

# Digital wellbeing in the twenty-first century

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## Contents

1. Introduction: A moment of reflection .....	4
The promise and the necessity of personal growth .....	4
2. Symptoms and Diagnosis.....	6
2.1 Distraction .....	6
2.2 Collective pathologies.....	7
2.3 Complexity and overwhelm .....	7
3. What to do on the individual level.....	10
3.1 Know thyself.....	10
3.2 Beyond immediate subjective experience .....	11
4. What to do on the system level.....	13
4.1 Addiction by design & the attention economy.....	13
4.2 The attention economy .....	14
5. Outlook .....	15
5.1 The only way is ethics .....	16
5.2 Paradigmatic role for DSI .....	17
6. Conclusion: A dynamic ability .....	18

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# 1. Introduction: A moment of reflection

The history of technology is a story which has been told and retold. But there is a subplot to the story. For every technological step forward there have been doom-laden warnings about the disastrous effects this new invention would have on human beings and humankind collectively. Plato lamented the advent of writing, arguing that it would make people's memories feeble through lack of use. When the first steam trains vastly increased the speed a person could travel, some worried that women shouldn't ride because the high velocity would cause their uterus to explode from their bodies.

The advent of digital technologies – the personal computer, the internet, the smartphone – is no different. For as long as these technologies have existed, some voices have railed against their disastrous effects on our individual and collective wellbeing.

But in recent years and months, this conversation has taken on a new tone. Increasingly our understanding of psychology and neurology is shedding light on what these now ubiquitous technologies are doing to our minds and subjective experience. Moreover, more and more people, driven perhaps by observing both their own conscious experience online and social pathologies that appear linked to our use of technology, are wondering aloud whether we might be on the wrong track.

Tellingly, a growing number of these voices are coming from people who work, or have worked, in big tech companies, and now have serious misgivings about the impact of their creations. Starting in 2018, the big tech companies themselves began to openly and actively address questions around "digital wellbeing".

It seems that we've reached a point of collective reflection, where we need to decide how we want our relationship with digital technology to be. This paper is about that conversation: what have new technologies done to our well-being, and what can we do about it?

## The promise and the necessity of personal growth

The picture painted by the coming sections – in which some of the problems and pathologies are sketched out – is rather bleak. When we consider all of the ways that digital technology is straining our brains, our values and our social fabric, it's tempting to take a hard line, and conclude that we should go into reverse, and start to unpick the many ways the world has become digitised.

But this analysis is written from a core belief that this would be the wrong approach. Not only is it not feasible – there is no reverse gear – it's also not desirable.

At the heart of this story is the increasing complexity of the world we're living in, and our struggle to manage and navigate this complexity, rather than being overwhelmed by it. Our ability to deal with complexity extends way beyond digitisation; it is the unifying theme of all the major challenges of our time, from climate change and population growth to antibiotic resistance and beyond. While we should identify and minimise certain pathological *traits* in digital technology (such as purposely addictive design, discussed below) and in our own behaviour, we shouldn't be lured into thinking we should simply *reduce* our use of technology and our access to information. At best, this would address the most superficial symptoms by failing to recognise the underlying cause, namely the changing nature of the world we live in.

This is the context we need to keep in mind. Our feeling of overload, mediated through our digital devices, is not itself the problem, but rather a signpost to the real task at hand. We need to foster the right kinds of personal growth that increase our ability to handle complexity. Digital technology, far from being a menace, may actually be an ally for us in this undertaking.

## 2. Symptoms and Diagnosis

### 2.1 Distraction

Both in the workplace and outside, our experiences are now very often mediated through our digital devices. This has transformed not only the activities that we undertake, but the fabric of our conscious experience: that is, how we feel when undertaking them. Digital tools as we currently use them tend to lead to certain types of behaviour and, thus, experience.

One feature is fragmentation of attention and multitasking. When I'm sitting at my laptop, any conceivable task is just a click away. My computer is more than capable of keeping different processes running at once, and so my browser tabs pile up with countless tasks in process. All this leaves me in a state [described by Linda Stone, formerly of Apple and Microsoft, of "continuous partial attention"](#).

