with localism, however taken to extremes it can also lead to nationalism, protectionism, and xenophobia.

In 2014, some commentators drew anxious parallels with 1914. This was a little far-fetched, yet there are curious similarities, not only with 1914, but also with 1939. These include: rising nationalism in politics, the printing of money, inflationary pressure, politicised debt, challenges to reserve currencies, the fraying of globalisation, the expansion of armed forces, finger-pointing toward religious minorities, and last but not least widespread complacency.

It might be a logical leap, but I noted in *Future Files* that the top five grossing movies back in 2005 were all escapist fantasies. Was this an early sign that reality was getting too much for people even back then? Fast-forward to the present day, and dystopias and fantasy still dominate the box office, often featuring werewolves, vampires, and zombies. The latter, according to the author Margaret Atwood, are alluring because they have 'no past, no future, no brain, no pain'. At the same time, there's also a new trend for films containing fewer people or almost none at all, including a film called *Her*, set in 2025, about an emotional relationship between a human being and a computer operating system.

We shouldn't read too much into these films, because they are just entertainment. On the other hand, films — especially those set in the future — are usually commentaries on contemporary concerns, particularly regarding technologies we don't understand or can't control. Most monsters are metaphors. *Modern Times*, released in 1936, was about a character trying to come to terms with a rapidly industrialising society where the speed of change and level of automation were unsettling. *Plus ca change, plus c'est la meme*

chose, except that the current surfeit of digital wonders and computer-generated imagery could be desensitising us to the wonders of the real world and, counterintuitively, curbing our imaginations.

Our new surveillance culture

So have we invented any new fears of late? Is it the warp speed of geopolitical change that's unsettling us? Is technology creating a new form of digital disorder that's disorientating or is it something else? Do we still fear our machines, or do we now want to become part of them by welcoming them into our minds and bodies? I will expand on digitalised humans later in the book, but for now I would like to discuss reality, how we experience it, and how we're changing it.

Before computers, globalisation, deregulation, multiculturalism, and postmodernism, we had a reasonably clear view of who we were and what we were not. Now it's more complicated. Increasing migration means that many people, myself included, are not quite sure where they're from, belonging neither to the place they grew up nor the place they ended up. Rising immigration is also challenging our ideas about collective and national identity because some historical majorities are becoming minorities.

Similarly, what was once science fiction has become science fact, although sometimes it's hard to tell the difference. Amazon's much publicised plan for parcel-delivery drones is a good example. Was this just smart PR or could it actually happen? If enough people want it to happen, it probably will.

The smartphone, which started to outsell PCs globally back in 2012, has been hugely important in changing our external environment, although it now looks as though phones may soon give way to wearable devices. This in turn may usher in the era of augmented reality and the Internet of Things, where most objects of importance will be connected to the internet or have a digital twin. If something can be digitised, it will be.

Wearable computing and smart sensors could also mean datafication, whereby elements of everyday life that were previously hidden, or largely unobservable, are transformed into data, new asset classes, and — in most instances — money.

Embedded sensors and connectivity mean that many physical items will be linked

to information, while information will, in some cases, be represented by real objects or even smells. Incoming information such as messages are currently announced via sounds (pings, beeps, music, etc.), but could be represented in the form of glowing objects such as necklaces or even scents emitted from clothes or jewellery. If you are wearing augmented-reality glasses, a message from your boss at work could even be heralded by a small troop of tiny pink elephants charging across your desk.

On the other hand, using an augmented-reality device as a teleprompter in relationships or customer-service roles could render sincerity redundant. Individuals wouldn't know whether you really knew or cared about someone or not. Honesty, authenticity, and even truth, so essential for human communication, could all be in jeopardy. The implication here is that the distinction between the physical and the digital (the real and the virtual worlds of Kim Yoo-chul and Choi Mi-sun) will blur — everything will become a continuum. Similarly, I'd expect spheres of public and private data to become equally confused.

An example of this might be the Twitter stream of one of my son's teachers, who tweeted that she was 'sinking pints and generally getting legless' prior to starting her new job. You might argue that I shouldn't have been following her tweets — but then one might argue that she should have been more careful about what she was saying on a public forum.

But back to how we are changing physical reality. If you're not familiar with augmented reality, it is, broadly, the overlaying of information or data (sounds, videos, images, or text) over the real world to make daily life more convenient or more interesting. Then again, perhaps the word 'augment' is misleading. What we're doing is not augmenting reality, but changing it. Most notably, we are already dissolving the supposedly hard distinction between what's real and what's not real, and in so doing changing ourselves and, possibly, human nature.

Most people would argue that human nature has been fixed for thousands of years. This is probably true. Yet the reason for this could be that our external environment has been fairly constant until now. I'm well aware of the argument that we've used technology to augment reality for millennia — and that once we've shaped our tools, our tools shape us — but the difference this time is surely ubiquity, scale, and

impact.

