Chapter 7

Digital Divides

> It is dangerously destabilising to have half the world on the cutting edge of technology while the other half struggles on the bare edge of survival.
>
> Bill Clinton

> I would like to allocate more time to dating, though. I need to find a girlfriend. That's why I need to carve out just a little more time. I think maybe even another five to 10 – how much time does a woman want a week? Maybe 10 hours? That's kind of the minimum? I don't know.
>
> Elon Musk

Mind the Gap

That new digital information and communication technology (ICT) has kept us better all connected to family and friends has been widely acknowledged and celebrated. Today, by simply using our small, portable, lightweight mobile devices, we remain connected across time and space better than any time in human history. Such technology has given us the ability to not only be virtually united to those we love and care about, but it also allows us quick and easy access to the World Wide Web and the vast stores of information contained therein. Online social media platforms have reconnected us to long forgotten friends and schoolmates in an easy and efficient way, and our mobile devices quickly detect real-time messages and interactions that we may otherwise miss. In this hyperconnected digital world, we do not have to miss anything irrespective of whether we are at home, work or on the move. But while acknowledging the many ways we are now more connected, we must also recognise that for some demographic groups and regions of the globe, the ubiquitous nature of digital technologies, and their widespread acceptance as critical to a new way of life, is disconnecting them more from the

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world around them and diminishing their ability to remain active participants in society. In many parts of the global south, for example, digital interconnectivity remains a remote aspiration in the absence of clean water, food to survive, electricity and security for countless individuals and their families. Even in more developed nations of the world, a digital divide remains a daily reality for those people living in some rural, isolated and remote areas of their respective counties. In addition, there are a significant cohort of our fellow citizens who remain marginalised in society, and our headlong rush into the digital era is driving a further wedge between the haves and the have-nots in society: those with the means and the digital competencies to take full advantage of this new world and those whom we choose to leave behind. The widespread introduction of digital ICT has been shown to play a crucial role in reinforcing existing social inequalities.

Other digital inequalities and divides are also evident. The profile of many of the leading luminaries in the tech sector, with the notable exception of a few outliers, is predominantly white, young to middle-aged, male, and American, or American leaning. The gender and ethnic misbalance between those at the top of the digital tech industry and the users of their products is worthy of attention. The main reason we should be concerned about this lack of diversity in the tech sector is that digital technology is not value-neutral. The ideals, morals, desires and demands of only one segment of society are becoming deeply embedded and codified into each new piece of technology, application or segment of software produced by these technology corporations. Little or no value is placed on the social, cultural and religious sensitivities that exist in society and communities across the world in digital technology design and development processes. There is a further gap evident that continues to grow and have significant long-term implications for society at large. As these digital behemoths continue to expand exponentially so too does the colossal personal wealth and influence of just a handful of individuals, further exacerbating a very worrying trend in economic inequality within and between nations. As the personal wealth of the Amazon CEO Jeff Bezos, for example, swells beyond comprehension, his company continues a relentless drive to undervalue the efforts of its workforce and their determination to win better pay and working conditions.

The Digital Haves and Have-Nots

The internet is a pervasive but now fundamental part of many people's daily life that continues to deliver significant economic and social benefits to countless across the globe. Yet, according to the World Economic Forum, some 3.7 billion people, more than 52 per cent of the world's population, are still not online.[1] The 'Digital Divide' is a term most often used to refer to the gap between demographics and regions that have access to modern digital ICT and the backbone infrastructure and those that do not or have restricted or limited access.

[1]Internet for all. *World Economic Forum*. Retrieved from https://www.weforum.org/projects/internet-for-all

Having previously referred to the division between those who had and those who had not access to the telephone network in the late twentieth century, in the early 1990s, the term began to be used more commonly to describe the gap between those with access to the internet and those without, lately in particular high-speed broadband access. There are two key manifestations of this divide: within a country or region and between states. In the literature, three further levels of the digital divide are identified.[2] The first level is a simple division between those who have material access and those who do not. This level of the digital divide is narrowing as an increasing number in many states and regions gain access to digital ICT in their home, at work, in school or in a civic setting such as a library or community centre. The second-level digital divide emphasises that access to digital technology does not automatically lead to the use of such technology, and this is often explained as the consequence of underlying social inequalities. While many have the material access, they lack the quality of support and help needed to effectively use the technology, and this often replicates existing patterns of social disadvantage. The third level views the digital divide more comprehensively and highlights the concern that digital ICT produces winners and losers and suggests that overcoming digital divides is a rather complex challenge that goes well beyond simply improving access or internet skills.[3] Whatever the level, such problems do exist within many developed nations where a digital underclass without access or the skills to leverage the many benefits of these technologies has emerged over time.