A related trend is a shift towards instantaneous communication. This is a case where technology leads and social behaviour and expectation follows. Starting with email and compounded further by the adoption of instant messaging tools within organisations, the fact that messages are delivered instantly has created the additional pressure to read and reply immediately. This is both an element in the fragmentation/multitasking issue described below, because people keep their inbox or messaging tool open in the background, and for many people leads to work encroaching on their evenings and weekends. The notification function built into most apps also has the effect of interrupting our attention.

Our adoption of these new tools and technologies has far outstripped our understanding of the full effects. Even now, our knowledge of how these practices affect our subjective experience and overall wellbeing is limited. But psychologists and neurologists are beginning to analyse what this distracted state is doing to our brains.

Neuroscientist Daniel Levitin has expressed serious concerns about the trend towards fragmentation, arguing in [his 2014 book \*The Organized Mind\*](#) multitasking is a myth. According to Levitin, concentrated attention operates through a neural network called the "central executive function", which is only able to handle one thing at a time ; what feels to us like keeping several items in our mind at once, is in fact a rapid switching between items. This is proven through experiments to be extremely inefficient: we get less done, but our brains rattle along in a highly activated, dopamine-charged state, meaning we get tired sooner. This can lead us to feel like we've done a lot of work, even if we have accomplished little.

More worrying still, the “plasticity” of our brains means that the more time we spend in such a distracted state, the further we undermine our ability to concentrate and learn on the level of our brain’s hardwiring. In a survey of the scientific literature, Daniel Coyle describes the role of a brain tissue called myelin, which helps us learn new skills by isolating the specific neural circuits involved. As computer scientist and author Cal Newport [writes](#): “why it’s important to focus intensely on the task at hand while avoiding distraction is because this is the only way to isolate the relevant neural circuit enough to trigger useful myelination. By contrast, if you’re trying to learn a complex new skill (say, SQL database management) in a state of low concentration (perhaps you also have your Facebook feed open), you’re firing too many circuits simultaneously and haphazardly to isolate the group of neurons you actually want to strengthen.”

[This kind of distracted, fragmented use of technology has also been shown, in a 2012 study on students, to correlate with depression](#), although we should be careful about inferring cause and effect.

## 2.2 Collective pathologies

The ways that digital tools are undermining our wellbeing go beyond each individual’s behaviour and experience. We are also witnessing troubling *emergent* patterns on the level of groups, communities and whole societies – many of which seem to be connected to the way our software is built and used.

This is an enormous sociological topic in its own right, and here it is only possible to give it a cursory glance, by highlighting two of the most widely discussed phenomena.

Firstly, social media platforms have hosted an explosion of hate-speech, aggressively hostile communication targeted at a huge number of people, including public figures such as campaigners for LGBTQ+ rights.

Secondly, since people are disproportionately likely to be connected with people who share their political and social outlook, they can end up in self-reinforcing “echo chambers”, which reflect their own biases back at them rather than challenging them.

## 2.3 Complexity and overwhelm

It’s something of a cliché, especially when writing about technological trends, to claim that the world we’re living in is becoming ever more complex. Let’s take a moment to unpack what this might mean and whether it is true.

Starting on an anecdotal level, in the most everyday situations we end up processing far more information than we would have done in the pre-digital era. I recently needed to buy new lights for my bike. Over the course of 30 minutes or so of surfing, I probably considered over 100 products from various suppliers, cross-referencing against user reviews written by people around the world. Forty years ago it would theoretically have been *possible* to amass the same level of information: I could have ordered and browsed a range of product catalogues and somehow contacted other users to ask for their opinions. But I wouldn't have done – that would be far too much effort. I would have gone to my local bike shop and let the sales assistant talk me through the handful of models for sale.

So perhaps it's beside the point to say that there is more *information* available in the digital age (although this is also probably true) – what is undoubtable is that the *threshold* to accessing most kinds of information has been drastically lowered. This leads us to consume more information in more situations. In 2009, [researchers at the University of California estimated](#) that a person processed on average 34 gigabytes of information per day, five times more than an average person 25 years earlier.

