

Technology and In/equality, Questioning the Information Society

(Almost) 20 Years Later

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Abstract

At the beginning of the 21st century, we co-edited a book called Technology and In/equality, Questioning the information Society. In that book, we focused on access and control of media technology, education and skills with a particular focus on gender and global economic development. The editors and contributors were all committed to approaching teaching and research about digital technologies and society from an interdisciplinary perspective. In this article, we reflect on how the debates about digital inequalities have developed over the past 20 years, and on our current understanding of “technology” and “in/equality,” the key terms in the title of the book. In this article, we examine what has stayed the same and what has changed, through the lens of gender. We argue that while digital technologies have clearly changed, inequalities have persisted. Contrary to popular belief, access is still an issue for the global south, as well as for marginalised communities throughout the world. We also show how gender inequalities and hierarchies are reproduced in digital spaces, demonstrating that even where women have equal access, possibilities for discrimination and oppression remain. We conclude by arguing that there remain important tasks for scholars of technology and new media, namely to monitor the material and symbolic significance of new technological developments as they emerge and to examine the ways in which they may reflect and re-produce social inequalities.

Introduction

In 2000, together with Nod Miller and Peter Senker, we co-edited a book called *Technology and In/equality, Questioning the Information Society* (hereafter *T&I*). It is still in print, has received some good reviews (e.g. Perelman 2001; Wajcman 2001; Lax 2002; Karl 2003), sold over 1000 copies, was widely used in teaching in the first years after its publication, and has been cited about 340

Fig. 1 and 2: Contents of Technology and In/equality

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times.¹ The book was produced in the late 1990s by a group of colleagues working in the Department of Innovation Studies, University of East London. We promoted an interdisciplinary approach to teaching and research about digital technologies and society, including a focus on inequalities and a dedicated “Women and Technology” degree pathway. Following an introductory essay by the editors, the book has three parts: access and control of media technologies, education and skills with a particular focus on gender, and global economic development (see Figure 1 and 2 for the full list of chapters).

In this short article, we reflect on how debates about inequalities in digital cultures have developed over the past two decades. We start by reflecting on the technologies and inequalities that were the focus of our attention in 2000, before summarising our understanding of these key title terms, and illustrating these

1 Maarten van Wesel tracked down the citations, which is notoriously time-consuming for edited collections. He consulted Google Scholar in October 2018, and searched for all individual chapters and for the whole collection. This did lead to some duplicate citations, but these have been excluded from the total mentioned here.

by reference to gender, a topic addressed in *T&I* and still an important focus of Henwood's work. We then turn our attention to the current situation, focusing on the massive concentration in the ownership and control of internet provision, the pervasive digitalisation of everyday life, again paying particular attention to gender.

Technology and Inequality in the Year 2000

In 2000, public and commercial access to the internet had only been around for a few years, since 1993 when the World Wide Web had become available. We were becoming familiar with email, search engines, text-based environments such as listservs and role-playing games, and digital television was beginning to emerge. However, print media, radio and television were still setting the agenda, not only in terms of content but also aesthetically and symbolically. It was, at that time, still possible to consider the potential impacts of digital developments on a more discrete or sectoral basis, such as the implications for media production and consumption or for workplace automation of routine tasks in factories and offices. Nonetheless, as our title also indicates, there was much discussion of the social implications of the so-called "information society" (one of the precursors to the "digital society"). This discussion dated back to the 1970s, when Daniel Bell developed his ideas about information becoming a commodity to be traded and the crucial role of information workers in advanced economies (Bell 1973). We were coming to the end of the first dot-com boom (1995–2000), 5 years of massive speculation in internet-based start-ups and rapid growth of internet use among the broader public. But we (editors and contributors) knew enough history to know that bubble would soon burst, as had happened with the speculation in railway investment more than a century before. By 1999, it was becoming clear that the massive investments in small start-ups could not be sustained by any substantial activity.