While America's once vast digital divide is narrowing, the gap between groups who have access and those who lack access to computers, digital literacy and the internet persists, according to data from the US Census Bureau.[4] According to the Federal Communications Commission's (FCC) 2019 Broadband Deployment Report, 21.3 million Americans still lack access to any broadband whatsoever be that cable, digital subscriber line (DSL), fibre or wireless.[5] Both computer and internet use continue to vary based on a variety of factors most notably age, income, race and geographic location. The most recent Census Bureau report on computer and internet use in the United States – compiled in 2015 – revealed households headed by individuals 65 years and older continue to lag behind households headed by younger people in both computer ownership and internet use.[6] In fact, among these older aged households, 39 per cent lacked either a computer or a subscription that would allow access to the internet. This, of course, is set to narrow as current users grow older. Not that surprisingly, the Census Bureau found that numbers with access to the internet, whether through a desktop or

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[2]Goedhart, Broerse, Kattouw, and Dedding (2019).

[3]Van Deursen and Van Dijk (2014).

[4]Martin (2019). One of the great ironies of the latest consensus in the United States is that the main way of responding with information is online.

[5]2019 Broadband deployment report. (2019). *Federal Communications Commission*, May 29. Retrieved from https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2019-broadband-deployment-report

[6]Ryan and Lewis (2017).

laptop or handheld device, rose with higher levels of household income. The same pattern was observed for broadband internet subscription. Of households with a combined income of $150,000 or more, 90 per cent had broadband, a desktop or laptop and a handheld computer or smartphone, while at the opposite end of the spectrum, among low-income households – under $25,000 – 50 per cent did not have all these key digital technology enabling tools and devices.

Looking at race, Asians were the most likely to have a desktop or laptop, handheld device and broadband subscription, 65 per cent of whites reported all three items, compared with 55 per cent of Hispanics but only 49 per cent of blacks. Many of the households who lacked a desktop, laptop or broadband were still connected to the internet but through their handheld devices and smartphones. The report found that the long-standing gap in computer and internet use between urban and rural Americans not only persists but is also growing wider with the increased adoption of new technologies and platforms such as the smartphone and social media. States across the United States vary in terms of broadband internet subscription, with higher levels for those on the Pacific coast and most states in the Northeast.[7] In an article for *The New York Times*, Shira Ovide suggested that the digital divide in the United States became much more apparent during the Covid-19 pandemic and subsequent economic and social lockdown in many states across the country. In the article, Susan Crawford, a Harvard Law Professor, advocated for government intervention to help finance and oversee the backbone structure for broadband along similar lines previously seen for the telephone and electricity networks.[8] She contended the problem is that big service provider companies like AT&T and Comcast both own and control the internet backbone infrastructure, and they do not have any incentive to build more affordable access in remote and more costly regions. Microsoft has recently estimated that up to 157 million Americans – almost half the population – were not using fast internet connections,[9] and that even the US government, using different counting methods, maintained that more than 21 million Americans mostly in rural areas do not have access to fast broadband internet. Crawford suggests that the bill for a government-backed internet expansion would be larger than the $80 billion the Obama administration once estimated, but that the costs are worth it. The issues that people care about, such as fair access to good education, renewable energy, effective health care and new technologies like driverless cars, all depend on having high-grade internet networks everywhere and for everyone, she claimed.

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[7]Ryan and Lewis (2017, pp. 9-10).

[8]Ovide, S. (2020). We can do better: One plan to erase America's digital divide. *The New York Times*, April 14. Retrieved from https://www.nytimes.com/2020/04/14/technology/coronavirus-digital-divide.html

[9]McKinley, S. (2020). Microsoft Airband: An annual update on connecting rural America. *The Microsoft Blog*, March 5. Retrieved from https://blogs.microsoft.com/on-the-issues/2020/03/05/update-connecting-rural-america/

The Netherlands is among the top European Union (EU) 28 countries with the highest level of internet access in the home.[10] In 2017, 98 per cent of Dutch households had internet access against a European average of 87 per cent. Other high-ranking countries are Luxembourg and Denmark (97 per cent), Sweden (95 per cent) and Finland (95 per cent). However, the share of households with internet access is much lower in many Southern and Eastern European countries, and this is a source of concern for many of the European integrationists. EU-wide analysis identified a general profile of vulnerable people in the face of the digital divide.[11] They are most likely to be elderly, with a low level of education, manual workers or unemployed, with a relatively low level of income. The digital skills deficit in many of these countries represents an increasing threat to the economy of the EU – both in the public and private sectors – and to success in terms of a developed tech-savvy European-wide labour market. That said, for people living and working in North America, Europe and other relatively prosperous regions of the world, the necessary access to the internet and digital tools is almost a given for the majority. On a global scale, high-speed internet access can greatly improve the overall functionality and organisation of entire countries and regions. However, only just over half of households worldwide – 55 per cent – have an internet connection according to UNESCO.[12] Africa, for example, is being stifled by the lack of a widely available high-speed internet access, and this divide in availability of digital networked connected technologies severely inhibits the economic prospects of many of the world's least developed countries and regions.[13] Even in South Africa, a relatively wealthy nation, much of the population remains disconnected from the global digital network. For many rural districts right across the continent not on their national grid and in difficult economic situations, adequate access to even energy to power homes is not guarantee for these communities. In other developing regions of the world, like some areas in Asia and Latin America, there is also relatively sparse digital technology infrastructure in place to allow citizens of these regions to access the internet.