Approaching the question through the lens of systems theory, we know that the more tightly coupled the elements of a system are, the more the system will tend to exhibit complex emergent behaviour. Our digital devices are allowing us to have an ever broadening range of interactions with an ever larger number of people (thousands of people can see what I'm eating for lunch before I've even paid the bill). This would lead us to expect more complexity arising from our interactions.

So far this could be seen as something we've voluntarily (albeit not consciously) brought on ourselves by choosing to use technology in the way that we do. It would be possible – perhaps even desirable – to reverse this trend by abstaining from tech more often.

But the crucial point is that navigating complexity is not something we can opt in and out of, depending on how we want to buy our bike lights. All of the most pressing challenges humankind must address in the coming decades – climate change, inequality, providing healthcare to an ageing population, and many more – demand that we understand and steer complex systems. Put another way, we can debate whether the world has become more complex or whether we're just now noticing how complex it is – but either way it's clear that our collective capacity to handle complexity must increase.

This question of complexity has a clear bearing on the topic of digital wellbeing. The way we use our devices is both a driver and a consequence of the complexification of

our lives. Looking from this perspective offers us a different way to understand the behaviours we see in ourselves and in others.

The optimistic version of this is offered by Kevin Kelly in his 2017 book [\*The Inevitable\*](#):

Our lives are already significantly more complex than even five years ago. We need to pay attention to far more sources in order to do our jobs, to learn, to parent, even to be entertained. The number of factors and possibilities we have to attend to rises each year almost exponentially. Thus our seemingly permanently distracted state and our endless flitting from one thing to another is not a sign of disaster, but is a necessary adaptation to this current environment.

However, there is an alternative, pessimistic version of Kelly's rosy assessment. Problematic tech use can be seen as a consequence of people feeling overwhelmed. If you take a person sucked into a black hole of YouTube videos or angstily flicking between refreshing their inbox and Facebook newsfeed, it's clear that this isn't a rational choice between all possible options about how they could be spending that time best. Rather, I suggest that this kind of compulsive behaviour has more to do with trying to push away and avoid negative emotions, specifically including the feeling of being overwhelmed by the deluge of information and complexity.

### 3. What to do on the individual level

On the level of individual users, there are some tools and digital-social innovations (DSI) which help people to manage and improve their digital wellbeing.

Firstly, there are applications that give people transparency about how much time they're spending on their devices or on various websites. Some of the first such initiatives were developed by the open-source community, such as browser plug-ins [Mind The Time](#) and [RescueTime](#), or by campaigners for digital wellbeing, such as Common Sense's tool [Moment](#). Interestingly, in recent months [Apple](#) and [Google](#) have both launched their own suite of tools to offer this kind of transparency.

A second category mediates the information users receive to stop their attention becoming so fragmented. [Isolator](#) is a programme that blocks out all the windows except the one the user is currently working on, preventing them from seeing other activity such as email notifications. Along similar lines, some existing software tools, such as the [Scrivener](#) word processing tool, have developed distraction-free, full-screen modes.

The third category of DSI for digital wellbeing strategically disables functionality within devices, based on the logic of "saving" users from themselves curtailing options. The browser plug-in [LeechBlock](#), for example, lets users selectively block access to websites which put their wellbeing or efficiency at risk. Taking a more blanket approach, [Freedom](#) blocks internet access completely for a specified period of focus. The app [Inbox When Ready](#) not only hides a user's inbox and tantalising email notifications, but also lets them schedule an inbox "lockout". Approaching the issue from a hardware perspective, [Pause](#) has built a wireless phone charger which only works when the phone is placed screen downwards, obliging the user to take a prolonged break.

#### 3.1 Know thyself

It's interesting that big tech companies themselves are developing such projects, at least in the first category of transparency. Nevertheless, there is something about these approaches which feels inadequate. It's not that this information is irrelevant, but it seems to be addressing the wrong part of the problem.

One of the more surprising upshots of collective reflection on digital wellbeing is how it's changing our understandings of ourselves. As discussed above, if we observe ourselves closely, we see that the rational decision maker is only one of several competing impulses within us. This is not new to psychologists, but discussions about tech are making this idea apparent much more broadly.