At the time the book was being prepared (end of the 1990s), we were probably quite optimistic that inequality, in some overall sense, was slowly disappearing, at least in the UK where we were based. The Equal Pay Act had been passed decades earlier in 1970 and women were ever more visible in the labour market and public life. Even though all of the contributors had lived through the 1980s and Thatcherism with its sustained attacks on trade unions and public services, Britain appeared to be changing. The Labour Party, under the leadership of Tony Blair, had been elected in 1997, partly on a promise of "Education, education, education." The formal separation of universities (focusing on theoretical knowledge) and polytechnics (focusing on vocational training) had been removed in an effort to broaden access to higher education. There was a general feeling of optimism that long-term trends in the improvement of life chances might continue, as the book was finished before 9/11 and the subsequent "war on terror" and before the 2008 financial crisis. Nonetheless, we were aware that any progress towards equality

was the result of, and would continue to be dependent upon, struggles by minority groups, the women's movement and organised labour to maintain and improve people's living and working conditions.

In *T&I*, we argued against the notion that technologies are neutral artefacts or processes that simply "impact upon" society. We outlined three ways in which technologies can be said to be social constructions: as embodiments of values and interests of particular social groups – the "social shaping" approach (MacKenzie & Wajcman 1985); as sets of meanings given through consumption of technologies and always contested (Bourdieu 1984; Silverstone & Hirsch 1992); and as a more combined approach where "the process of stabilising meaning, itself always dynamic and contingent, is central to the process of creating the artefact and does not only occur after the artefact enters a wider world of consumption and use" (Henwood et al. 2000a: 12). This latter insight into the "interpretative flexibility" of technologies was one of the most important contributions of the "social construction of technology" (SCOT) approach (Bijker, Hughes, & Pinch 1987). SCOT, along with actor-network theory (e.g. Latour 1987), which emphasises the importance of both non-human and human actors, had come to dominate accounts of the technology–society relationship. In their different ways, both take into account the material and the symbolic aspects of technology. In our introduction to *T&I*, we made a strong case for continuing to do so, while remaining somewhat agnostic about theoretical allegiances.

In writing about inequality, we argued that it was not solely about exclusion, a problem to be solved by increased access. Instead, we took as our starting point that differences between individuals or social groups in access to, or possession of, particular jobs, goods or attributes did not automatically imply inequality, and that inequality required both difference *and disadvantage*. Thus, authors in the book sought to explore, not simply differences in access to, for example, the internet (Thomas & Wyatt 2000) or computing education (Henwood et al. 2000b; Miller, Kennedy, & Leung 2000). Instead, we explore the contexts within which, and mechanisms by which, such differences came to constitute the disadvantages that were, in the technology and inequality literature at that time, beginning to be thought of as new "cyberspace divides" (Loader 1998). Thomas and Wyatt illustrate how both inclusions and exclusions can be generated by those who do have access and, once again, how material and symbolic aspects of the internet are implicated in producing diverse in/equalities:

Perhaps the key feature of the internet, from the point of view of overcoming inequality, is its flexibility. It can contain many different, even contradictory 'virtual communities': racist organisations use the same infrastructure as the Association of Progressive Communications to spread their messages; anarchists share the same browser software as the financial organisations they are trying to destroy; pornography and sites promoting fundamentalist religions both flourish and are often found together in the vanguard of technical developments (Thomas & Wyatt 2000: 43).

Many of our arguments about technology and inequality are well illustrated with reference to gender inequality where, in the late 1990s, much of this debate focused on women's relationship to technological education and work. We were witnessing, and contributing to, a shift in research focus from studies of "women in technology" (that identified the "problem" as women's underrepresentation in technology and the "solution" as greater access) to a more relational focus on "gender and technology." This shift in emphasis was sometimes expressed as a shift from the "woman problem in technology" to the "technology question in feminism" (Henwood 2000; Faulkner 2001). The latter approach sought to embrace a more nuanced account of women's agency that did not rely on the notion of individual choice and which continued to identify "material disadvantage and structural inequalities, focusing on the collectivities of class, gender and race" (Henwood & Wyatt 2000: 130). At the same time, it posited a more socio-cultural understanding of both gender and technology where neither is fixed or "given" but are, like other cultural processes, subject to negotiation, contestation and, ultimately, transformation.