Mojo Networks is one of several companies and organisations that are seeking to bring connectivity to these underserved regions of the world.[14] Other tech companies have also launched initiatives that are designed to provide access with Facebook partnering with India telecom giant Bharti Airtel as part of the social network company's Express Wi-Fi project to sell internet access in regions where

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[10]Digital economy and society statistics - households and individuals. (2019). *Eurostat*, June. Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_households_and_individuals

[11]Vasilescu, Serban, Dimian, Aceleanu, and Picatoste (2020).

[12]New report on global broadband access underscores urgent need to reach the half of the world still unconnected. (2019). *UNESCO*, September 23. Retrieved from https://en.unesco.org/news/new-report-global-broadband-access-underscores-urgent-need-reach-half-world-still-unconnected

[13]Lavery et al. (2018).

[14]Kirkpatrick (2018).

web coverage is currently limited. However, while this may appear on the surface to be altruism at work and a philanthropic gesture, Facebook's business model, and that of other such platforms, relies heavily on an ever-increasing supply of personal data. As we witness a growing scepticism towards these corporations in the West over their mismanagement and misuse of our personal data, this might be a perfect opportunity for these tech giants to spread their avaricious tentacles to more innocent regions of the globe. What may on the surface seem like genuine eagerness to connect the world may well be an oblique attempt to dominate the entire global internet landscape. Such regions do not need another form of Western domination, a new form of digital colonisation, and instead need to be able to shape their own network experiences based on their specific needs, cultures, societies and understandings. Facebook are not the first or only American corporation to attempt to capitalise on such an opportunity for expansion. In remote areas of the world where you cannot get clean drinking water or basic medicine, you can always get a cool bottle of Coke Cola.

As the Corvid-19 coronavirus pandemic took hold, more than one billion children across the globe were locked out of classrooms because of virus-suppression measures. A significant number were left without any level of instruction because of the digital technology deficit even as teachers worked tirelessly to provide and continue online lessons and teaching. Working from home became a new reality for many as countries brought in measures to slow the spread of the virus, and this again exposed the technologically deprived in specific regions and areas of disadvantage and across the globe. This is why the digital divide is so important in the context of contemporary society. In many ways, people can no longer play a full and active role in society without being able to use digital technology. In most developed countries, governments and their agencies expect citizens to have internet access and an operational e-mail address. Authorities have committed to increasing the information and services they provide but only making many of these available online. The present functioning of many aspects of civic society, whether it is applying or reapplying for a passport, renewing a driving licence, filling in tax returns and censuses forms, seeking unemployment benefits or assistance, filling in the voter register, these and other civic society activities are largely dependent on high-speed internet access and a basic level of digital computer literacy. Filing online is so much more efficient for government departments than processing paper forms, and there are indications that such online filing could become compulsory in the not to distance future. More and more jobs require a basic level of digital skills and you really cannot get the full benefits of education without being digital computer literate. The use of social networking platform to remain connected to family, friends and contacts, the increasing move towards a cashless society, the ability to book flights and holidays, shop online, pay a bill and check your bank account: all these point to the digital divide increasingly being a significant problem for society and needs to receive much more sociological attention as to their long-term implications. Arguing for a sociologically and Weberian approach to the study of the digital divide, Ragnedda makes the pertinent argument that the digital divide deals with inequalities that exist in the digital sphere, and thus, it should be viewed as a

social rather than technological issue, and as such should be understood through sociological eyes.[15]

The Digital Gender and Race Divides

While the geographical digital divide will remain of significant concern to governments and agencies tasked with dealing with matters of social inequality, there are other concerns apparent in the way digital technology excludes people and groups from active engagement and participation in its design and development processes. An issue of growing concern is the gender dimension and the fact that for many women the tech sector can often be a hostile and unwelcoming place to work and build a career. Diversity is critical to the design and development of digital technology as it enables organisations to create better and safer products that take everyone into consideration, not just one section of society. But from an early age, it is perceived that boys are better at science and maths, and this discourages girls from studying many digital ICT-related subjects. The 2018 *Women in the Digital Age* report found that there were nearly four times more men than women in Europe with digital ICT-related studies, and that there was an actual decrease in women taking up such higher education studies when compared to 2011.[16] According to Eurostat, girls and women are significantly under-represented in ICT learning, and at the time of the report, there were more than 1.3 million people enrolled in ICT courses in the EU, but only 16.7 per cent of those were female.[17]

While the tech sector now employs more people than ever, not all digital-related occupations are technical ones, and the roles women play are often much different from that of men. Many jobs in the digital tech industry are non-technical such as administration, clerks, legal work and cleaning jobs which, although important to the running of any organisation, are less related to innovation, design and technical development. Women tend to do the bulk of this non-technical work. Despite the increasing demand for digital professionals with technical backgrounds, and the positive employment trend of the sector generally, only 16.1 per cent of digital ICT specialists across Europe are women.[18] Globally, figures indicate that female participation at the technical levels of the digital sector is still not improving to any great extent. In the United States, women currently remain grossly under-represented in software engineering – 14 per cent of the total workforce – and computer science-related jobs – 25 per cent of the total workforce.[19] In fact, women software engineer hires have only increased 2 per cent over the past 20

