



# The IT revolution reassessed part three: Framing solutions

Richard A. Slaughter

Foresight International, PO Box 793, Indooroopilly, QLD, Australia



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## ABSTRACT

The first section picks up the central theme of the series by focusing on ill-considered or compulsive innovation. It questions fatalistic attitudes and argues that, far from being inevitable, concerns such as artificial intelligence (AI) or Chinese surveillance practices need to be brought more fully into the open and subjected to more sustained critical enquiry. The rest of the paper takes up the theme of recovery and renewal. Some critical ‘blind spots’ are briefly outlined (a distinct lack of interest in global challenges; a pervasive tendency to under-value ‘the social’) and reframed in more positive terms. The notion of ‘constitutive human interests’ is raised. It’s here that the implications of the project become ever more obvious since many of the concerns raised can be viewed as positive opportunities for productive innovation and adaptive change. A variety of innovations for better managing IT-related innovations and re-purposing the Internet are subsequently discussed. They include working with three scales of innovation, taming algorithms and supporting human agency. The positive innovation theme continues in the following section where wider questions about social democracy, new infrastructure and regulation are discussed. The question of ‘re-humanising’ the IT revolution then brings in notions of the public good, moral universals and the ambiguity of rapid and unconstrained technical innovation. The overall conclusions of the paper, and indeed, of the whole project, are framed by a growing imperative to ‘disrupt the disruptors’ by investing in socially democratic actions and processes across the board. Finally, a new look at values and moral development arguably has significant implications for the issues discussed throughout.

*Never has an industry attained such global dominance with so little effort at regulation. Search engines are like cars on motorways with no requirement for brakes, emission controls or seatbelts. The failure to regulate, let alone properly tax, these massive corporations is the grossest lapse of modern government (Jenkins, 2017).*

*Big data ... is not a technology or an inevitable technology effect. It is not an autonomous process ... It originates in the social, and it is here that we must find it and know it (Zuboff, 2015).*

*History is made by humans not by machines (Taplin, 2017).*

*A People’s Internet is possible ... Silicon Valley loves a good disruption, so let’s give them one (Scholz, 2016).*

## 1. Introduction

The first paper in this series explored several accounts of the IT revolution. Of particular interest was the contrast between those who framed this process in terms of positive outcomes and those who consider that it has been subverted by powerful actors

E-mail address: [rslaughter@ozemail.com.au](mailto:rslaughter@ozemail.com.au).

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especially in Silicon Valley. The second paper considered two case studies: the Internet of Things (IoT) and the projected rise of Autonomous Vehicles (AVs). It briefly employed Integral concepts to identify values and worldviews that appear to characterise leading figures within the IT industry. These interior human characteristics arguably have powerful consequences yet have been widely overlooked in high-tech environments. It concluded that, on the whole, and notwithstanding some obvious practical gains, there is evidence to support the view that the Internet has been undermined and compromised by the power, wealth and reach of vast monopoly enterprises. Yet the second paper also suggested that multiple solutions, or ways forward, already exist in embryo and many more are sure to emerge. So the third and final paper considers ways of challenging the current status quo, of revising assumptions and re-designing (or re-purposing) the Internet and associated IT applications towards more egalitarian and socially viable ends. These are huge and complex topics that shift and change almost daily. So it should be appreciated that a concise account such as this cannot be other than a work in progress.

The first section picks up the central theme of the series by focusing on ill-considered or compulsive innovation. It questions fatalistic attitudes and argues that, far from being inevitable, concerns such as artificial intelligence (AI) or Chinese surveillance practices need to be brought more fully into the open and subjected to sustained critical enquiry. The rest of the paper takes up the theme of recovery and renewal. Some critical ‘blind spots’ are briefly outlined (a distinct lack of interest in global challenges; a pervasive tendency to under-value ‘the social’) and reframed in more positive terms. The notion of ‘constitutive human interests’ is raised. It’s here that the implications of the project become more obvious since many of the concerns raised can also be viewed as positive opportunities for productive innovation and adaptive change.

A variety of innovations for better managing IT-related innovations and re-purposing the Internet are subsequently discussed. They include working with three scales of innovation, taming algorithms and supporting human agency. The innovation theme continues in the following chapter where wider questions about social democracy, new infrastructure and regulation are discussed. Finally we return to the question of ‘re-humanising’ the IT revolution. Here the discussion includes notions of the public good, moral universals (and their lack) and the vexed, ever-present question of the sheer ambiguity of unconstrained and rapid technical innovation. The overall conclusions of this paper, and indeed, of the whole project, are framed by a growing imperative to ‘disrupt the disruptors’ by investing in socially democratic actions and processes across the board. These could include changing the terms of business to rein in the oligarchs, breaking up monopolies (or re-constituting them as public utilities), subjecting proposed high-tech innovations to greater informed scrutiny, building new civic infrastructure and supporting the development of further IT capabilities in the public, as opposed to private, interest.

## 2. Compulsive innovation

‘You can’t stop progress’

One of the themes that emerges from this enquiry is the need and opportunity for large-scale, democratically mediated social design and a commitment to long-term social innovation in the public interest. At first sight it may appear difficult to see how the motivation for such efforts could arise or from whom. But these are early days and motivation can emerge from a variety of sources. To begin with, in a context of radically ambiguous technical innovation, with its accompanying upheavals and disruptions the widely held, but ultimately fatalistic, view that ‘you can’t stop progress’ clearly lacks credibility and should be set aside. Modifying this slightly to ‘you can’t stop technical innovation’ is a small step forward but doesn’t take us very far. Of far greater value is a more nuanced understanding of what terms such as ‘progress’ and ‘innovation’ actually mean, what values they spring from, whose interests are represented (or extinguished) and what longer term impacts and consequences may plausibly occur.

Such issues are hardly the stuff of common conversation but if society is to regain any say at all in its own prospects they need to be brought to full awareness and debated much more widely. Similarly, the social, political, technical and environmental consequences of neo-liberal formulas, of economic growth as the primary goal along with ever more extreme inequality are no longer in doubt. They are writ large throughout the world. People are becoming ever more concerned about these issues and, moreover, the Earth system itself is responding to multiple human impacts with glacially slow, but unstoppable, momentum. Notions of ‘progress’ in this context clearly need to be unpacked as they are fraught with ambiguity and increasingly divorced from genuine human interests (Metcalfe, 2017). Australia’s Gold Coast illustrates this dilemma rather well. Here an immodest, high-rise ‘glitter strip’ devoted to pleasure seeking and escapism emerges from the edge of a vast ocean that could – and almost certainly will – overpower it at any time. Viewed from above or from the ocean the hubris inherent in these structures becomes obvious. (Fig. 1) All it will take to shatter the illusion is increased beach erosion, the steady rise of sea levels, a strong storm surge or perhaps a wayward cyclone. The mode of development on open display is a living testament to a worldview characterised by profit-seeking, denial and short-termism. These are not characteristics that bode well for the future (Slaughter, 2016).

‘Progress’ is often seen as synonymous with technical innovation but such notions do not withstand close scrutiny. Similarly, a continuing free-for-all dialectic of innovation and counter innovation quickly becomes irrational in our currently divided world. In what may be an inexact but tellingly perverse reversal of Moore’s Law the stakes grow ever more extreme with each new level of technical capability. Yet business leaders and decision makers seem largely unaware of this. We can see this in the current breakout of IT company investments in powerful real-world applications such as automation and advanced robotics that look set to destroy most, if not all, semi-skilled jobs (Murphy, 2017). We see it in the irrationality of emerging autonomous weapon systems (Begley & Wroe, 2017). We also see it on the mid-term horizon in the systemic threats that plausibly arise from quantum computing (Majot & Yampolskiy, 2015). A more immediate example is the rise of GPS spoofing. The early development of this technology was undoubtedly useful as it introduced precise, reliable navigation into countless transportation applications. Now certain features in its



Fig. 1. High-rise hubris, Gold Coast, Australia.

design are being quite deliberately employed to disable it. According to reports anomalous results were first spotted by *PokemonGo* players near sensitive sites in Moscow and then began appearing elsewhere. For example, alarms began to sound when the master of a ship in the Black Sea discovered that his position was over 30 km away from where it was supposed to be. Russia is thought to be one entity experimenting with the technology. But of equal or perhaps greater concern is that spoofing software can now be downloaded from the Internet and employed by anyone with the knowledge and will to do so (Hambling, 2017).

A similar dialectic can be seen in countless other examples, sometimes even in advance. Actively scanning the environment for signals of change does, in theory, provide time to respond. Separate scanning hits may interact to reveal previously hidden possibilities. For example, public media announce that trials of driverless ‘autonomous vehicles’ (AVs) will occur along a public motorway. A UK Minister of Transport announces that AVs will be in use by 2021 (Topham, 2017). Such developments are now becoming technically feasible. Yet around the same time a radical group publishes details about how, with a little imagination, vehicle-derailing devices can be easily and cheaply constructed and set in place leaving those responsible to disappear without trace (Thiessen, 2017). Little imagination is required to suggest that both high- and low-tech devices will be developed to intervene and disrupt the smooth operation of AV technology wherever it is deployed. Once again we are reminded that new technologies are never ‘value free;’ they always come with hidden weaknesses and costs, winners and ‘losers’. Those who put their faith in complex systems will eventually need to recognise that the latter are not infallible. Those with different values and what one might call ‘oppositional’ social interests will continue to take advantage of any weaknesses or blind spots (Bartlett, 2017). It follows that the ‘hidden’, non-material side of any technology is at least as significant as its physical form. It therefore requires much closer attention.