In *T&I*, chapters by Henwood et al. (2000b: 111 ff.) and Miller, Kennedy, & Leung et al. (2000: 129 ff.) apply this thinking, and they complicate notions of access as the solution to inequality in their studies of women following IT courses. Henwood et al. argue that, despite getting access to IT courses, women continued to experience marginalisation precisely because the cultural nature of both technologies and gender was not recognised. Even when reflection on such processes was built into IT courses (such as the Women and Technology pathway of the Interdisciplinary IT course they studied), women continued to be marginalised by dominant discourses and practices. This happened, they argue, precisely because women's greater access tended to re-assert gendered binaries that continued to equate technical competence with men. Miller, Kennedy and Leung reflect on inequalities on a distance learning access course that was designed to support mature, black women from a disadvantaged area to enter IT education. They contrast policy rhetoric that suggested such inequalities could be overcome through such remote access with the "practical difficulties, personal uncertainties and ideological tensions in using new technologies to overcome inequalities" (Miller, Kennedy, & Leung 2000: 146).

Where are We Now?

We hope that much of the book still resonates today, providing insights into late 20th-century technologies and how they were experienced in different contexts. But the world has changed. In rich, highly industrialised countries, technologies are now permeating our lives in ways that were difficult to imagine 20 years ago. Many of our daily activities, from using public transport to interacting with our colleagues and friends, have become "digital by default." It is becoming increasingly

difficult to avoid digital technologies and the services they facilitate, in shopping, health care and many other interactions with public- and private-sector organisations.

This growing digital imperative does not mean that inequalities are no longer important. We underestimated three developments that have become important in the years since the publication of the book. The first is the resurgence of academic and policy (to some extent and in some places) attention to inequalities following the publication of *The Spirit Level* by Richard Wilkinson and Kate Pickett (2009) and *Capital in the Twenty-First Century* by Thomas Piketty (2013/2014). The second is the extraordinary ability of international capital to accumulate resources and to avoid taxation, resulting in massive personal fortunes for a tiny number of high-tech entrepreneurs. The third is the persistence of sexism and misogyny. We discuss each of these below, by reference to questions of access and digital divides.

Wilkinson and Pickett (2009) drew attention to how societies with greater income and wealth inequalities (including the United Kingdom and the United States) suffer more from physical and mental illness and have higher rates of violence and teenage pregnancy, among other problems. Piketty's (2014) painstaking work demonstrates how income and wealth inequality have been increasing in many countries since the 1980s. As he himself admits, he underestimated the importance of human capital, such as education and social networks, that makes it easier for wealthy elites to find their place in the world. He puts most of his hope in a radically reformed system of taxation, which could then fund better education for all.

As the Introduction to this Special Issue suggests, early discussions about the digital divide focused on the simple question of whether or not people had access to the internet. Not enough attention was paid to gender, class, ethnicity and other potential markers of difference and sometimes disadvantage and the intersections between them. This point was explicitly taken up by many of the *T&I* contributors, most notably in the chapter called "Access is not the only problem, Using and controlling the internet" (Thomas & Wyatt 2000). As the chapter title suggests, we question the policy focus on increasing access to the internet, not because it was not important but because the focus on use meant that how inequality is affected by the production, control and ownership of key aspects of internet infrastructure and how provision was neglected. We were concerned about what we then called "portals," but even so we completely underestimated the domination of the big five, namely Facebook, Amazon, Microsoft, Apple and Google. When our book appeared, Mark Zuckerberg was still in high school, Google was one of several competing search engines and Amazon was selling just books. Only Apple and Microsoft were firmly established. All of those corporations are American, and all act to secure their global dominance through acquiring small companies, imposing technical standards throughout their supply chains, and lobbying governments to implement regulation favourable to their interests.