If wearables do become as alluring as smartphones, this may result in many people abandoning real life altogether. It may become increasingly difficult to exist without such technologies. But this is only the beginning, potentially.

We may start by downloading our dreams and move on to attempts to upload experiences. Such things are a long way off, maybe even impossible. Yet we're already close to the prospect of sticking virtual-reality goggles on our heads to trick our minds into thinking something is happening when it's not, and I'm sure implants can't be far off.

The idea of figuring out what human consciousness is, replicating it, and then uploading it (i.e. ourselves) into machines, thereby achieving a kind of immortality, is the stuff of science fiction. But some people believe it could one day become science fact, allowing 'us' to be transmitted into deep space at the speed of light, where we might bump into — travelling as packets of data in the opposite direction — aliens or even God. (Why can't aliens — or God — be digital? Why do we always assume that intelligent aliens would have physical form, usually bipedal?)

In the meantime, don't forget that while corporations may one day anticipate our every need and personalise our experience of reality, governments could be doing something more sinister, such as erasing our memories or implanting false ones, thereby changing reality in another direction.

The things to worry about here are individual freedom, mental privacy, and self-determination, especially what happens to the private self if it is constantly spied upon. It's possible that we'll trade the idea of governments gathering information about us in return for the promise of security, in which case privacy will become collateral damage. But with companies, it could be different. At the moment, we seem happy to trade privacy for convenience or personalisation, yet where is the line legally and ethically? Is it right for Apple, Google, or Facebook to have unhindered access to our personal data or to know more about us than national security agencies?

Is it right, as the writer Bruce Schneier suggests, that 'The primary business model of the internet is built on mass surveillance'? Or that, if something is free on the internet, you are probably the product?

Flying further into the future, what if companies used remote brain scans to intercept our thinking or predict our actions? Remote brain scanning could be impossible, but Facebook is doing a good job of mind-reading already. No wonder the WikiLeaks co-founder Julian Assange described Facebook as 'the greatest spying machine the world has ever seen'.

CCTV cameras, along with phone intercepts, are largely accepted as a fact of life nowadays, but what if everything you say and do were captured and kept for posterity, too? How might you live your life differently if you knew that everything you did might one day be searchable? Radical transparency could fundamentally change our behaviour. What, for instance, happens to intimacy when there are no secrets and everything is made public? What happens to a person's individual identity?

And forget Big Brother — we're the ones with the cameras. We live in an era of mass surveillance, but the lenses are focused on ourselves, and the trend is towards self-disclosure and selfie-centred activity. In the UK, for example, almost half of the photos taken by 14-to-21-year-olds and uploaded to Instagram are selfies. I'm not saying that Orwell was wrong, however it might turn out that Aldous Huxley was more right.

Ray Bradbury may have been slightly off target, too: you don't need to burn books if nobody reads them any longer. Open discussion in pursuit of truth is irrelevant if it's watered down to the point of invisibility by a deluge of digital trivialities.

Transparency is a force for good. It can expose wrongdoing, promote cooperation, uncover threats, and level the playing field in terms of the distribution of economic power in society. But too much transparency, along with near-infinite storage capacity, could turn us into sheep. Peer pressure could become networked, and conformity and conservatism could result. Hopefully, new rules and rituals will emerge to stop people observing what other people don't want them to see.

We may also come to realise that certain things are best left unsaid or at least unrecorded.

Perfect remembering

I'd imagine that for some people, wearables and implanted devices would enable a kind of sixth-sense computing. Individuals will record and publish almost everything from

birth to death, and the resultant ‘life content’ will be searchable and used to intuit various needs and to fine-tune efficient living.

It will also enable people to become intimately acquainted with those who died before they were born. For example, gravestones might allow interaction so that family members, friends, and other interested parties would be able to find out details about the lives of the deceased. It may even be possible for algorithms to combine ‘life content’ with brain data and genetics to create holograms of dead people that would respond to questions.

Of course, some people will choose to turn these recording technologies off or use them with restraint. Such individuals will understand the need for boundaries surrounding the use of technology and will appreciate that not everything in life needs to be measured, augmented, or kept forever for it to be worthwhile.

Their beliefs would probably be an anathema in South Korea, where apps such as Between already allow lovers to record every significant moment in their lives, along with the duration of their relationships. This doesn’t currently include the ability to track how many other people your partner has looked at each day, but if eye tracking and facial recognition become commonplace, there’s no reason to suppose that it won’t be added.

Whether or not a significant ‘tech-no’ movement will ever emerge, I’m unsure. I can imagine an eventual backlash against Big Tech, as occurred with Big Tobacco, but I think it’s rather doubtful — although if you talk privately to people of a certain age, it’s surprising how many would find it a relief if the internet was turned off at weekends or disappeared altogether. What we’re more likely to see is a rebalancing. Certain places will limit what you can and can’t do in them, and Screen-free Sundays at home or Tech-free Tuesdays at work may appear.