### 2.1. Artificial intelligence

Bill Gates and Stephen Hawking are among many who have warned of the dangers of artificial intelligence (AI) and the very real possibility that it may represent an existential threat to humanity. Fresh impetus to this debate was provided when Mark Zuckerberg and Elon Musk clashed over this issue (Biggs, 2017). While Musk echoed previously expressed concerns, Zuckerberg would have none of it. For him such talk was ‘negative’ and ‘irresponsible.’ He’s dead against any ‘call for a slowdown in progress’ with AI (Frier, 2017). So it fell to director James Cameron, director of *Terminator 2* and other movie blockbusters, to inject some reality into the proceedings by reminding everyone of the mammoth in the room. Namely that it is ‘market forces (that) have put us into runaway climate change, and the sixth mass extinction.’ He then added that ‘we don’t seem to have any great skill at *not* experimenting on ourselves in completely unprecedented ways’ (Maddox, 2017, *emphases added*).

What is significant here is that it falls to a *movie director* to draw attention to links between the products of an advanced techno-



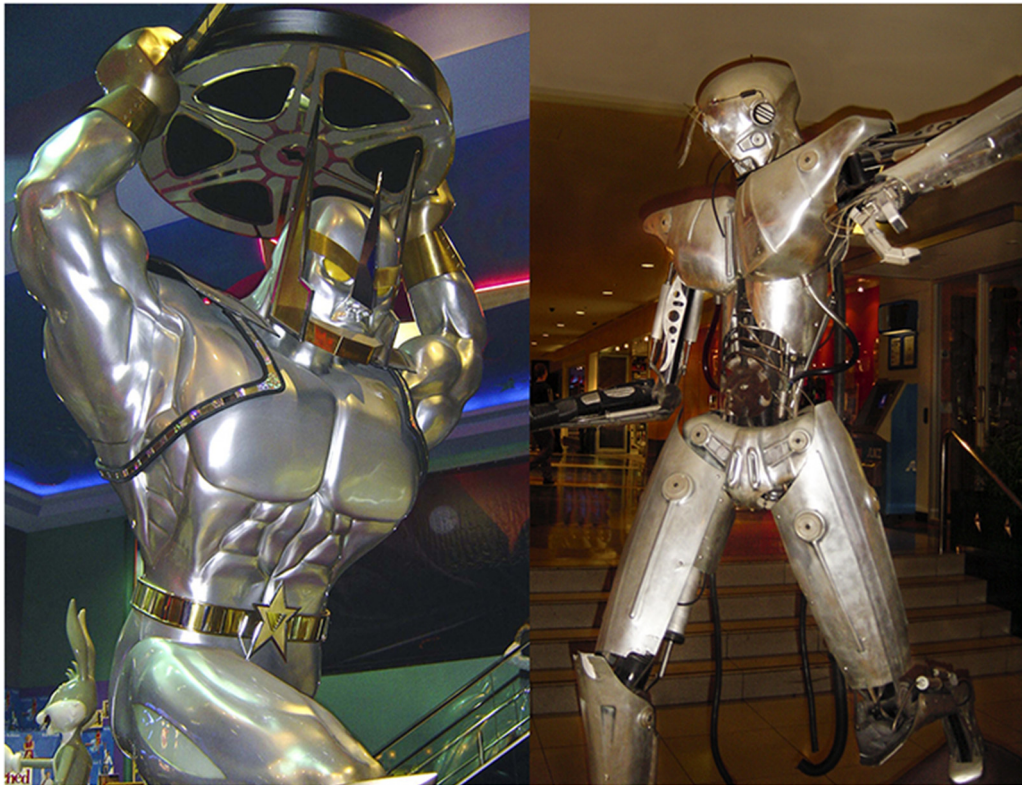


Fig. 2. Augmented and robot figures as entertainment.

economic system and the growing likelihood of irrational outcomes. Such concerns are fundamental to the maintenance of public safety and wellbeing. Yet, as was pointed out in an earlier paper, careful consideration of the social implications of technical change by public authorities has declined even as the need for it has increased. The race to create artificial intelligence is being pursued in many places. Yet up to this point few of the key players have appeared willing to pull back and rigorously assess the risks or seek guidance from wider constituencies. For East or West to passively ‘follow the technology wherever it leads’ is technological determinism writ large. It’s clearly an inadequate basis upon which to make decisions, let alone to gamble with the future of humanity.

We cannot assume that advanced AI will take over the world and either destroy humanity or render it redundant. Such outcomes are certainly possible but there are genuine differences of opinion on these very questions (Brooks, 2017; Caughill, 2017). Of more immediate concern is that various agencies have been looking to AI for military and security ‘solutions’ for some years. Robotised figures have been common in the entertainment industry for several decades (Fig. 2). But wider appreciation of risks involved in their use in real-world situations has been minimal thus far. Now, however, robot soldiers are being designed and tested. At the time of writing, for example, a group called the Campaign to Stop Killer Robots was meeting at the United Nations in New York. Part of the program included a film illustrating the potential of ‘assassin drones’ to sweep into a crowded area, identify targets using facial recognition, apply lethal force and vanish. Concerned scientists were attempting to ‘highlight the dangers of developing autonomous weapons that can find, track and fire on targets without human supervision’ (Sample, 2017). This may sound like science fiction (SF) but a leading AI scientist offered at least two reasons for believing that such devices are closer than one might think. In their view:

The technology illustrated in the film is simply an integration of existing capabilities. It is not science fiction. In fact, it is easier to achieve than self-driving cars, which require far higher standards of performance. (Also) because AI-powered machines are relatively cheap to manufacture, critics fear that autonomous weapons could be mass produced and fall into the hands of rogue nations or terrorists who could use them to suppress populations and wreak havoc (Sample, 2017)

This is merely one branch of a rapidly evolving area of research and innovation but the prospects are clearly terrifying. They also raise another key question: who or what locus of authority provided the green light to arms manufacturers, the disruptors of Silicon Valley, or indeed anyone else to carry out these unprecedented experiments? Reinventing the world in a high-tech era – whether by innovation or disruption or both – is a non-trivial matter. To routinely and relentlessly create quite new dangers and hazards cannot do other than threaten the viability of humanity and social life. Yet somehow these entities continue to operate openly and with confidence, yet lacking anything remotely like a social license. Some consider that the development of AI could be *the* test case that decides the matter for once and for all. Here is Taplin again on how what he regards as the benign legacy of Engelbart – an Internet pioneer – was turned toward darker ends. He writes that the latter ‘saw the computer as primarily a tool to augment – not replace – human capability’. And yet ‘in our current era, by contrast, much of the financing flowing out of Silicon Valley is aimed at building

machines that can replace humans' (Taplin, 2017, p. 55). At this point, and to anticipate a theme considered below, the ghost of Habermas might well be heard whispering something along the lines of 'whatever happened to our communicative and emancipatory interests?' To what extent does their absence from dominant technical discourses mean they are also missing from the products and outcomes they produce?

## 2.2. *The panopticon returns*

The original panopticon as envisaged by Jeremy Bentham in the 18th Century was a design for a prison in which all the inmates could be continuously monitored without their knowledge. Since they could never know whether they were being observed or not they were constrained to act as if they were at all times. Hence they became adept at controlling their own behaviour (Wikipedia, 2017). During recent years newer versions have arisen that bring this oppressive model to mind. One is in China; the other much more widely distributed. Chinese intentions to use IT for social control are revealed by Paul Mozur in Shanghai. He writes that:

China's ambitions with AI range from the anodyne to the dystopian, according to the new plan. It calls for support for everything from agriculture and medicine to manufacturing. Yet it also calls for the technology to work in concert with homeland security and surveillance efforts. China wants to integrate AI into guided missiles, use it to track people on closed-circuit cameras, censor the Internet and even predict crimes (Mozur, 2017).

This may not seem like a particularly significant departure from what's already occurring elsewhere. What is different is that China already has totalitarian tendencies since it is ruled by an inflexible party machine that shows no interest in human rights or related democratic norms. While the US has itself long been hamstrung by deadlocked and ineffectual governments it does have a constitution that protects certain core rights (such as free speech). Despite systematic predation (through copyright theft and monopoly power) by Internet oligarchs, the US also retains elements of a free press and it certainly has an independent judiciary. Furthermore, the European Economic Community (EEC) has already taken the first steps to establishing a more credible regime of regulation. In so doing it has shown that it is willing and able to take on the Internet oligarchs and force them to change their behaviour. So in the West there are real prospects of reining in at least some of the excesses.

But China is a very different story. According to reports its oppressive 'grid system' of systematic surveillance has been operating in Beijing since 2007. Aspects of this oppressive new system were summarised as long ago as 2013 in a Human Rights Report. For example:

The new grid system divides the neighborhoods and communities into smaller units, each with a team of at least five administrative and security staff. In some Chinese cities the new grid units are as small as 5 or 10 households, each with a "grid captain" and a delegated system of collective responsibility ... Grid management is specifically intended to facilitate information-gathering by enabling disparate sources into a single, accessible and digitized system for use by officials. ... In Tibet the Party Secretary told officials that 'we must implement the urban grid management system. The key elements are focusing on ... really implementing grid management in all cities and towns, putting a dragnet into place to maintain stability. ... By 2012 the pilot system was in 'full swing' (as it had stored) nearly 10,000 basic data' (and collected) hundreds of pieces of information about conditions of the people (Human Rights Watch, 2013).

By 2015 this vast modern panopticon was ready to be rolled out to enable the full-on mass surveillance of China's 1.4 billion citizens. Another report noted that:

It envisages a national population database linking people's compulsory identity cards with their credit histories, travel records, hotel registrations and social security details. Police and state security agencies will have access to every aspect of a person's life at the click of a keyboard and everyone will be issued with a single 'all-in-one' identity card (Sheridan, 2015).