Perhaps, it is time to revisit the simple question of whether or not people have access as it remains highly unequal. Policymakers, certainly those in the

global north, have moved on from this question, assuming that internet access is now ubiquitous. However, this is not the case. In 2016, 46 percent of the world's population had used the internet in the previous 3 months² but just under 20 percent of the African population has access, whereas almost 80 percent of those living in Europe do so.³ Moreover, the rate of growth of access has been slowing in recent years.⁴ Thomas and Wyatt had criticised the assumption that growth would continue inexorably and appear now to be correct in their criticism. Even in countries with a high rate of overall access, there are wide disparities between sub-groups, as recent changes to how digital inclusion is monitored in Australia show clearly (Thomas et al. 2018). In 2016, 87 percent of the population had internet access. Thomas and his colleagues put forward a composite digital inclusion indicator (that includes access, affordability and ability) that goes beyond simple questions of physical access (including both mobile and broadband) to include relative costs (which are increasing because of greater bandwidth needs) and the abilities of people to engage with digital technologies. Their analysis found that gender, education, age, indigeneity and English as native language, all play a major role in explaining the extent to which people have access, are able to pay for it and are able to make extensive use of it. The statistical data are usefully complemented by case studies of indigenous people, those who are deaf or hard of hearing and single parents. This approach could provide a useful model for both academic researchers and policymakers who seek to develop a more nuanced understanding of access to technology and digital inequalities. Such insights can also provide an important context for research that seeks to explore what people are actually doing when they do have access: consuming and/or creating social media content, watching films, checking agricultural prices or trolling public figures.

Debates about access remain important when reflecting on gender-technology relations as well. In the United States, 37 percent of women were computer science majors in the mid-1980s but only 18 percent in 2012. They made up only 26 percent of the computing workforce in 2013 and just 30 percent of Google's workforce.⁵ In the United Kingdom, the percentage of women studying computer science remains very low, and even fell slightly between 2010 and 2014 (from 14 percent to 13 percent) (WES 2018). While computer science as a whole is still very male dominated (Aspray 2016), this is especially the case in Artificial Intelligence (AI), what a researcher at Microsoft has referred to as a "sea of dudes" problem (Clark 2016). Other research has shown that job advertisements for technology posts continue to be gendered masculine, and jobs advertisements for Machine

2 <https://data.worldbank.org/indicator/IT.NET.USER.ZS> (accessed 27 September 2018).

3 <http://hdr.undp.org/en/data> (accessed 27 September 2018).

4 <https://www.theguardian.com/technology/2018/oct/18/exclusive-dramatic-slow-down-in-global-growth-of-the-internet> (accessed 17 December 2018).

5 <http://www.techrepublic.com/article/the-state-of-women-in-technology-15-data-points-you-should-know/> (accessed 17 October 2018).

Intelligence jobs are the most masculine of all, directly affecting who applies.⁶ On the other hand, women in western countries use the internet 17 percent more than their male counterparts and make more use than men of mobile phones, Skype and most social media.⁷ Do these figures suggest that women remain users, rather than designers of technologies? If so, what might this mean for digital inequalities?

In 2019, we clearly still need to examine the ways technologies are gendered in/by design. For example, the gender bias in the rapidly expanding area of AI as machine intelligence-based systems can, if not checked, reflect and reinforce gender biases that exist outside AI. This occurs when machines are trained using data that rely on historical data and gender stereotypes, as when LinkedIn displayed highly paid jobs more frequently to men.⁸ Researchers are now beginning to examine these biases and the resulting disadvantages in terms of access to jobs and services, as well as how AI might be used to challenge gender and other forms of discrimination drawing on developments in critical data studies (boyd & Crawford 2012; Fotopoulou, forthcoming).

We have already acknowledged that a major change since the publication of *T&I* is the digitalisation of everyday life. However, even though women may use social media more than men, a more interesting set of questions concerns how gender and gender relationships are (re-)produced online. Back in 2000, we acknowledged the importance of work in feminist technoscience, especially that of Haraway (1985) who, as we wrote, “enthusiastically embraces the indeterminacy and unpredictability of modern technoscience and delights in being a cyborg, a hybrid of organism and machine” (Henwood et al. 2000a: 14). Turkle, we noted, also showed enthusiasm about the potential of people to “express multiple and often unexplored aspects of the self, to play with their identity and try out new ones” (Turkle 1995: 12). However, as we argued then:

Such arguments are seductive in their ability to direct our thinking towards new possibilities, but they often ignore the mundane, material reality of many people’s lives in which they do not have the personal, cultural or financial resources to engage in such playful activities (Henwood et al. 2000a: 14).