We might see cafes or churches using special wallpaper or paint to block mobile signals. There was a case recently of a person who responded to news that a friend had died with the text ‘RIP INNIT’. This person may soon be forwarded straight to hell — which for them might be an eternity in Starbucks with no mobile reception.

There’s also an emerging trend where people who spend all day looking at screens or communicating with people remotely want to engage physically with other people or use their hands to make things when they’re not working. I met an accountant

recently who had taken up making fishing flies by hand because this was, in his words, ‘an antidote to the world of computer screens and numbers’. There’s even a spark of interest in chopping and stacking your own firewood, although I suspect this has more to do with a crisis of masculinity than an attempt at digital detoxing.

But assuming, for a moment, that we don’t significantly switch things off, what might a hyper-connected world look like 20 or 30 years hence? More specifically, how might our identities change if we never switch off from the digital realm and are never allowed to escape into a private sphere?

Early indications are that a significant number of people are finding two-dimensional simulations of life more captivating and alluring than five-dimensional reality, and that while collaboration and sharing are on the increase, compassion, humility, and tolerance are not. Why might this be so?

One reason could be chemistry. Sending and receiving messages, manipulating virtual worlds, and gamifying our everyday lives can result in blasts of dopamine, a neurochemical released in measured doses by nerve cells in our brains to make us feel excited, rewarding certain types of behaviour. Online friendship has not been described as the crack cocaine of the digital age for nothing: even the tiniest text message, flirtatious email, or status update results in a small jolt of pleasure — or what animal behaviourists call ‘operant conditioning’.

There is some good news on the horizon, however. David Brooks, writing in *The New York Times*, posed the question of whether technological change can cause a fundamental shift in what people value. To date, the industrial economy has meant that people have developed a materialist mindset whereby income and material wellbeing become synonymous with quality of life. But in a post-industrial or knowledge economy, where the marginal cost of digital products and services is practically zero, people are starting to realise that they can improve their quality of life immeasurably without increasing their income. This is a radical thought, not least because many of the new activities that create quality of life or happiness do not directly produce economic activity or jobs in the conventional sense.

It could be argued, for example, that Facebook creates happiness — but Facebook employs very few people. It is in the self-actualisation business, and allows people to

express themselves *themselves*.

In the past, great fortunes were made by making things that people wanted. Making people want themselves might make the great fortunes of the future. Moreover, if human happiness is fundamentally derived from helping other people then the new philosophy of online sharing and collaboration could herald the dawn of a new age of fulfilment.

Regardless of material possessions, it seems that what most people want from life is straightforward. They want connection, support, and respect from family and friends. They want purposeful work, enough money, freedom from violence and abuse, and a community that cares for everyone. People also want a shared vision of where society is heading, and to be part of something meaningful that is larger than themselves — this could be family, an organisation, a nation, a belief, or an idea.

In the case of Kim Yoo-chul and Choi Mi-sun, work was absent, but arguably so too was everything else.

Our environment has changed an awful lot since the Stone Age, while our neural hardwiring has not. One major consequence of this is that we still crave the proximity, attention, and love of other human beings. This could change, but currently it's what marks us out as being different to our machines. We should never forget this — no matter how convenient, efficient, or alluring our machines become.

[Future Flash 1 — 'Digital']
Dear LifeStory user # 3,229,665 Daily data for Friday, August 12, 2039

Devices currently embedded: 6
Digital double status: OK (next payment due September 1, 2039)
Today's time online: 18.4 hours
Data uploaded: 67,207 items
Data downloaded: 11,297 items
Images shared: 1,107 ☺
Images taken without consent (automatically removed): 4,307 ☹
Micro-credits earned: 186 @ $0.00001
Nudges: 144
Good citizen points: 4 ☺ ☺ ☺ ☺
Nike points: 11
Pizza Planet pizza points: 18
Coke Rewards: 4
Outstanding infringement notices: 1
Contact with people of moderate risk: 1
Home security: FUNCTIONING
Anxiety alert level: MODERATE
Vital signs: NORMAL
Water quality: GOOD (supply constraints forecast)
Air quality level (average): 5
Flagged foods: 45 ☹ ☹ ☹
Calories consumed: 1,899
Calories burnt: 489
Total steps taken: 3,349 ☹
Energy inputted into local network: -112
CO2 emissions (12 month average): 22.8 tonnes
Non-neutral transport: 14 km
Travel advisory: recommend route B12
Automatic appointments confirmed: 8
Goods approaching wear out date: 16
Personal network size (average): 13,406
Eye contact with people in close network: 3
Eye contact with people not in network: 2
Individuals to be deleted: 4
Automated greetings sent: 87
Current relationship status: single, tier 4
People currently attracted to you: 2
Pupil dilation score (daytime) 12
Pupil dilation score (evening): 0
Last coupling: 43 days ☹
Coupling agreements signed: 3
Attention level: 4
Learning level: BRONZE

Lessons learnt: 0
Current life expiry estimate: January 11, 2064