Since then further details of this oppressive and inescapable surveillance system have emerged. For example a Wired article by Rachel Botsman revealed that two Chinese data giants – China Rapid Finance and Sesame Credit – had been commissioned by the government to create the required infrastructure using copious amounts of big data. Free access to this vast resource means that people can be monitored, rated and evaluated in depth throughout their normal lives. It turns out that 'individuals on Sesame Credit are measured by a score ranging between 350 and 950 points.' While the algorithms remain secret the five factors employed are not – credit history, fulfilment capacity (or ability to abide by contractual arrangements), personal characteristics, behaviour and preferences and, finally, interpersonal relationships. Those with high scores get consumer choices, easy credit and the chance to travel; those with low scores become the new underclass with few meaningful choices at all. These are described as 'private platforms acting essentially as spy agencies for the government.' The author then adds that 'the government is attempting to make obedience feel like gaming. It is a method of social control dressed up in some points-reward system. It's gamified obedience' (Botsman, 2017).

What's particularly curious here is the inevitability of non-trivial perverse outcomes, foremost among which are the immense cultural and human costs. Masha Gessen's mesmerising and sometimes painful account of life in post-revolutionary Russia clearly demonstrates how hard it is to imagine that a cowed and passive population could retain sufficient awareness or creativity to contribute much of value to any culture, however instrumentally powerful it may appear (Gessen, 2017). In Botsman's view 'where these systems really descend into nightmarish territory is that the trust algorithms used are unfairly reductive. They don't take into account context.' Yet without a keen sense of context meaning becomes free-floating and elusive. Finally there's the inevitable emergence of 'reputation black markets selling under-the-counter ways to boost trustworthiness' (Botsman, 2017). Overall, this may turn out to be the world's prime contemporary example of a 'deformed future' in the making.

A second and equally subversive example is found in the growing use of voice-activated ‘digital assistants’ over the last few years. Skillfully packaged as mere ‘assistants’ and ‘helpers’ they are ‘on’ all the time and thus set to respond to every request and whim. Some of are equipped with female voices that are intended to exert a distinctly seductive effect as shown in Spike Jonze’s 2013 film *Her*. What is less obvious (at least to the user) is that with each and every use the individuals concerned reveal ever more information about their not-so-private lives. Before long comprehensive profiles are assembled, preferences noted and rich fields of data produced.

As things currently stand, the operators of these systems own this treasure trove of information outright. They are then able to poke, prod and suggest new products and services in the light of those already consumed. Sales go up but consumers become ever more tightly bound to their own induced impulses and proclivities. Thus, instead of having open-ended learning experiences, of responding to challenges, of deepening their knowledge and understanding of their own authentic needs and human qualities, those who succumb can end up having ‘feelings’ for, and an ersatz fictional bond to, a remote impersonal network that exists only to exploit them. A further consequence of becoming over-reliant on such ‘immersive’ technologies is that the real-world skills and capacities of human beings start to atrophy. Memory, time keeping, spatial awareness are among the capabilities that wind down over time leaving people ever more dependent and at risk (Aitkin, 2016). In this case, as in many others, people are seduced into becoming a core component of the ‘product’ being sold. As the human interiors shrink and fall away, identity itself becomes elusive and problematic.

In summary, leaving the high-tech disruptors in any field to their own devices, so to speak, simply means that the human enterprise is subjected to random shocks and abuses that end up placing it in ever-greater peril. For Naomi Klein this is part of a deliberate playbook designed to provide a minority with greater dominance and power (Klein, 2007). But it’s also the result of a certain kind of blindness that comes from over-valuing the technical and under-valuing the human and the social. If there’s a consistent theme here it’s that *power in the wrong hands creates more problems than it solves*. So high-tech innovation needs to be separated from simple notions of ‘progress.’ It is fundamentally a question of values and power – instrumental, cultural and symbolic. If humanity is to have any change of avoiding Dystopian outcomes human societies will need find new ways to own their own power and give only such of it as they judge necessary to governance structures that meet their real needs. Another way of saying this is that it’s time to disrupt the disruptors. They’ve had their moment in the sun and the clouds are gathering. It’s time for them to stand aside so that a different world can emerge.

### 3. Blind spots as opportunities

It has been suggested throughout this enquiry that worldview limitations are complicit in supporting a kind of widely shared and selective blindness that prevents many of the key players from perceiving what is strikingly obvious to others. Three brief examples are provided here. One concerns the implications of Earth changes now under way. Another is how unthinking commitments to empiricism, technical determinism and neoliberalism have eroded key modalities of human and social existence. Finally there is a significant, but seldom appreciated, underlying concern regarding the nature and implications of constitutive human interests.

#### 3.1. Global context, global limits, global action

Macro views of the contradictory and unsustainable condition of human civilisation have gained little or no traction with US corporations, the giants of Silicon Valley and their wealthy associates. This ‘condition’ obviously has multiple facets and there are many ways of coming to grips with it. For some observers a primary concern is the way humanity has laid waste to natural resources as a consequence of having outgrown the physical capacities of the global environment (Higgs, 2014). In this view issues around global warming, the scarcity of fresh water and the sixth extinction loom large. The accumulation of planetary impacts has given rise to the term ‘Anthropocene’ or era of human-related changes (Carrington, 2016; Slaughter, 2012; Steffen et al., 2015a). The term has slowly become accepted over recent years as those dedicated to ‘Earth science’ have provided numerous insights into the nature of large-scale processes of change.

Well-grounded knowledge about changing parameters of the global living space available to humans and other species has become both plentiful and increasingly reliable. It has, for example, provided valuable inputs to policy and decision-making at all levels. Work by Steffen and others on planetary boundaries is of particular salience (Steffen et al., 2015a, 2015b, 2004; Stockholm Research Centre, 2017). It shows how humanity has exceeded safe limits in three areas (flows of phosphorus and of nitrogen; loss of genetic diversity) and is set to exceed them in two others (land system change and climate change). Yet vital global concerns of this kind are not only widely overlooked by many high-tech entrepreneurs they are also actively denied by some of their most wealthy backers (Mayer, 2016). The very last thing the latter are prepared to recognise is the reality of global limits (Higgs, 2014).

Coming to grips with limits, the extent of human impacts and the choices and options available to humanity also provide many positive opportunities. Among these is the increased breadth and capability that flows from adopting more progressive values and broader, more inclusive worldviews (see below). Taking global issues seriously then opens up a plethora of actions and strategies that, properly understood, significantly enhances our individual and collective ability to navigate through the rough weather that undoubtedly lies ahead (Monbiot, 2017; Raworth, 2017). The New Economy Network Australia (NENA) is one of many organisations that demonstrate in practical terms how new economic structures and processes can be created both with, and without, official sanction (NENA, 2017). Other examples are discussed below.

|  |  |
|--|--|
| <p><b>Interior human development</b></p> <p>Primary roles of human developmental factors that frame perception and condition identity, motivation and capacity. Reveals options for translation and transformation. Re-focuses debates, strategies, on key human factors. Opens up grounds for resolving issues.</p>             | <p><b>Exterior actions</b></p> <p>Focuses on what people actually do: skills, habits, behaviours and strategies. Occupations, professions, sport, formal and informal work. Real world projects. Drivers and inhibitors of behaviour. The many applications of foresight &amp; design.</p>   |
| <p><b>Interior cultural development</b></p> <p>How history, cultures, ideologies, worldviews and language mediate self and other. Socialisation frameworks with embedded presuppositions and hierarchies of values. Establishes foundations of economy. Actively selects specific options from wider range of possibilities.</p> | <p><b>Global system, infrastructure</b></p> <p>The material world. Cycles of matter and energy. Physical and built environments. Infrastructure(s). Technologies and their impacts on society and the global system (resource depletion, pollution, ecological simplification, etc.). Visible consequences of value, cultural and design choices at every level.</p> |

Fig. 3. Four quadrants of Integral enquiry (Slaughter, 2010).

### 3.2. Re-valuing the human and social interiors

The empirical-analytic methods employed to create powerful technologies and to understand track macro phenomena both emerge from the ‘exterior collective’ quadrant of Integral enquiry. Yet taken in isolation they cannot grasp the nature of related human and cultural realities since they spring from very different sources and invoke different kinds of knowledge. Integral perspectives seek greater balance by adding an ‘interior’ dimension to both individual and collective phenomena (Fig. 3). The general lack of such distinctions helps explain (and indeed to resolve) some of the confusion and conflict that occurs when, for example, new waves of high-tech innovation (exterior collective) impact on human life worlds (interior individual) and pre-existing ways of life (interior collective). As noted, people, social systems and cultures are all deeply affected. Jobs are destroyed, professions disappear and machines primed to take over operations that were previously understood to exist solely within the domain of human action. Yet the study of history, the foundations of personhood, society and culture are only marginally accessible to empirical enquiry and are therefore routinely dismissed. Which is not to say that they cannot be studied and understood by those with the requisite skills, insight and methods (Esbjorn-Hargens, 2012).

### 3.3. Constitutive human interests

German philosopher Jurgen Habermas produced a series of works that made significant demands on readers yet also produced insights of continuing value. Of direct relevance here is his account of ‘constitutive human interests.’ Unlike much of his work the essence of such interests are easily grasped and usefully illuminate a number of vital social processes that tend to be overlooked in high-tech environments. Fig. 4 provides an outline of Habermas theory. In this account, *the technical interest* relates to ‘work’ and the empirical/analytic sciences that are centrally concerned with *production and control* (i.e. the application of technical rules to instrumental problems). *The practical interest* is about human interaction. Here the concern is not with control, nor with technical processes, but with *communication and understanding*, both of which are grounded in language and culture. The point is to clarify the conditions for clear and unobstructed communication between participating subjects. These are seen as interpretive tasks requiring appropriate skills. The third and perhaps ‘highest’ interest is *the emancipatory interest*. This relates to *questions of power and the universal drive for emancipation and freedom of action* (Habermas, 1971).