Tristan Harris, founder of the [Center for Humane Technology](#) (formerly known as Time Well Spent) and one of the most influential thinkers on the topic of digital wellbeing, talks explicitly in terms of software bypassing people's "reflective brains" in order to target their "lizard brains". One of the three calls to action in his [TED-talk](#) is to change our self-perception to acknowledge that we are persuadable.

Hence, a key part of promoting digital wellbeing is getting to know ourselves better. This imperative to "know thyself" has been expounded by mystics, priests and philosophers for centuries. Today it is not just a spiritual calling, it's also a race. As Yuval Noah Harari points out, in an age when digital devices are collecting ever more information about us, from what we read to our heart rates, we have our work cut out to understand our consciousness better than technology does. In his 2018 book [21 Lessons for the 21st Century](#), Harari takes this argument even further: "for every dollar and every minute we invest in improving artificial intelligence, it would be wise to invest a dollar and a minute in advancing human consciousness."

Here we see how the quest for digital wellbeing overlaps with another parallel DSI trend. Over the ages, a key tool for contemplatives aiming to get in contact with themselves and their own experience has been meditation. Indeed, the final chapter of Harari's book is devoted to extolling the benefits of meditation. And there has been a boom in digital guides and supports to meditation. Apple named mindfulness and meditation apps as one of four "breakout trends" in app culture in 2017. One of the many popular meditation apps, [Calm](#), was named as one of the best iPhone apps of 2017. Digital supports to self-exploration seem set to increase in their sophistication and popularity.

### 3.2 Beyond immediate subjective experience

In the vein of looking inside ourselves for information, philosopher and writer Joe Edelmann argues for the importance of connecting and listening to our emotions if we want to build a healthier digital culture. "Every feeling is a reminder of something important to us," Edelmann [writes](#), and "feelings help us reevaluate how we're doing with what we value. Positive feelings remind us [to] *embrace* and *notice* what's important to us...[whereas] a negative feeling signals a conflict between our values [italics are Edelman's]."

Edelmann's writing prioritises our personal values, exploring how we can create digital structures that allow people to spend their time in ways aligned with those values. This highlights a crucial point when we consider how to define, and maximise, digital wellbeing: it is not enough to just look at a snapshot of someone's experience using a device and ask whether or not they're enjoying themselves. We also need to think more broadly about the idea of integrity, that is, rather than

focusing on the particular enjoyment of a moment, we must consider if our actions align themselves with what is most important to us in life. To take a hypothetical example, imagine Joana spends all her time watching cat videos. Since Joana loves cats, this is delightful from moment to moment. But ultimately it might be a hindrance rather than a help for her deeply-held drives for creation, self-expression, etc.

Hence, our collective challenge becomes even more complex. Now we need to reflect not only on our actual behaviour with digital tools, and which parts of our neuropsychological make-up it activates, but also on the broader structures that we are participating in through digital activity. Further, we must reflect on how well these match our personal values.

Before turning to these structures, it's worth noting that there are some digital tools which aim to help people with the task of identifying and articulating their personal values. For now these seem to be limited to the realm of consultants and coaches offering services to corporate clients, with examples including [Values in Action](#) based in Sweden and [ValueMatch](#) based in the Netherlands.

## 4. What to do on the system level

While a certain amount can be done on the individual level, if we are serious about promoting digital wellbeing, we also need to take a systemic view of the structures that currently underpin our digital spaces.

### 4.1 Addiction by design & the attention economy

The feeling experienced by the users of certain digital tools, that their use has become compulsive, not entirely of their own volition – this is in many cases not an accident but exactly what was intended. In the world of software design, people have been working to make their products ever more addictive.

An important forerunner here was the [Persuasive Technology Lab](#) at Stanford University founded in 2010. This approach was made more mainstream by Nir Eyal, whose 2014 book [Hooked](#) gives detailed advice on building “habit-forming” programmes. Eyal writes:

habit-forming companies get users to cue themselves to action by attaching their services to the users' daily routines and emotions. A cemented habit is when users subconsciously think, “I'm bored,” and instantly Facebook comes to mind. They think, “I wonder what's going on in the world?” and before rationale [sic] thought occurs, Twitter is the answer. The first-to-mind solution wins.