Our critique remains relevant but now looks extremely limited. We simply could not have foreseen the violence perpetrated through social media as some people adopt alternative and often multiple online identities to engage in sexual grooming

6 <http://textio.ai/gendered-language-in-your-job-post-predicts-the-gender-of-the-person-youll-hire-cd150452407d#.gz88w50vr> (accessed 17 October 2018).

7 <http://www.techrepublic.com/article/the-state-of-women-in-technology-15-data-points-you-should-know/> (accessed 17 October 2018).

8 <http://theconversation.com/artificial-intelligence-could-reinforce-societys-gender-equality-problems>. (accessed 17 October 2018).

and exploitation, cyberbullying and the vicious trolling of those with whom they disagree. Women, especially strong women, feminists and those who challenge the gender binary, have often been the intended victims of such practices. At the same time, many “intended victims” have used the very same technologies, if not necessarily the alternative identities, to refuse such victimisation and stand together, as in the #MeToo movement.

Conclusion

There are many issues that we did not consider in 2000, and which we do not have space to analyse here, but which are becoming increasingly important for understanding the distributional dimensions of digital transformations. We hardly touched upon privacy and surveillance, though others at the time were paying attention to the surveillance possibilities of digital technologies, especially as the possibilities for private corporations to know so much about our everyday activities expanded (Lyon 1994, 2018). Given the continued global digital divide, it remains important to remember that the implications of state, corporate, peer and self-surveillance are also unevenly distributed.

Another topic that has received more attention in recent years is the sharing economy, that works to the advantage of those with something to share, whether it be a house or car, and to the platforms underpinning the sharing economy though not to those who work for them (van Dijck, Poell, & de Waal 2018; van Doorn 2018). The environmental costs associated with our increasing dependence on digital technologies – and their production, use and disposal – are only beginning to be addressed, and they are most certainly not evenly distributed (Crawford & Joler 2018).

It remains important to study the myriad ways in which digital technologies are developed, implemented and used. Some of the contemporary discourses surrounding particular developments, such as AI and smart houses, are very familiar from the 1980s and 1990s, especially in terms of the promises made and expectations raised by industry. The promissory discourses remain, even when the objects themselves change, and the cycles may be getting shorter. “Big data” may already have peaked, the “connected home” has replaced the “smart house” and much is now expected of quantum computing.⁹ The technologies and the companies which provide them operate at a global level, raising serious questions about regulation and governance, especially at a time when many countries are becoming increasingly nationalist in orientation, and multilateral organisations are losing influence. Global structures of employment and production, important in our book, are still often ignored in much of the digital studies literature. These

9 <https://www.gartner.com/smarterwithgartner/top-trends-in-the-gartner-hype-cycle-for-emerging-technologies-2017/> (accessed 12 October 2018).

structures have consequences for inequalities. The low-paid, unregulated working conditions that have long been common in the global south are now appearing in the global north in the so-called “gig economy.”

In this short article, we have reflected on how debates about technology and inequalities have changed in the nearly 20 years since *T&I* was published. We have argued that while the technologies under scrutiny have clearly changed, inequalities have persisted. We have shown that, contrary to popular belief, access is still an issue for the global south, as well as for marginalised communities throughout the world. We have also shown how gender inequalities and hierarchies are reproduced in digital spaces, even where women have equal access and are the largest user group, such as with many social media platforms. For these reasons, we argue that the task of scholars of technology and new media remains much as it has always been, namely to monitor the material and symbolic significance of new technological developments as they emerge and to examine the ways in which they may reflect and re-produce social inequalities. This continues to be an important prerequisite for the larger task of contributing to agendas for positive social change.

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