At no point does Habermas denigrate the technical interest per se since civilisation depends upon the maintenance of effective and efficient technical processes. Rather, what he is set against is the *over-extension* of the technical into areas that he considers illegitimate – as, for example, when decisions about new technologies are made on the basis of ‘can it be done?’ rather than ‘should it be done?’ One is a pragmatic issue concerned with technique; the other is value-laden and grounded in ethical considerations. This distinction has been widely overlooked in the present context. Then concerning the practical interest, there are many non-technical factors (such as power, ideology, marketing and direct exploitation) that impede and *prevent* true communication taking place between individuals and groups. The issue then becomes that of defining the conditions under which communication can be optimised. This again is not a technical question but one that relates to the richer and more complex world of *human intersubjectivity*.



|                              | Life Dimension | Form of Knowledge      | Criteria                                       | Type of Problem   |
|------------------------------|----------------|------------------------|--|---|
| <i>Emancipatory Interest</i> | Power          | Critical               | Emancipation and liberation                    | Normative: critique of domination, repression and distorted communication |
| <i>Practical Interest</i>    | Interaction    | Interpretive           | Achievement of communication and understanding | Interpretive understanding and practical choices                          |
| <i>Technical Interest</i>    | Work           | Empirical / analytical | Economy, efficiency and effectiveness          | Technical and instrumental  |

Fig. 4. Habermas' constitutive human interests (Habermas, 1971).

Finally, the emancipatory interest is engaged in the critique of domination, repression, mystification and institutional inertia. It tries to define the conditions within which people can create an *authentic existence* for themselves.

Unfortunately however, questions of limits, of the character and requirements of 'the social' and the whole question of underlying human interests – actual human needs and qualities – mean little or nothing to techno-enthusiasts and Internet entrepreneurs. As we've seen their speech patterns, metaphors, discourses were, and remain, focused on the single-minded pursuit of power, exploitation, expansion and accumulation of immense financial rewards. These features go a long way towards explaining why the Internet and many associated technologies became debased and also why they parted company from authentic human and social needs. The rise of *homo economicus* and the rapid expansion of humanly arid technical systems could not but produce a generalised Dystopian sense that human affairs were spinning out of control. During the second decade of the 21st Century traditional research, scholarship and the scientific method itself were also being undermined by the diminished rationality of technical innovation coupled with denialism on an astonishing scale. Moreover, the tendency of traditional disciplines toward subject compartmentalism made it difficult to address the growing complexities of macro-change. Many people began to experience a sense of the coming-apart of earlier structures and assumptions, often expressed as multiple failures. For example:

- A near-universal failure to resolve major environmental issues.
- Unwillingness on the part of global elites to rein in growth or reduce over-consumption.
- Unresolved questions about the Global Financial Crisis (GFC) and its aftermath.
- The related failures of globalisation and 'trickle down' economics to create a fairer and more equitable distribution of wealth.
- Growing instability and upheaval in the Middle East consequent upon the Iraq war and the abortive 'Arab spring'.
- Multiple failures of the US government to regulate or reform Wall Street, apply its own anti-trust regulations to the Internet oligarchs, develop appropriate policies on high-tech innovation or respond effectively to global warming.
- New waves of high-tech innovation were and are undermined by corporate power, mass surveillance and a newly enfranchised criminal underclass (Glenny, 2011; Zuboff, 2015).

The environment created by these interrelated and ever-shifting phenomena was and remains complex and challenging to say the least. Governance virtually everywhere has become more difficult. So it is regrettable, but not entirely surprising, that high-tech innovators have had little of value to say about the world they have been attempting to create. So long as their own innovations made it to market, these 'straws in the wind' were held to be of little significance. A variety of non-empirical and broad-based approaches to understanding were quietly developing in the background. Yet since they are too numerous to receive adequate attention here they might well form the basis of a separate work.<sup>1</sup>

Overall, the selective blindness the high-tech sector is less an indication of strength and power than of 'thin' and, in the long run, unproductive views of reality. For this to change the entire sector – and those who seek to replace or reinvigorate it – would do well to re-direct their attention toward blind spots such as those outlined here. Properly understood they provide creative springboards, stimuli for new thinking and radically new opportunities. In terms of the examples given these could include the following.

<sup>1</sup> The task of grasping some of the interior aspects of social change in the post WW2 era was taken up by interdisciplinary scholars such as Lewis Mumford, Hannah Arendt, Ulrich Beck, Zigmunt Bauman and Jurgen Habermas, among many others. More recent perspectives shedding further light on these matters include accounts of hypernormality (Hooton, 2016), anticipation theory (Poli, 2010), the 'de-growth' movement (Cattaneo et al., 2012; Videira et al., 2014) postnormal studies (Sardar, 2015) new economic paradigms (Raworth, 2017) and the wider use of Integral methods (van Egmond & de Vries, 2011).



- Grasping the reality of global limits and the vast number of opportunities for values development, creativity, design and adaptation that they imply.
- Re-valuing aspects of ‘the social’ such as empathy, care, respect and in-depth communication between equals.
- Consciously seeking to understand and enable fundamental human interests, without which it is doubtful if advanced and vibrant human societies can endure.

In short, careful and genuine investments in richer worlds of meaning and significance foreshadow completely different outlooks and a radically renewed palette of options.

#### 4. Transcending reductionism, re-purposing the Internet

##### 4.1. Interior drivers, scales of implementation

Virtually everyone outside the Silicon Valley bubble who has paused to consider the complex tangle of issues thrown up by the IT revolution in general and the Internet in particular tends, at some point, to reach a key conclusion – that *the key issues before us are not primarily technical*. Technology provides the physical substrate and software an artificial ‘nervous system’ that reaches ever more deeply into human lives. But merely following technical capabilities as far as they can be driven appears to confine humanity on a fast train to Dystopia and perhaps the end of human civilisation itself. Yuval Harari unintentionally provided a rehearsal, or test case, for that thesis in his book *Homo Deus* (Harari, 2015). Here the main driver of change was considered to be the ingenuity of large groups of people and their most significant achievements, indeed, are said to be those associated with high technology. Yet by relentlessly following this technologically determinist path the outlook for what the author refers to as ‘unaugmented’ humans is that they are expected to fall by the wayside and become the ‘road kill’ of history. It is severe and uncompromising conclusion but consistent with the starting assumptions. If, on the other hand, the uses of high-tech are shaped and conditioned by progressive social drivers – such as life-affirming values and expanded worldviews – the outcomes would certainly be very different. So in playing a reductionist game with the very forces that moderate raw technical power – language, values, worldviews and similar culturally derived sources of meaning and capability – Harari actually demonstrates how vitally necessary they really are (Slaughter, 2017). Nor is this the only source that confirms this vital insight.<sup>2</sup>

There are clearly many aspects to this story and a growing number of informed observers of this rapidly changing scene. As mentioned in the previous paper, Greenfield views the IT revolution less as an overwhelming success than a full-on invasion. So he seeks to explore the implications of what he regards as ‘the colonisation of everyday life by information processing.’ As with other critical approaches he is interested not merely in raw outcomes but also in the *motives* of promoters, the *ideas* behind the hardware and the social *interests* involved.<sup>3</sup> Working at a more fine-grained level and acknowledging such interests helps to re-frame core assumptions within corporate and business environments.<sup>4</sup>

Greenfield considers the Internet of Things (IoT) at three scales of implementation: the human body (or the ‘quantified self’), the home environment (or ‘smart home’) and public spaces (the ‘smart city’) (Greenfield, 2017). Such terms are already in wide circulation but Greenfield wants to probe more deeply into what they mean through actual case studies. As noted above, the marketing of high-tech devices commonly highlight assumed benefits to users but obscure underlying corporate benefits. So at the individual human scale biometric devices such as the Fitbit and the Apple Watch monitor a variety of health and fitness indices. Yet once again the flows of personal data are valued, analysed and used as inputs to advertising and sales. Insurance companies have obvious interests in these skewed transactions and some offer reductions in premiums in exchange for such personal data. Truck and public service drivers are especially vulnerable to the imposition of more heavy-handed versions. Then, unless this trend is halted, the intensive collection of personal data may be required of all drivers and other persons responsible for vehicles and related machinery. The logical end point of this insidious process is nothing less than the imposition of total surveillance.

At the scale of housing, ‘smart homes’ are beginning to be promoted on grounds of safety, security and convenience. But the rise of home-based ‘digital assistants’ requires careful consideration. Greenfield notes that ‘although the choices these ... offer to us are presented as neutral, they are built on numerous inbuilt assumptions that many of us would question if we were to truly scrutinise them’. In relation to Amazon’s rapid order ‘dash button’, for example, he adds:

The benefit to the individual customer is tiny compared with what Amazon gains. Sure, you never run out of cat food. But Amazon gets data on the time and place of your need, as well as its frequency and intensity, and that data has value. It is an asset, and you

<sup>2</sup> The idea that repressing or turning away from human qualities and social phenomena is exceptionally damaging receives powerful support from Masha Gessen in her book *The Future is History* (Gessen, 2017). Here she shows in tragic detail how, in the decades following the 1917 October revolution, Russian society and its people were radically diminished by the withdrawal of official support for, and interest in, questions of values, personal wellbeing and social coherence. Much of the substance of human and social life drained away with tragic consequences. With neither the language nor conceptual ability to come to grips with their condition the population was unable to grasp or improve it.