[15]Ragnedda (2017, p. 3).
[16]Quirós et al. (2018).
[17]Girls and women under-represented in ICT. (2018). *Eurostat*, April 25. Retrieved from https://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20180425-1
[18]Quirós et al. (2018, p. 30).
[19]Funk, C., & Parker, K. (2018). Diversity in the STEM workforce varies widely across jobs. *The Pew Research Center*, January 9. Retrieved from https://www.pewsocialtrends.org/2018/01/09/diversity-in-the-stem-workforce-varies-widely-across-jobs/

years. It, unfortunately, gets even more dispiriting for women of colour who only make up 18 per cent of entry-level positions, as opposed to 30 per cent of white women and 35 per cent of white men.[20] Once working in the tech sector, those few women employed find it difficult to rise through their organisations to higher job positions and to management level. Although Asian women, black women and Latinas report the desire to be promoted more than white men or women, they are still often promoted less within the digital tech sector.

How did such under-representation of women come about, and why is it continuing to the present day? When seeking a better understanding, debates normally focus on the issues of choice and ability, with a narrative of women simply not being interested in computers or computer science and thus do not possess the necessary skill set to work in the sector.[21] Such broad claims simply serve to reinforce the gendered division of labour and the general stereotyping of men as being more likely to possess hard, technical skills and women as displaying soft skills and attributes such as empathy, communication and caring, and this has consequential implications for the type of work we view as suited to each gender.[22] Television, magazines, movies and other forms of mass and popular media play a significant role in influencing people's perceptions of the tech sector, and media images often carry implicit messages about gender roles. Computer programmers, digital tech designers and developers are often depicted as young men, while women are regularly portrayed as digital tech users. Such representations work to reinforce social expectations of gender and gender stereotypes, and what types of work men and women are most suited to do. Such perceptions of the gendered division of labour become reinforced and stabilises over time, affecting how the jobs within the sector are performed, understood and represented to others both inside and outside the industry. Once gendered, occupational roles have unescapable effects on the degree to which individuals are viewed as competent, status-worthy and a legitimate sources of authority.[23] As fewer and fewer women study digital technology-related subjects in school and university, employers within these sectors have a gender biased talent pool from which to recruit from. Many of these recruitment boards are, themselves, made up of a single gender, given the lack of female participation at middle and senior management levels. Such situations quickly lead to the expansion of gendered recruitment and an atmosphere within the tech industry than can become hostile to gender diversity and difference. Gender bias has become embedded both in the recruitment process and the systems used to aid recruitment in the tech sector. In building their artificial intelligence (AI) recruitment system, Amazon discovered their machine-learning computer programme had a major problem: the recruitment engine did not like women. According to a report from Reuters, the e-commerce corporate

[20]Women in the workplace 2019. *McKinsey & Company*. Retrieved from https://wiw-report.s3.amazonaws.com/Women_in_the_Workplace_2019.pdf
[21]Grey and Healy (2004).
[22]MacLean, Marks, and Chillas (2017).
[23]Ridgeway (2011).

giant was forced to scrap an internal project that was trying to use AI to vet job applications after the software consistently downgraded female candidates.[24]

In her autobiographical account of her earlier life and work in the tech sector, Wendy Liu pointed to the fact that women were regularly denigrated online, which led her to conclude that being seen as female would be a hindrance in her career:

> Even as a pre-teen with a negligible understanding of societal gender dynamics, it didn't take me long to realise that parts of the Internet I liked were not always welcoming to women. Beyond the cliché that there were no girls on the Internet, there was no shortage of jokes about women's place in society, or casual references to women's lack of aptitude for programming. I figured that I would simply get used to it; I derived enough joy from Internet culture to remain steadfast in my belief that I belonged anyway. Plus, the nickname I'd adopted for most online interactions was sufficiently androgynous that some people even addressed me as 'Sir'.[25]

A study released in 2020 found that nearly 60 per cent of young women between the ages of 15 and 25 have been victims of online harassment and abuse, with a staggering 39 per cent of those saying they've been threatened with sexual violence while online.[26] The report added that most first experience social media harassment between the ages of 14 and 16 resulting in some girls and young women having lower self-esteem, losing confidence or experiencing mental or emotional stress due to such online harassment. The interviewees, from 22 different countries, said no action was taken when they reported such abuse. In the absence of fair and meaningful gender balance in the industry, the online world, through its designers, developer, gamers, and other such users, can become a site of toxic masculinity that not only becomes a place that is out of bounds for women but can sometimes descend into antagonism, outright rage and misogyny. Gamergate was a perfect example of this decent into hatred.

In 2014, an angry ex-boyfriend of video game designer Zoë Quinn published an extensive screed and set in motion a series of events that changed the way some people see their role and behave online.[27] The post systematically documented

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[24]Dastin, J. (2018). Amazon scraps secret AI recruiting tool that showed bias against women. *Reuters*, 11 October. Retrieved from https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G

[25]Liu (2020, p. 13).