Note how this short passage features several of the points discussed above: recognising that users are subject to various and competing drives, some more conscious than others; also that these include the impulse to push away uncomfortable feelings such as boredom – Eyal talks a lot about ‘triggers’ and says that the strongest triggers are when people feel “bored, lonely, confused, lost or indecisive.” He combines this understanding with a clear and provocative attitude: that product designers can and should exploit these mechanisms to their own gain. A suggestive blog title from his personal website indicates that for him users' wellbeing is a secondary consideration: [“Variable Rewards: Want To Hook Users? Drive Them Crazy”](#).

Techniques of this kind are widespread within the commercial tech industry, and have undoubtedly contributed to the phenomenon described in the introduction that many practitioners are renouncing their arts. To give a further example, Sean Parker, first president of Facebook, publicly [remarked](#): “God only knows what it's doing to our children's brains”. Over time, too, awareness is spreading beyond industry insiders to society at large. In August 2018, [fifty psychologists issued an open letter](#) condemning the “hidden manipulation techniques” used by certain websites.

## 4.2 The attention economy

As many people have pointed out, these techniques and other troubling features of software design can be traced back to a more fundamental defining feature of today's digital economy. It's extremely common for websites and apps to make money not by charging people to use them, but instead letting them use it for free and selling advertising and/or monetising user data. This naturally creates a strong incentive to keep users fixed to their screens for as long as possible, whether this is actually good for them or not. Former Facebook engineer Jeff Hammerbacher famously [lamented](#): "The best minds of my generation are thinking about how to make people click ads."

For as long as the so-called "attention economy" is the dominant business model for digital products, it will exert a strong pull that's opposed to the project of improving overall digital wellbeing.

There is a large number of people and organisations working to upend this paradigm, and these fall under the catch-all term of DSI. The open movement, featured in DSI4EU's [last trend analysis](#), explicitly rejects the conventional financing model described above, instead typically depending on crowdfunding, volunteered time or other sustainability models. Hence, alongside the direct benefits that people derive from using open-source products, the open movement itself provides the indirect benefit of shining a critical light on the structures that many people are subjected to much of the time, while also demonstrating the feasibility of other models.

A number of activist DSI projects are aimed specifically at raising awareness of these issues. Alongside the campaigning work of groups like the Center for Humane Technology and Common Sense, somewhat subversive projects such as [My Digital Shadow](#) draw user's attention to the invisible structures that they are participating in, so that they might change their behaviour.

## 5. Outlook

We can be sure that this issue is not going to go away. Rather, as the proliferation of digital, networked devices continues, seeping into more parts of our lives, more corners of our home, maybe even into our very bodies, finding ways to relate and interact with them that are healthy will only become more pressing.

The pace of change also means that it's inadequate just to draw up rules and guidelines for the devices we have now, because soon enough these will be swept away by the next iteration. Instead, the goal has to be giving people higher-level abilities and attitudes that will better allow them to respond appropriately to each new technological development in ways that enhance rather than undermine their wellbeing.

This trend analysis has explored several facets of what we might mean by this term. As we've seen, it includes but also goes beyond the immediate experience of using technology – whether the user is having an enjoyable and enriching time versus being in a state of dopamine-fuelled agitated distraction, for instance – it also includes the idea of integrity with my most deeply held ideals. Pulling all this together (and drawing on ideas of Joe Edelman, Tristan Harris and others) I propose the following working definition:

**Wellbeing** is the *freedom* to spend my *time* in a way that aligns with my *values*.

Recognising the importance of promoting digital wellbeing, and then finding effective ways to do so, will require action on several levels.

On the individual level, we should seek to create and cultivate responses on the level of *tools*, *behaviours* and *attitudes*.

The categories of **tools** outlined above will continue to develop. Users will have increasingly detailed and immediate access (if they want it) to transparent and quantified information about how they're spending their screen time. The adoption of such tools in recent months by Apple and Google confirms that this is now becoming ingrained and standard. As for strategically disabling functionality, this type of tool will presumably keep evolving to shadow the expanding capabilities of our devices – allowing users to choose when *not* to embrace those capabilities.