<sup>3</sup> ‘Social interests’ in the sense Greenfield is using the term refers more to a notion of ‘economic beneficiary’ than Habermas more encompassing and philosophical usage. Yet the two usages are arguably related.

<sup>4</sup> In 2015 John Naughton reported on work by Doc Searles on what he calls the ‘intention economy.’ Of direct relevance to the issue of there being human interests beyond the purely technical is the following view. Namely that ‘many market problems ... can only be solved from the customer side: by making the customer a fully-empowered actor in the market place, rather than one whose power in many cases is dependent upon exclusive relationships with vendors, by coerced agreement provided entirely by those vendors’ (Naughton, 2015).

can be sure that Amazon will exploit it in every way its terms and conditions permit – including by using it to develop behavioural models that map our desires in high resolution, so as to target them with even greater efficiency in the future (Greenfield, 2017).

Then, in relation to the IoT and at the scale of the ‘smart city’ Greenfield identifies core elements of what he calls the ‘guiding ideology’ of the Internet. It employs decontextualised and stripped down notions of language and meaning that preclude features such as uncertainty and interpretation. In such a view the world appears ‘perfectly knowable’ which implies that technical systems can encode it ‘without bias or distortion.’ Consequently, when applied to cities:

This is effectively an argument that there is one and only one correct solution to each identified need; that this solution can be arrived at algorithmically, via the operations of a technical system furnished with the proper inputs; and that this solution is something that can be encoded in public policy, without distortion (Greenfield, 2017).

That these observations are not merely theoretical is confirmed by the emergence of ‘Google Urbanism,’ an ambitious plan by the company’s Alphabet subsidiary to reconfigure cities in its own image. Its pilot project on the Toronto waterfront seeks to ‘reimagine urban life in five dimensions – housing, energy, mobility, social services and shared public spaces.’ But what is causing most concern is a proposed ‘data-harvesting, wi-fi beaming digital layer’ that would provide a ‘single unified source of information about what is going on.’ This would gather ‘an astonishing level of detail’ such that ‘each passing footstep and bicycle tire could be accounted for and managed.’ Issues of privacy and the blurring of public and private interests may be trumped, however, by the suspicion that ‘the role of technology in urban life is obvious: It is a money-maker’ (Bliss, 2018). For Morozov, ever on the alert for new forms of Internet solutionism, such heavy-handed developments signal ‘the end of politics.’ He comments that:

Even neoliberal luminaries like Friedrich Hayek allowed for some non-market forms of social organisation in the urban domain. They saw planning as a necessity imposed by the physical limitations of urban spaces: there was no other cheap way of operating infrastructure, building streets, avoiding congestion. For Alphabet, these constraints are no more: continuous data flows can replace government rules with market signals. (Morozov, 2017c)

Seen in this light the emergence of high-end ‘smart cities’ represents a further incursion of technical expertise into the lifeworlds of people, the ethos of cultures and the character of the settlements where much of humanity lives. Greenfield’s conclusions therefore speak directly to this process. He finishes with several recommendations that can be summarised as follows.

- The use of algorithms to guide the distribution of public resources should be regarded as a political act.
- Claims of perfect competence in relation to ‘smart city’ rhetoric should be rejected.
- Any approach the whole IT domain should include a healthy dose of skepticism.
- Commercial attempts to gather ever more data about people should be resisted (Greenfield, 2017).

#### 4.2. Taming the ubiquitous algorithm

Standing at the core of a vast number of IT processes is the ubiquitous algorithm. Its relative obscurity and foundation in mathematics means, however, that for many people it remains a mystery. But this need not continue. Cathy O’Neil was originally employed as a ‘quant’ in the heart of the New York financial district prior to the Global Financial Crisis (GFC). She saw first-hand, how the algorithms that exploit ‘big data’ can be used productively or as instruments of power and exploitation. In her view most people are unaware of how these new capabilities have proliferated. Consequently the reliance of bureaucratic systems on them is seldom appreciated. In the US she notes that ‘getting into college, getting a job, being assessed as a worker, getting a credit card or insurance, voting, and even policing are in many cases done algorithmically.’ She adds that:

Moreover, the technology introduced into these systematic decisions is largely opaque, even to their creators, and has so far largely escaped meaningful regulation, even when it fails. That makes the question of which of these algorithms are working on our behalf even more important and urgent (O’Neil, 2016).

She uses a ‘four-layer hierarchy’ in relation to what she calls ‘bad algorithms.’ At the first level are those with ‘unintentional problems that reflect cultural biases’. Next are those that ‘go bad through neglect.’ Third are those that she regards as ‘nasty but legal’ and finally ‘intentionally nefarious and sometimes outright illegal algorithms.’ In relation to the latter she adds that:

There are hundreds of private companies, including dozens in the UK, that offer mass surveillance tools. They are marketed as a way of locating terrorists or criminals, but they can be used to target and root out citizen activists. And because they collect massive amounts of data, predictive algorithms and scoring systems are used to filter out the signal from the noise (O’Neil, 2016).

The scam run by Volkswagen to conceal the results of emissions tests is, in her view, perhaps the most well known example, but the sale of surveillance systems to repressive regimes looms larger as a serious future threat. In her 2016 book *Weapons of Math Destruction* she looks into numerous context only to find the same dynamic at work. In one case a school district attempted to identify the weakest teachers and designed a set of tests of ‘teacher effectiveness’ using algorithms. Many of the criteria, however, such as how well students were learning year to year, could not be measured directly. The use of unverifiable proxies resulted in wildly varying results – but teachers were sacked anyway. From this and other cases O’Neil concluded that many algorithms are poorly designed and proxies used in place of real data invisibly distort the results. Another oft-experienced trap is where hidden feedback loops render data meaningless the more often they are run within a system. What is also significant about this account is that the underlying issues

are less about mathematics, statistics or data, than they are about transparency (or its lack) power and control. Currently in the US, for example, the well off can usually afford human representation whereas the poor are left with poorly performing data and a bureaucracy they can neither influence nor communicate with. In summary, used well algorithms can be tools that usefully extract value from big data. Used poorly, they can certainly ramp up the efficiency of operations but at the cost of unreliable or unjust results and increasing inequality.

O'Neil suggests a number of solutions, none of which are short term or particularly easy to implement without wider social support. 'First and foremost', she suggests, 'we need to start keeping track.' For example, 'each criminal algorithm we discover should be seen as a test case. Do the rule-breakers get into trouble? How much? Are the rules enforced, and what is the penalty?' She continues:

Even once we start building a track record of enforcement, we have ourselves an arms race. We can soon expect a fully-fledged army of algorithms that skirt laws, that are sophisticated and silent, and that seek to get around rules and regulations. They will learn from how others were caught and do it better the next time. In other words, it will get progressively more difficult to catch them cheating. Our tactics have to get better over time too (O'Neil, 2016).

Finally she suggests that:

We need to demand more access and ongoing monitoring, especially once we catch them in illegal acts. For that matter, entire industries, such as algorithms for insurance and hiring, should be subject to these monitors, not just individual culprits. It's time to gird ourselves for a fight. It will eventually be a technological arms race, but it starts, now, as a political fight. We need to demand evidence that algorithms with the potential to harm us be shown to be acting fairly, legally, and consistently. When we find problems, we need to enforce our laws with sufficiently hefty fines that companies don't find it profitable to cheat in the first place. This is the time to start demanding that the machines work for us, and not the other way around (O'Neil, 2016).

O'Neil's program for re-purposing algorithms is certainly ambitious but, given the plethora of unresolved issues in this area, it seems entirely appropriate. In her book she also calls for a 'model builder's pledge' (similar to the Hippocratic Oath taken by medical practitioners) a full-scale regulatory system, algorithmic audits and greater investments in research. In light of this she speaks approvingly of Princeton's Web Transparency and Accountability Project and European approaches (noted below) that are, even now, starting to dictate a new raft of terms and conditions that the Internet giants will have to recognise. Ultimately, she returns to the same ground that others have indicated in arguing that such choices are fundamentally moral, hence also ethical and social.

#### 4.3. Defensive measures, key questions

Many options are available to those who are willing to invest the time and effort required. In mid-2017, for example, Australian reporter Rose Donahue interviewed Helen Nissenbaum in New York about what the latter calls the 'obfuscation movement.' This was described as a 'David and Goliath' strategy that relied on the fact that the former had more freedom to act than the latter (Donahue, 2017). Donahue noted that Nissenbaum had developed tools specifically designed to disrupt Google's tracking and ad delivery systems. One called 'TrackMeNot' allows users to browse undisturbed under the cover of randomly generated searches. Another dubbed 'AdNauseum' is a tool that collects data from every site visited by the user and stores them in a vault. This vastly overstates the user's activity and therefore serves Google false information. While such tools may at present appeal only to a minority there are undoubtedly many more to come. A high-tech defensive war against the overreach of Internet oligarchs is increasingly likely. Many of these tools will become easier to use and personal agency will be enhanced as more people avail themselves of them.

In summary, the present Internet has evolved – or 'de-evolved' – into its present condition over an extended period. It will therefore not easily be prised from the grasp of giant corporations. Repurposing the Internet will take time. It will take concerted social and political action as well as extensive technical backup. Charles Arthur credits online rights activist Aral Balkan with the following insight: 'If you see technology as an extension of the self, then what is at stake is the integrity of our selves'. He continues: 'Without that - without individual sovereignty - we're looking at a new slavery' (Arthur, 2017). So key issues include the following.

- What kind of society do we want to live in?
- What visions of human life, society and culture do we believe in?
- What kinds of futures arise from our collective decisions?