[26]Abuse and harassment driving girls off Facebook, Instagram and Twitter. (2020). *Plan International*, October 5. Retrieved from https://plan-international.org/news/2020-10-05-abuse-and-harassment-driving-girls-facebook-instagram-and-twitter

[27]Warzel, C. (2019). How an online mob created a playbook for a culture war. *The New York Times*, August 15. Retrieved from https://www.nytimes.com/interactive/2019/08/15/opinion/what-is-gamergate.html

the last few weeks of his breakup with Zoë and was annotated and punctuated with screenshots of many of their very private digital correspondences, detailing fights and rehashing their sexual history. The all-caps rant quickly went viral and was picked up by some users of the *Reddit* and *4chan* platforms. Ms Quinn and her immediate family members were subsequently threatened and her private information exposed, including old nude photos from a past relationship. Online chat rooms began to discuss the best ways to 'ruin her life' and fantasised about elaborate ways of killing her. In the months leading up to this, news reports revealed an increase of hoaxes and harassment campaigns, including some that impersonated, silenced and intimidated women of colour. Under the hashtag '#gamergate', a general harassment campaign targeted several women in the video game industry, with supporters organising through online platforms such as *4chan, Internet Relay Chat, Twitter* and *Reddit*. Gamergate supporters argued there was unethical collusion between the press and feminists, progressives and social critics. What began as a breakup post had morphed into a leaderless harassment campaign to preserve white male internet culture, disguised as a critique of journalist ethics and political correctness.

Darker forces were quick to seize upon this opportunity and exploit online male-dominated anger and aggression. In his opinion piece for *The New York Times*, Charlie Warzel put the controversy into a wider context of political and social upheaval and the emergence of controversial right-wing personalities:

> Crucially, Gamergate emerged during the internet's shift from a largely anonymous or pseudonymous culture to one centered around personality-driven influencers. And, unlike previous abuse campaigns led by armies of unknown internet users, Gamergate attracted the attention of then-men's rights bloggers like Mike Cernovich and Roosh V, right-wing political correctness monitors like Christina Hoff Sommers and middling journalists like Milo Yiannopoulos, then a writer for Breitbart.[28]

Describing it as a 'culture war', Steve Bannon – at the time Breitbart's chairman but later to become central to the Trump campaign for president – saw the controversy as an opportunity to ignite a dormant, internet-native audience towards a focussed and familiar cause: that feminism and social justice struggles had spiralled out of control. The toxic masculinity coursing through the veins of the internet made it a fertile ground for recruitment and ripe for such a right-wing takeover. The playbook for Gamergate is now employed regularly by right-wing actors attempting to manipulate public sentiment through their use of groups of online trolls coalescing on bulletin-board sites and platforms. In a study of personality and individual differences, it was reported that young men are more

[28]Warzel, C. (2019). How an online mob created a playbook for a culture war. *The New York Times*, August 15. Retrieved from https://www.nytimes.com/interactive/2019/08/15/opinion/what-is-gamergate.html

likely to become internet trolls, and that such individuals have poor social skills and employ an empathic strategy of predicting, recognising and taking pleasure from causing pain and in the emotional suffering of their victims while abstaining themselves from the actual experience of these negative emotions.[29] Many feel a sense of disenfranchisement leading to a malicious desire to try to make those enjoying some degree of success and happiness feel as miserably, trapped and oppressed as they do. The fact that such groups of trolls are almost exclusively male makes targeting women that much easier.

But the focus of attention for such internet trolls and right-wing bloggers are not always female, exposing another damaging divide that exists within the digital tech sector. Blacks and Hispanics are also regularly targeted by online hate content largely because they are seen as different and are not sufficiently represented at all levels of the tech sector. Minorities are under-represented in science, technology, engineering and math jobs, relative to their presence in the overall US workforce, particularly among workers with a bachelor's degree or higher.[30] Reflecting on their own and their family's lived experiences, blacks in the tech sector are four times more likely as whites in these roles to say their workplace does not pay enough attention to increasing racial and ethnic diversity. Past studies have raised a number of possible reasons for this under-representation including the need for racially and ethnically diverse mentors to attract more blacks and Hispanics to these jobs, limited access to advanced science courses or socio-economic factors that disproportionally affect these minority communities.[31] The problem does not simply relate to attaching new talent from under-represented groups in society, but the tech sector has a significant problem with retaining women and people from some ethnic backgrounds in their industry.

That is the conclusion of *Tech Leavers*, a study from the Kapor Center for Social Impact and Harris Poll that explored the reasons people leave tech companies.[32] Nearly 40 per cent of employees surveyed indicated that unfairness or mistreatment played a major role in their decision to leave their company, and under-represented men were most likely to leave due to unfairness. Women experienced and observed far more unfairness than men, and nearly one third of under-represented women of colour were passed over for promotion, more than any other group surveyed. One in 10 women experienced unwanted sexual attention, while lesbian, gay, bisexual and transgender (LGBT) employees were more likely to be bullied and or experience public humiliation. Nearly a quarter of under-represented men and women experienced stereotyping in their workplace and at almost twice the

[29]Sest and March (2017).