Of course it only becomes real when there is a change in the **behaviour** of users. The tools mentioned above can be a support, but in many cases no new tool is necessary. From digital detoxes, to bedrooms as screen-free zones, to reading online news

through the slightly more cumbersome browser rather than the slightly more seamless app – there are enough possible tricks and ideas to fill countless online listicles. We should hope for a greater sense of individual and collective experimentation, so that if somebody tells us about a strategy of theirs – for instance, maybe they change their operating interface every few months to stop them becoming too used to it, and thereby their behaviour becoming too automatic – it would seem sensible and normal, rather than vaguely esoteric and suspicious.

Going one level deeper, behavioural change is only sustainable if it is rooted in revised **attitudes**. A part of this, as discussed above, we ultimately need to be spending more time thinking and talking about our most deeply-held personal values, and what it means to express them in our everyday lives. It is possible that the digital tools which try to help people do this, which for now seem limited to the world of corporate consultants, will be expanded to be used by more people and in different contexts. Indeed, the imperative to know ourselves better requires effort on many fronts, exploration of values being just one. The boom in meditation apps is one sign of the appetite for this, and we should expect the development of ever more sophisticated digital approaches to help more people develop their own contemplative practices.

## 5.1 The only way is ethics

However important all that is, action cannot be limited to the individual level. There is also important work to be done at the level of workplaces, and the tools, behaviours and attitudes that prevail there. Though there is much to say here, the topic is largely beyond the scope of this trend analysis.

Finally, a lot of the pathologies that are detrimental to our digital wellbeing are created or exacerbated by characteristics of product design and the prevailing culture of the technology industry. To give one example, as we entrust more important and more sensitive parts of our lives to digital systems, the famously cavalier culture that characterises Silicon Valley (the unofficial motto of Facebook until 2014 was “move fast and break things”) is no longer appropriate. Ultimately, these things too need to be addressed.

We are talking here about fundamental, structural changes to a powerful system, in such a way that it embodies a code of ethics that’s currently lacking. There is no straightforward recipe for achieving this. But there are some places we might start.

As noted throughout this analysis, there is an increasing number of people working within the world of technology who are concerned about digital wellbeing and want to participate in changing things for the better. Organisations such as the [Human Systems Open School](#) try to reach these people and give them the knowledge and

tools to start doing just that. Attempts have already been made to draw up rules and guidelines for ethical design, for example by [Indie](#).

## 5.2 Paradigmatic role for DSI

Central to all of this are DSI communities in the broadest sense. The open source community and other networks of digitally minded activists have, over many decades, developed hardware and software which embodies a different set of values, and works out of a different paradigm, from the commercial world of “big tech”.

This has been extremely important, and it may grow in importance – in terms of setting the agenda, drawing people’s attention to matters of digital wellbeing, and demonstrating the plausibility of other routes we might collectively take. Hence the impact of DSI in this sphere can extend way beyond the users of a specific product – it can also help to shift an entire system.

## 6. Conclusion: A dynamic ability

Every major technological development is followed by a personal and cultural process in which we learn how to wield and apply the new technology. But these two things are becoming unsynchronized. In the digital age, the pace of technological development is outstripping our collective ability to adapt.

This growing gap is one reason why an urgent debate about digital wellbeing has now emerged. At the same time, it demonstrates what kind of solution we are aiming for. It's not enough to survey the devices and software we're *currently* using and, by developing the right tools and behaviours, make our interactions with these promote our wellbeing as far as possible. If our strategies are stationary, they will be swept away by the next wave of technologies. What we need is a *dynamic* set of abilities that let us use today's and tomorrow's technology in a healthy way, as well as making systemic changes to the way technology is built.

Doing this is more than just a rearguard action to mitigate something inherently harmful. As we've seen, we are under pressure to handle ever greater degrees of complexity. If we can align our digital tools with our deeper natures and values, they become a powerful ally in addressing humanity's biggest challenge and helping us individually and collectively thrive.