It will not escape readers of *Futures* that these are exactly the kinds of questions that have driven futures/foresight thinking and practice for several decades. As the wider implications of IT revolution cause more and more people to focus upon them so new players will need to become more involved in the search for solutions. Governments, city authorities and civic administrators at all levels will need to be open to new forms of social engagement. They, in turn will also need greater support from an informed public.<sup>5</sup>

<sup>5</sup> A decisive move away from neoliberal assumptions and practices would arguably do more than almost any other measure to facilitate these tasks.

## 5. Productive innovation

### 5.1. Social democracy

Many of the decisions and practices of the high-tech innovators and oligarchs have gained support from prevailing assumptions about the market, the consumer, a minimal role for government and so on. Yet despite its broad influence the durability of neoliberalism as a guiding ideology should not be overstated. An in-depth review of neoliberalism by Metcalf refers to a 2016 paper published by the International Monetary Fund (IMF) that explicitly connects the former with some of its most significant consequences. These include ‘pushing deregulation on economies around the world ... forcing open national markets to trade and capital, and for demanding that governments shrink themselves via austerity or privatisation’ (Metcalf, 2017). While such insights may appear unremarkable in themselves they represent a startling admission by the IMF whose policies have long supported such practices. The author also suggests that the ideology should not be seen merely a ‘standard right wing wish list’ but rather ‘a way of reordering social reality, and of re-thinking our status as individuals.’ Viewed in this light the main premise – that ‘competition is the only legitimate organising principle for human activity’ – seems unlikely to remain viable over the longer term since it rules out and overwhelms vital human capacities. These include care, compassion, philanthropy and the like which all healthy societies need in order to function at all. The decline of neoliberal values and assumptions would also mean that previously unthinkable options would emerge, as would new strategies to reform the system. A ‘new normal’ would have its chance to become established.

In the UK a resurgent Labour Party raises the possibility that just such a development could be occurring through the rise of social democracy. Rundle summarises what he considers to be some of the wider implications. In this distinctively optimistic view local, national and global societies could:

Be run as a tripartite process of state, market and community institutions, with a “democratically enabling” state enforcing limits to the private sector, mandating social-economic spaces into which community/open/free/collective activities can expand, and having democratic socialised ownership, whole or part, of key economic sectors.

Such a shift has major implications for all sectors of the economy – which includes IT systems and the Internet. He continues:

That means ultimately that energy, water, resources, finance capital and communications infrastructure should be seen as social in nature, part-owned by the state, and certainly steered by it, through, for example, elected public boards. It means recognising that when corporations such as Google become monopoly default resources, they have de facto socialised themselves and institutional arrangements should reflect that (Rundle, 2017).

Raw suggestions in this form have a long way to go before they can be rendered into widespread practice. Yet they make a good deal of sense in the current context. Google/Alphabet, for example, may thus far have avoided the rigours of US anti-trust regulations but this may turn out to be a temporary ‘victory’ as other governments step in to take actions based on alternative assumptions and views (see below). Rundle’s piece also demonstrates yet again why so many observers and critics of the IT revolution argue that the central issues are not primarily technical but social and political. Society as a whole needs to take part in multi-faceted conversations of this kind.

### 5.2. New infrastructure

There’s no shortage of ideas and proposals regarding ‘what needs to be done’ to re-design and re-direct the Internet and, by extension, high-tech innovation in general. Helen Magretts of the Oxford Internet Institute is no exception. In order to deal with aspects of Internet aggression she suggests that:

Any successful attempt to prevent extremist, abusive and hateful behaviour online must be multifaceted, thoughtful and collaborative. It will involve ethical and legal frameworks to guide as well as mandate good behaviour; working with tech companies rather than making enemies of them; smarter policing of activities that are already illegal; and crowdsourcing safety, so that people and social enterprises play a role (Magretts, 2017).

Cathy O’Neil puts a strong case for the establishment of a new infrastructure to deal with the uses and misuses of algorithms. She seeks to create reliable records of how these tools are used and by whom. She also knows that to do so will not be easy as powerful organisations normally resist being called to account. She writes that:

We need to demand more access and ongoing monitoring, especially once we catch them in illegal acts... We need to demand evidence that algorithms with the potential to harm us be shown to be acting fairly, legally, and consistently. When we find problems, we need to enforce our laws with sufficiently hefty fines that companies don’t find it profitable to cheat in the first place. This is the time to start demanding that the machines work for us, and not the other way around (O’Neil, 2016).

Taplin goes further than most in optimistically proposing what he calls a ‘digital renaissance.’ This has various features that include:

- a shorter working week and the establishment of a universal basic income (UBI);
- measures to get the technical and creative communities working together;
- revisions of the ‘safe harbour’ provisions in the DMCA act;



- the Library of Congress issuing new guidelines as to the ‘fair use’ of creative and copyrighted material;
- revisions to, and wider application of, anti-trust regulations (to break up monopolies); and,
- a proliferation of co-operatives, non-profit companies, and what he calls ‘zero-marginal-cost distribution systems (Taplin, 2017).

In this latter respect Taplin echoes suggestions by Rushkoff that were noted in a previous paper. Rushkoff is interested in exploring a range of social and economic inventions in the context of re-thinking what money is and is for (Rushkoff, 2016). Finally Morozov (whose work has contributed substantially to this enquiry) suggests that *a single data utility* would be best placed to make the best use of material from divergent sources. In the light of current experience with commercial entities it would need to be non-commercial and publically owned, much as Rundle has suggested. Given that progressive governments could set up such utilities quite easily the next step would be to ensure that ‘whoever wants to build new services on top of that data would need to do so in a competitive, heavily regulated environment while paying a corresponding share of their profits for using it.’ He adds that ‘such a prospect would scare big technology firms much more than the prospect of a fine’ (Morozov, 2017a).

### 5.3. Effective regulation

When the European Union (EU) handed Facebook a \$120 m fine in May 2017 and Google a heavy \$2.4bn in June, both for market abuses, many wondered what the next step would be. By mid-2017 the answer came in the form of another acronym – the GDPR (or general data protection regulation). Long time observer of the IT scene, John Naughton, emphasised that GDPR is not a directive but a regulation so it will become law in all EU countries at the same time. Some of the implications are as follows:

- The purpose of the new regulation is to strengthen and rationalise data protection for all individuals within the EU. It also covers the export of personal data to outside the bloc. Its aims are to give control back to EU residents over their personal data and to simplify the regulatory environment for international business by unifying regulation.
- The GDPR extends EU data-protection law to *all* foreign companies that process the data of EU residents. So even if a company has no premises or presence within the EU, if it processes EU data it will be bound by the regulation. And the penalties for non-compliance or infringement are eye watering, even by Internet standards: fines up to €20 m and/or 4% of global turnover.
- More significantly, the GDPR extends the concept of “personal data” to bring it into line with the online world... The regulation gives important new rights to citizens over the use of their personal information... Valid consent has to be explicitly obtained for any data collected *and for the uses to which it will be put*.
- Citizens will now have the right to request the deletion of personal information related to them (Naughton, 2017a;).

This is obviously what pundits call a ‘game changer’ as it fundamentally changes the rules for how these organisations collect, will be able to use and manage private data. Naughton calls it an ‘existential threat’ to those currently operating beyond the reach of existing data regulation laws. It will certainly help to resolve the present situation in which people’s private lives everywhere are regarded as ‘fair game’ to entities whose sole interests lie in sales, profit and power. And it will go a long way to resolving some, but by no means all, of the concerns expressed so clearly by Zuboff (2015) and others. At the same time it should be recognised that public service sectors such as education and health will have to adjust their own procedures and this will involve considerable costs.

### 5.4. The technical is political – the return of anti-trust

As the oligarchs have steadily penetrated ever more areas of human and economic life they’ve become so powerful that they abjure regulation by elected bodies and are frequently said to be way ‘ahead’ in terms of their products and services. But this is a mistake. If we accept that the technical is political it is harder to confuse technical mastery with other forms of expertise. As ever, Morozov nails the core of this confusion by reference to underlying social interests. He poses the following question:

How could one possibly expect a bunch of rent-extracting enterprises with business models that are reminiscent of feudalism to resuscitate global capitalism and to establish a new New Deal that would constrain the greed of capitalists, many of whom also happen to be the investors behind these firms? (Morozov, 2017b).

During mid-to-late 2017 it was clear that, while the Internet giants were not about to collapse, social and political forces on both sides of the Atlantic were beginning to line up in broadly the same direction. Signs were emerging that might be called their ‘golden age’ could be coming to a close. In September, for example, the Guardian editorialised that ‘Amazon’s dominance of the eBook market may not have raised prices, but it left the sector anaemic and competition floundering’. Another commentator was quoted as saying of the oligarchs that he did not think ‘any credible economist who isn’t an Ayn Rand lunatic would accept that these are not monopolies’; also that ‘Amazon sells 65% of books online now, Google controls 80% of the search market’ (McChesney in Solon & Siddiqui, 2017). More people than ever are becoming aware of the fact that something is very wrong with this picture.

During the same month Ben Smith, a well-regarded BuzzFeed writer, was among the first of many to confirm what he called a ‘palpable, perhaps permanent, turn against the tech industry.’ He added that ‘the new corporate leviathans that used to be seen as bright new avatars of American innovation are increasingly portrayed as sinister new centres of unaccountable power.’ In his view this constituted ‘a transformation likely to have major consequences for the industry and for American politics’ (Smith, 2017). He also reported on how politicians of widely differing views were urging ‘big tech’ to be considered less as private companies than as ‘public utilities.’ After years of denying the value or relevance of treating the high-tech giants in the same way that Bell Telephone and

Microsoft had been treated in earlier years (i.e. broken up into small units) anti-trust legislation was finally back on the agenda. Similarly Washington senators Elizabeth Warren and Claire McCaskill both became involved in making anti-trust regulations part of the Democratic agenda over the next four years. Overall, the gap between ideas and effective action was perceptibly closing.