[30]Funk, C., & Parker, K. (2018). In their own words: Why some STEM workers say their race or ethnicity has made it harder to succeed in their job. *The Pew Research Center*, January 8. Retrieved from https://www.pewsocialtrends.org/2018/01/09/blacks-in-stem-jobs-are-especially-concerned-about-diversity-and-discrimination-in-the-workplace/

[31]MacPhee et al. (2013).

[32]Scott, Klein, and Onovakpuri (2017).

rate of white and Asian men and women. Timnit Gebru, a leading AI researcher at Google and one of the few black women in her field, claimed she was fired over her work to fight bias in that organisation.[33] She had been conducting research that was critical of large-scale AI models and was also critical of existing diversity and inclusion efforts at Google. At the same time, the company paid tens of millions of dollars to two executives who had been accused of sexual misconduct towards their co-workers, staying silent about the alleged abuse and letting them walk away with no consequences.[34] While the tech industry frequently blames the 'pipeline' for not delivering enough qualified and talented candidates from under-represented backgrounds and communities, Kapor Center Co-chair Freada Kapor Klein argues the more nuanced and accurate way to frame the issue is to look at the complex set of biases and barriers that begin in preschool and persist in the workplace that have kept women and people of colour from gaining access to such highest-paying jobs in one of its most sought after and growing economic sectors.[35] Reversing under-representation in black and Hispanic populations, as well as female participation in the tech workforce, is all part of long-term efforts to tackle inequality right across society. The tech industry should be made up of a representative sample of the population which it claims to serve, which is roughly half female and incredibly diverse. But fundamental to approaches towards fair and equitable representation are also efforts to address income inequality in society.

Big Tech's Role in Economic Inequality

The overall accumulation of vast wealth and the evidential income inequality between those at the top of the tech industry and the majority of ordinary citizens is also a significant social issue that warrants much closer sociological and political attention. This additional social divide, brought about by the relentless growth of the digital economy, points to a continuing and worrying fracturing within society and inequality at the levels we are witnessing today is damaging to everybody, including those at the top. A core feature of capitalist economies is that the free market will inevitably produce winners, and that spurs people to work harder and longer. If we create a society in which those who do not make an effort get as much as those who do go that extra mile, we would be weakening people's incentive to work hard. This is a seductive argument and one that feeds into the concept of the 'American Dream'. But even those whose values align with this argument

[33]Metz, C., & Wakabayashi, D. (2020). Google researcher says she was fired over paper highlighting bias in A.I. *The New York Times*, December 3. Retrieved from https://www.nytimes.com/2020/12/03/technology/google-researcher-timnit-gebru.html

[34]Benner, K., & Wakabayashi, D. (2018). How Google protected Andy Rubin, the "Father of Android". *The New York Times*, October 25. Retrieved from https://www.nytimes.com/2018/10/25/technology/google-sexual-harassment-andy-rubin.html

[35]Guynn, J. (2020). Here's why women, blacks and Hispanics are leaving tech. *USA Today*, July 9. Retrieved from https://eu.usatoday.com/story/tech/news/2017/04/27/toxic-workplaces-technology-women-minorities-retention/100977038/

must recognise that beyond a certain level of wealth any additional income for people is often non-productive and will remain in that individual's ever-growing bank account. If the money was more widely distributed among those who need it or would use it, this stimulates economic activity that then has positive effects for society as a whole. But how wide is the gap and what, in fact, is the ever-increasing value of the digital economy and the individuals that benefit financially from its growth? It took Apple 42 years to reach $1 trillion in value; it took the company just two more years to get to the $2 trillion mark, the first US company to hit such a valuation.[36] Even more spectacular was that most of Apple's second $1 trillion came in just 21 weeks – while the global economy shrank faster than ever during the coronavirus pandemic and during the subsequent economic and social shutdowns. They made this leap in value at a time when many of their outlets were closed due to attempts to slow the spread of the coronavirus worldwide. Apple had begun selling their iPhones, iPads and Macs online even as their brick-and-mortar stores remained closed and their employees were out of work.

Microsoft and Amazon shadow Apple as the most valuable publicly traded US companies, each at about $1.6 trillion, and they are followed by Google-owner Alphabet at just over $1 trillion. Facebook is fast closing in on the $1 trillion mark, and the US tech sector alone is now said to be worth more than the entire European stock market combined.[37] These, and other heavyweight digital technology corporations, surged to record high values during the coronavirus pandemic as consumers came to rely more heavily on e-commerce, video conferencing, media streaming and other services they provide. Investors saw these companies emerging from the pandemic stronger than smaller competitors, with some even viewing their volatile shares as safe havens. And as these digital technology megacorporations soared in value, the personal wealth of their founders, management and shareholders has also climbed to almost unimaginable heights. As of October 2019, *The Forbes 400* valued Jeff Bezos, CEO and president of Amazon, as the richest person in the United States at $114 billion.[38] He was closely followed by co-founder of Microsoft Bill Gates, who was valued at $106 billion. In fourth place, Facebook co-founder, Chairman and CEO Mark Zuckerberg's net worth was estimated to be at $69.6 billion; Larry Ellison, co-founder and the Executive Chairman and Chief Technology Officer (CTO) of Oracle Corporation, $65 billion; and Larry Page and Sergey Brin, co-founders of Google, at $55.5 and