## 6. Humanising and democratising the IT revolution

### 6.1. Public goods and moral universals

If anything has become clear during the present enquiry it is that humanising the IT revolution requires something other than technical innovation. It obviously has many technical implications but the key drivers of a multi-faceted shift toward a different *modus operandi* are not technical but found within human, social and cultural contexts. As Zuboff noted in relation to big data, 'it is not an autonomous process ... it originates in the social, and it is here that we must find it and know it' (Zuboff, 2015).

The current 'de-evolved' Internet and explosion of radically ambivalent high-tech innovations provide clear evidence of an extended and continuing cultural failure. Despite its many positive aspects it's becoming harder to avoid the fact that the US has become enmeshed in its own downward spiral. Countless words have been written on this topic but one core concern is its singular lack of success in creating viable 'public goods' such as free health care, quality education, protection from random violence and public wellbeing on a broad scale. Umair Haque argues that the lack of such goods separates the US from all other advanced nations. The former spring from 'moral universals' that he suggests are largely absent from the US but which are needed to 'anchor a society in a genuinely shared prosperity.' Such universals don't simply 'spread the wealth' but help to civilise people. They 'let people grow to become sane, humane, intelligent human beings' – all characteristics upon which democracy depends. Any society lacking these characteristics simply runs out of steam. In this view, what happened in the US is that:

They have never seen - and still don't see - the benefits: the civilising process that democracy depends on. Thus, in America today, there are no broad, genuine, or accessible civilising mechanisms left. ... The natural consequence of failing to civilise is breaking down as a democracy - democracy no longer exists in the sense of "people cooperating by voting to give each other greater prosperity". They have merely learned to take prosperity away from one another (Haque, 2017).

Such suggestions must be treated as debatable, yet Haque is not alone in advancing this general argument. Noted Australian journalist, Peter Grete is in broad agreement. In his opinion 'since America's founding, its leaders have recognised that the country's real authority – as opposed to power – rests on its moral standing.' Yet the routine outpouring of ignorance by the US president has 'placed the US on the same moral plane as some of the world's most ruthless tyrants.' He finds this 'deeply troubling' because 'without a clear moral framework, the world becomes a snake pit of competing national interests' (Grete, 2017). Such sentiments provide yet another factor that helps to account for the debased version of Internet usage and commerce that became normalised over recent years.

### 6.2. Values, worldviews, research

Taken together the above goes a long way toward explaining why the Internet became compromised. It not only failed to deliver on the idealism of its early proponents but also became a source of exploitation, danger and oppression. The many and varied uses of IT are divided between the genuinely helpful and those that are routinely misused. At least two underlying rationales for moving toward the former can be briefly mentioned here. One springs from value and worldview considerations. An outlook typified by greed, selfishness, exploitation and an underlying disregard for real human and social needs will produce, and has produced, applications adapted to these uses. On the other hand positive values such as generosity, care and respect, especially when coupled with socio-centric or world-centric outlooks, will be directed toward more widely useful and constructive uses. This identifies a core difference between, say, monopoly platforms that treat people like mindless sheep by driving them into the arms of the advertising industry, and socially useful innovations such as local currencies, that respect and build local economic and social wellbeing.

As noted above, a different, but related, rationale can be drawn from evidence-based Earth science. The latter makes it abundantly clear that humanity is under real and unrelenting pressure to re-think the conditions of its tenancy of this small planet. Here values such as caring, foresight and obligations to future generations come to the fore. They simply make better sense in this context. Roger Dennis is not alone in suggesting that leaders in technology need broader and deeper views of the world. In fact he suggests that 'the industry doesn't need more programmers, it urgently needs more women, ethicists and philosophers' (Dennis, 2017). Political decision-making about the uses and abuses of all classes of high technology need to be returned from 'defence' contractors, specialised labs and private corporations to well-staffed and properly equipped locations firmly placed within the governance and related structures of civil societies. This process will certainly include private initiatives that draw both on progressive values and emerging technologies to help break the multi-monopolies of currently over-dominant players (Ahmed, 2017). It follows that effective and helpful innovation does not necessarily mean expanding the size of governments per se, but it will certainly require overturning any residual notion that 'markets rule.' Clearly they don't and can't.

Another way to 'humanise the future' is to ensure that sufficient human and economic resources are directed toward high quality evaluation and research. In late 2017, for example, the Oxford Internet Institute found clear statistical evidence that during the previous US election 'the balance between freedom of speech and election interference has been tipped.' Specifically 'Twitter users got more information, polarising and conspiratorial content than professionally produced news' and 'average levels of misinformation were higher in swing states than in uncontested states' (Howard & Kollanyi, 2017). Junk news is an ideal medium for the further

propagation of junk science. So the researchers came up with a short list of actions to deal with the abuses they uncovered. These include:

- Up-dating the Uniform Commercial Code ... forcing companies to adhere to basic anti-spam and truth-in-advertising rules;
- Ensuring that paid political content on social media is accompanied by the disclosure of backers;
- Social media platforms be required to file political advertising and bot networks with election officials; and,
- Bots in general be clearly identified to users (Howard & Kollanyi, 2017).

Not long after this the Economist magazine (not particularly well known for having a progressive outlook) ran a 'leader' story that posed the question Do social media threaten democracy? One reason provided was that 'far from bringing enlightenment, social media have been spreading poison' (Economist, 2017). Clearly disquiet with social media is no longer limited to a few marginal sources. During 2017 disruptions to vital democratic processes – especially during the US election and the 'Brexit' referendum – carried out by Russian and other sources had been acknowledged and documented in detail (Cadwalladr, 2017). Given the complexity of issues involved, high quality research and monitoring of such activities becomes vital. It allows knowledge and policy-formulation to be up-dated, miscreants to be identified and, overall, routine reality checking to occur.

### 6.3. Sharing cities, platform cooperativism

Nowhere is the potential for new kinds of IT-enabled organisations and practices more timely and useful than in relation to cities and cooperatives. For example, in Darren Sharp's view the notion of Sharing Cities – rather than merely 'smart' ones lacking a social contract with citizens – can serve as 'an antidote to top-down technologically deterministic visions of the future.' His vision is one in which existing infrastructure such as wi-fi and spaces within public buildings are made more widely available. He looks to Seoul and Amsterdam for examples of how a sharing approach is actually working. In summary he suggests that 'Sharing Cities create pathways for participation that recognise the city as a commons and give everyone the opportunity to enjoy access to common goods and create new forms of shared value, knowledge and prosperity' (Sharp, 2016). That this is not an isolated example and should be seen in a much wider context is demonstrated in a fine collection of 137 case studies. This is much more than a 'how-to' reference work as it presents a vision for cities that situate people (rather than the market, technology or governance) at the core of what cities are and how they operate (Shareable, 2017).

In a similar vein Rushkoff explores the potential of democratically focused social and economic innovations. Drawing inspiration from existing examples he highlights possible characteristics of IT-enabled 'steady state' enterprises, 'platform cooperatives' and 'genuinely distributist businesses.' Such features include the need to 'reclaim values' in support of 'women's equality, integrative medicine, worker ownership and local currency' (Rushkoff, 2016, 215–37). Platform cooperatives are among the most promising of new IT-enabled and democratically constituted organisational forms. One of the most thorough treatments of this emergent phenomenon is provided by Trebor Scholz. As with many other observers he is clear about the need for change. For example he writes that:

We cannot have a conversation about labour platforms without first acknowledging that they depend on exploited human lives all along their global supply chains, starting with the hardware without which this entire "weightless" economy would sink to the bottom of the ocean. ... (Similarly) this isn't merely a continuation of pre-digital capitalism as we know it, there are notable discontinuities - new levels of exploitation and concentration of wealth for which I penned the term crowd fleecing. Crowd fleecing is a new form of exploitation, put in place by four or five upstarts, to draw on a global pool of millions of workers in real time (Scholz, 2016, 3–4).

In Scholz' view what he calls 'platform cooperativism' is the coming together of three elements: the existing technical know-how of existing monopoly platforms, a sense of solidarity and reframing concepts like 'innovation' with a view to sharing the rewards. He also provides a typology of platform cooperatives and a useful list of guiding principles:

- Ownership.
- Decent pay and income security.
- Transparency and data portability.
- Appreciation and acknowledgement.
- Co-determined work.
- A protective legal framework.
- Portable worker protections and benefits.
- Protection against arbitrary behaviour.
- Rejection of excessive workplace surveillance.
- The right to log off (Scholz, 2016, 18–21).

For Scholz the core of the issue is 'a new story about sharing, aggregation, openness and cooperation.' Equally significant is that his view of the present incumbents may be iconoclastic but it is certainly not punitive. Rather:

The importance of platform cooperativism does not lie in "killing the death star platforms." It does not come from destroying the

dark overlords like Uber but it comes from writing over them in people's minds, and then inserting them back into the mainstream (Scholz, 2016, 26).

This is clearly a human and social process that seeks to recover values that were cast aside in the single-minded pursuit of growth and profit. This, it seems, is the very foundational work that can help to rehumanise and democratise both the Internet and the IT revolution on which it is founded.

## 7. Conclusion: values and moral development

This and the previous papers have commented on certain value and worldview limitations that arguably characterise both the ethos of Silicon Valley and some of its leading figures. More recently John Naughton took up the issue of what he calls the 'astounding naivety of the tech crowd' himself. For him a plausible explanation can be found in the restricted nature of the latter's educational backgrounds – mainly mathematics, engineering and computer science. He notes that these are 'wonderful disciplines' but then goes on to suggest that:

mastering them teaches students very little about society or history – or indeed about human nature. As a consequence, the new masters of our universe are people who are essentially only half-educated. They have had no exposure to the humanities or the social sciences, the academic disciplines that aim to provide some understanding of how society works, of history and of the roles that beliefs, philosophies, laws, norms, religion and customs play in the evolution of human culture (Naughton, 2017b).

Some may regard these as contentious topics yet there are quite straightforward ways of addressing them in this context. One is to go back to the Universal Declaration of Human Rights (UDHR) that was signed off by the United Nations (UN) back in 1948. Here there are a couple of specific articles that speak directly to the themes of this paper, as follows:

### Article 12

No one shall be subjected to arbitrary interference with his *privacy*, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.

### Article 22

Everyone, as a member of society, has the right to social security and is entitled to realisation, through national effort and international co-operation and in accordance with the organisation and resources of each State, of the economic, social and cultural rights indispensable for his *dignity* and the free development of his personality (United Nations, 1948;).

These statements clearly established that the nations of the world were firm in their belief that the privacy and dignity of all human beings were to be respected and maintained in perpetuity. After the horror of two disastrous world wars they were deemed to be of particular value and significance. Yet the high-tech sector almost everywhere seems to have lost sight of these vital commitments. Wendell Bell later took up the theme of 'universal human values' in volume 2 of his masterwork *The Foundations of Futures Studies*. Here he suggested that:

Human societies and cultures have many features in common. ... Near-universals do not exist by chance. ... They give us insight about which values may have contributed to the survival and flourishing of human societies over the long haul of human evolution (Bell, 1997, 171).

He continues by discussing four values that he considers of major importance: 'knowledge, evaluation, justice and cooperation.' He also mentions those from a survey carried out by Kidder: 'love, truthfulness, fairness, freedom, unity, tolerance, responsibility and respect for life' (Bell, 1997, 181). Taken out of context such lists mean very little but they do indicate general orientations that have been highly regarded by most cultures over long periods of time. As such they are not to be readily dismissed. The picture becomes clearer still when Bell reviews Kohlberg's stages of moral development, summarised in Fig. 5 (Kohlberg, Levine, & Hewer, 1983).

Bell summarises some of the features of these stages in the following way.

**Stage 6:** Universal principles of justice, the equality of human rights, and respect for each individual's human dignity are the most important, more important even than the law. Doing right flows from a rational belief in the validity of universal moral principles and having a personal commitment to them.

**Stage 5:** A rational obligation to be impartial in upholding values and trustworthy in fulfilling voluntarily made contracts, recognising that some general rights such as life and liberty transcend law and majority opinion. Doing right is both fulfilling one's freely agree to obligations and a rational calculation of the greatest good for the greatest number.

**Stage 4:** A concern with larger social institutions and society as a whole. Doing right is fulfilling one's obligations and being concerned about the welfare of the group.

**Stage 3:** The need to be a good person in your own and others' eyes. Being mutually loyal... Doing right is living up to the expectations of others.

**Stage 2:** Serving one's own needs or interests while recognising other people's needs or interests. Doing the right thing still depends on external authority.



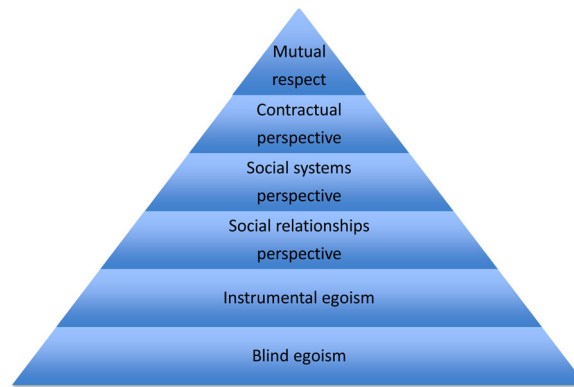


Fig. 5. Social perspectives at six stages of moral development (Bell, 1997; Kohlberg et al., 1983).

**Stage 1:** Obedience and the avoidance of punishment. Doing right depends on external authority. (Bell, 1997, p. 218)

It is for the reader to consider the how well or badly the values and human qualities suggested here may apply to specific individuals and organisations that have colonised the Internet for their own limited purposes. But at the very least Bell and Kohlberg provide us with clear and reliable criteria that can legitimately be used as an evaluative scale. So in terms of moral development thus defined, some organisations and their executive leaders may find themselves hard pressed to provide adequate answers. Which has huge social implications. When the question of re-negotiating social contracts is raised – and it will be repeatedly – then interlocutors can legitimately seek evidence for the fulfilment of these criteria at the highest levels. Possibly the most useful guidance and overall summary is provided by Bell himself when he suggests that ‘People live best who live for others as well as for themselves’ (Bell, 1997, 275). Finally Fig. 6 summarises some of the key suggestions made throughout this series back to an Integral perspective.

A straightforward four-quadrant analysis illustrates how various right hand quadrant phenomena (including technology, infrastructure and exterior actions) can usefully be related back to various left hand quadrant equivalents (values, worldviews, stages of development etc. as expressed through a variety of cultural norms and conditions). It follows that one way of promoting more humanised and democratic uses of any technology is to simply open to these left-hand quadrant realities and take them fully into

|  |   |
|--|---|
| <p><b>Interior human development</b></p> <p>Relate human developmental factors to organisational development and innovation. Implications of different worldviews, values and choices. Revalue human agency as source of power and capability. Re-focus attention on human and social priorities for positive futures.</p>   | <p><b>Exterior actions</b></p> <p>Abandon the century-long fiction that consumerism equals happiness. Re-value human capabilities and redress their takeover by tech substitutes. Restrict ‘screen time’ in favour of real world interaction and experience. Refine uses of ‘digital reality’</p>   |
| <p><b>Interior cultural development</b></p> <p>Revalue the socio-cultural domain and recognise how IT conditioned by these foundations. Develop understanding of how cognitive and social interests intersect with technical and practical outcomes. Pay particular attention to role of public goods and moral universals in pursuit of healthy social forms. Abandon business models based on theft of private data. Support progressive innovations such as social democracy and platform cooperatives.</p> | <p><b>Global system, infrastructure</b></p> <p>Revise and update civil infrastructure to shift core functions from private interests. Invest powerful new oversight and foresight functions. Subject new technologies such as algorithms and cryptocurrencies to strict evaluation and continuing management. Ensure that innovation and technical development contributes to human, social and environmental wellbeing. Ensure that ‘sharing cities’ are based on democratic principles.</p> |

Fig. 6. Humanising and democratising IT.  
(Adapted from Slaughter, 2010, p. 153).

account.

This series has shown how the early Internet was shaped and conditioned by specific human and cultural forces within the U.S. After a fairly benign, government-funded start, a handful of entrepreneurs took over and, with little or no thought for wider consequences, actively fashioned the conditions for their own success. Tax laws were revised. Anti-trust regulations that had earlier been applied to Microsoft and the Bell Telephone Company were set aside. Strategies were undertaken through which private monopoly platforms would grow unhindered into the world-spanning behemoths of today. The rise of neoliberalism then turbo-charged this process. Following Hayek it viewed the government as an impediment to ‘progress’ and the market as an unquestioned good. These tendencies, along with Rand’s nihilistic view of human existence, all helped to bring the present constellation of rootless and invasive entities to its present condition.

In an alternative world, competent far-sighted governance would have set the conditions for such enterprises and modified them progressively over time. Human rights (including the right to dignity, privacy and freedom from oppression) would have been respected and consciously built into the foundations of the Internet. Corporations would have learned to respect users and therefore to ask before expropriating creative work and private data wholesale for commercial gain. Tax laws that mediated fairly between corporate and social needs would have helped to ensure a steady flow of income for social expenditures. When entities grew too large they would have been broken up or otherwise compelled to adapt. Currently, however, we do not live in that world.

Yet, as can be seen from some of the many examples outlined above, there are a host of reasons to support informed optimism and hope, the framing of real solutions. Furthermore, it is helpful to remember that some aspects of our situation are by not entirely new. When Martin Luther hammered a copy of his 93 theses onto the Wittenberg church door some five centuries ago, he set himself against the oligarchy of the day – the all-powerful Catholic Church. He questioned the legitimacy of that vast institution and, at the same time, began a process that both destroyed its business model and made way for alternatives. Today the underlying dynamic is suggestive but there are also clear differences. Luther’s stripped down version of Christianity was a radical change but it still provided people with a sturdy moral framework to guide their thinking and behaviour. Such foundational certainties are more elusive in our own time. On the other hand this very fact arguably provides a rationale for recovering, re-valuing and applying some of the universal human values outlined above. The latter are perhaps among the most viable sources of strength and continuity available during times of transformation and change.

The legitimacy of the Internet oligarchs is now in doubt from many quarters and for a variety of reasons, so limits are likely to be imposed. Similarly, the business model that daily abuses countless human beings is unlikely to survive without major changes being wrought by newly enfranchised, democratically constituted cooperatives and civil authorities. While government actions may be slow and, at times uncertain, this study has shown that a host of responses, innovations and alternatives is under active development. It is inconceivable that these will not change the nature of digital engagement over time. So it is indeed possible to look ahead with qualified optimism and to anticipate a new and different renaissance. It is one that sets aside technological adventurism and wild, unconstrained innovation, in favour of positive human values and cultural traditions that balance human dignity and rights on the one hand with the enhanced stewardship of natural systems on the other.

## Notes

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