[36]Nicas, J. (2020). Apple reaches $2 trillion, punctuating big tech's grip. *The New York Times*, August 19. Retrieved from https://www.nytimes.com/2020/08/19/technology/apple-2-trillion.html

[37]Winck, B. (2020). The US tech sector is now worth more than the entire European stock market, Bank of America says. *Business Insider*, August 28. Retrieved from https://markets.businessinsider.com/news/stocks/us-tech-stocks-worth-more-european-stock-market-apple-microsoft-2020-8-1029545001#

[38]Kroll, L., & Dolan, K. A. (2019). The Forbes 400: The definitive ranking of the wealthiest Americans. *Forbes*, October 2. Retrieved from https://www.forbes.com/forbes-400/#555323d37e2f

$53.5 billion, respectively. Seven out of the top 10 on the Forbes list of the wealthiest people in the United States obtained this wealth from the tech sector, and this affluence will have grown during the coronavirus pandemic as tech stock shares increased exponentially during the lockdown and subsequent measured reopening of societies and economies.[39]

Yet, as Jeff Bezos' personal wealth soared to new heights, Amazon's aggressive attitude towards its workforce showed no sign of abating. Amazon is the second-largest private employer in the United States and is headed by the richest man on the planet. As the coronavirus pandemic disrupted life as we know it for people across the world, many confined to their homes relied on Amazon as a lifeline. Its workers have even been called heroes, and Amazon has even been viewed by some as an essential service through this pandemic. But the way these workers are treated by their employer has attracted criticism and controversy from multiple sources. Hundreds of thousands of these workers are employed by or contracted to Amazon, whose delivery network has emerged as a vital service for millions requested to stay at home. *Wired* magazine interviewed nine individuals working for Amazon during the Covid-19 crisis, who worked in the company's fulfilment centres, delivered packages and groceries and stocked food in Amazon cafeterias.[40] These workers, although framed as frontline heroes, unanimously stated they did not sign up for such a level of risk they felt exposed to at work. Coronavirus outbreaks in at least 50 Amazon facilities in the United States led to employee protests in Detroit, New York City, and Chicago, where workers said Amazon was slow to notify them about infections in the workplace and failed to conduct adequate facilities cleaning. At Whole Foods, an Amazon-owned company, staff staged a nationwide demonstration citing similar safety concerns and calling for free coronavirus testing for all employees. More than 5,000 Amazon workers signed a petition asking for additional benefits given the health crisis, including hazard pay and for the company to shut down any facility where a worker tests positive so it can be properly cleaned. California's Attorney General Xavier Becerra, the Division of Occupational Safety and Health, and the San Francisco Department of Public Health all opened investigations into Amazon's practices around the pandemic.[41] The company stands accused of putting workers at need-

[39]Jeff Bezos, the Amazon CEO, set a record when his net worth jumped by $13 billion in just one day, Monday 20 July 2020. The Bloomberg Billionaires Index put Bezos' estimated net worth at $189.3 billion at the end of Monday after Amazon stock surged during the day, thanks to a positive Wall Street forecast. See Pitcher, J. (2020). Jeff Bezos adds record $13 billion in single day to fortune. *Bloomberg*, July 20. Retrieved from https://www.bloomberg.com/news/articles/2020-07-20/jeff-bezos-adds-record-13-billion-in-single-day-to-his-fortune

[40]Matsakis, L. (2020). 9 Amazon workers describe the daily risks they face in the pandemic. *Wired*, April 10. Retrieved from https://www.wired.com/story/amazon-workers-pandemic-risks-own-words/

[41]Kari Paul and Agency. (2020). California investigates Amazon's treatment of workers during pandemic. *The Guardian*, July 27. Retrieved from https://www.theguardian.com/technology/2020/jul/27/california-investigations-amazon-workers-coronavirus

less risk by having them share equipment, such as freezer suits, and for not allowing extra time in order to respect social distancing. In an October 2020 statement, Amazon admitted that nearly 20,000 of its employees had already tested positive for the virus in the United States alone.[42]

The working conditions in its centres and the treatment of its workforce during the pandemic stand as testament to criticism of Amazon going back many years. The company has fiercely opposed unionisation and the right of workers to collective bargaining leading to the Retail, Wholesale and Department Store Union producing a report detailing Amazon's 'deadly and dehumanizing employment practices, anti-union activities, destruction of brick and mortar retailers at taxpayer expense, and past practice of allowing its platform to sell racist products'.[43] It is not only the treatment of its workforce that needs closer attention but, indeed, the company's social responsibility and their obligation to pay their fair share of taxation. In a recent report by tax transparency campaign group Fair Tax Mark, Amazon, Facebook, Google, Netflix, Apple and Microsoft were all named as avoiding tax on a colossal scale by shifting revenue and profits through tax havens or low-tax countries and for also delaying the payment of taxes they do incur.[44] The report singles out Amazon as the worst offender. Alex Cobham, chief executive of the Tax Justice Network, outlined the consequences of such tax avoidance and declared:

> When multinational corporations abuse their tax responsibilities to society, they weaken the supports that our economies need to work well and create wealth. By ensuring multinational corporations pay their fair share locally for the wealth created locally by people's work – based on an agreed formula and supplemented by a minimum effective tax rate – governments can strengthen their economies to run smoothly and make a good life possible for everyone.[45]

So, while the wealth of these digital behemoths continues to grow at a startling rate so too does their power and egotism. There is a prevailing 'capitalism on steroids' approach within the tech industry and among many at the top that

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[42]Update on COVID-19 testing. (2020). *Amazon*, October 1. Retrieved from https://blog.aboutamazon.com/operations/update-on-covid-19-testing

[43]What's wrong with Amazon. *Retail, Wholesale and Department Store Union (RWDSU)*. Retrieved from https://www.rwdsu.info/new_report_what_s_wrong_with_amazon. There are also a wide range of arguments against, and criticism of, the Amazon business model on the *Social Justice Books* website at https://socialjusticebooks.org/about/why-boycott-amazon/.

[44]Fair Tax Mark (2019).

[45]Neate, R. (2019). New study deems Amazon worst for "aggressive" tax avoidance. *The Guardian*, December 2. Retrieved from https://www.theguardian.com/business/2019/dec/02/new-study-deems-amazon-worst-for-aggressive-tax-avoidance

view their own exceptionalism as worthy of the extraordinary levels of personal renumeration they now enjoy. And all the while some of the people working to grow these megacorporations at lower levels of their organisations struggle for wage increases, basic working conditions and respect.

The wealth accumulated by the tech sector has greatly exacerbated economy inequality in many countries, leading to negative and damaging effects for countless societies. In their extensive research into income inequality over many years, Richard Wilkinson and Kate Pickett produced strong empirical evidence that almost every modern social and environmental problem – ill-health, lack of community life, violence, drug misuse, obesity, mental illness, long working hours, big prison populations – are more likely to occur in a less equal society.[46] Corporate power is the elephant in the room, they suggest, and high levels of inequality in our societies reflect the concentration of power within particular institutions. Thomas Piketty, in his widely acclaimed work *Capital in the Twenty-First Century*, argues that we have not reformed the deep structures of capital and inequality as much as we thought, and that the main driver of inequality now threatens to generate extreme inequalities that stir discontent and undermines democratic values.[47] Piketty proposes a global system of progressive wealth taxes to help reduce inequality and avoid the vast majority of wealth coming under the control of just a tiny minority of individuals. Inequality continues to increase alarmingly since the 1980s, and this is preventing people with less income and wealth from reaching their true potential in terms of education and invention, making it harder for economies to benefit from new sources of innovation. It is restricting these individuals from earning more, educating themselves and, in turn, becoming innovators and entrepreneurs, all the while the money hoarded by the top 1 per cent in the world is not reinvested to any real extent in generating real economic output. Most of the money is pumped into speculative markets around the world, to make even more money; investments in speculative instruments that do not directly increase employment or factory output. The income tax applied to the earnings of the top 1 per cent is far less than that imposed upon middle- or lower-class working people, and when the middle and lower classes start feeling the pinch they spend less, they cut back on buying things, which leads to factories selling less, which leads to scaling down of production, which leads to lay-offs, which leads to more stress on the economy.[48]

The Need for Inclusivity

That digital ICT better connects us is impossible to argue against. The benefits of such hyperconnectivity can be positive as we strive to build and

[46]Wilkinson and Pickett. (2010). Wilkinson and Pickett follow on research - 'The Inner Level' (2018) - showed that more equal societies reduce stress, restore sanity and improve everyone's well-being.
[47]Piketty (2014).
[48]See 'Inequality for all' a 2013 documentary film directed by Jacob Kornbluth and narrated by American Economist, author and Professor Robert Reich.

maintain relationships that are extremely important to our overall well-being and happiness. But digital technologies are sometimes dividing us as a society, whether this is because of our location, gender, ethnicity or income. As the widespread adoption and acceptance of such technologies develops apace, there is grave danger that those unable to get or stay connected to the online world will continue to be left behind. As more and more aspects of civic society are pivoted online, the disadvantaged digital elements of our communities will witness their ability to remain active and productive citizens further diminish over time. There is also a pressing need for much more diversity within the tech industry itself. The obvious hostility towards women and individuals from particular ethnic backgrounds from some quarters of the online community needs to end, and the best way for this to happen is for more people from such backgrounds to be welcomed into the industry and given roles and positions that reflect the actual gender and ethnic balance in society itself. It is not just an issue of equality. If the industry continues to embed and codify the values of just one section of society, that of the young to middle-aged While Americanised male, then it can never claim to truly reflect the society in which it has emerged from. And while it cannot be solely blamed for the continually rising levels of income and economic inequalities, big tech is certainly contributing to it by its wide-scale tax avoidance and the enormous remuneration paid to those at the very top. The choice for the tech sector is a dichotomous one; do they see their future as one of inclusivity or one of exclusivity?

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