Technology and inequality: can we decolonise the digital world?[1]

By Padmashree Gehl Sampath

In this article, the author argues that techno-centric explanations of progress and industrialisation are deeply entrenched in a wider social context that encourages us to ignore the historical roots of current inequalities – which, in fact, are not amenable to a technological solution alone. Making the data economy work for all will require a serious reflection on how we want to frame this debate, and how to align ourselves to a common vision of social progress that technology could help to accomplish.

The current era of Big Data and artificial intelligence (AI) has rekindled the age-old debate on the role of technology in society. Data economy experts have worked overtime to promote a dominant narrative that frames technological change as an empowering, equalising and participatory force, equating technological progress with social progress. Complex social questions of politics, democratic accountability, rule of law, education, development, employment and equality are now typecast as problems that can be neatly categorised, optimised and solved through computable solutions (Morozov, 2013).

These arguments are not without detractors. Economists, who have traditionally been in favour of technological change on the grounds that average real wages grow in line with average labour productivity, are now concerned with rising income disparities, labour market dynamics and the destabilising effects of inequality. Socio-political studies have similarly argued that technological change and labour market uncertainties create anxiety in society, translating eventually into a 'resistance toward innovation' (Mokyr, Vickers and Ziebarth, 2015). There is also concern that letting technology markets function, and then thinking separately about how to distribute gains through compensatory schemes through the welfare state (for example, universal income schemes) deflect attention away from the ways in which technological control and technology domination undermines industrialisation, which remains a major issue in many economies world-wide (Iversen and Kusack, 2000). From a more epistemological perspective, hyperbolic claims that big data and the data economy are the new 'frontier of innovation', with 'cost-effective', 'profit-generating' properties for all, are misleading to the core because such market-centric metaphors divert focus from the ways in which the data economy facilitates

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extreme knowledge dispossession and shifts power into the hands of a few actors (Thatcher, O'Sullivan and Mahmoudi, 2016; Mattli, 2019, p. 6).

As these perspectives vie for dominance, especially in light of mounting evidence on how digital technology facilitates discrimination, upends societies and promotes inequality, the debate still remains unduly focused on machines and markets vs. regulation, eschewing some of the central questions on the role of technology for society (Kelsey, 2018). Can technological change deliver social progress on its own? Do historic and current geopolitics allow us to seek, and more importantly to align ourselves to, common ends in this regard? If so, can we really work within the current market-centric ideology to create technological change that is empowering, equalising and socially responsible for all?

In what follows, I argue that techno-centric explanations of progress and industrialisation are deeply entrenched in a wider social context that encourages us to ignore the historical roots of current inequalities – which, in fact, are not amenable to a technological solution alone. Tracing the role of technology from a historical perspective, I make three points. First, technology is never neutral despite its socially beneficial characteristics. It is a product of careful design, often employed as an instrument of power (Winner, 1977; 1986). Second, current rationales of technology and development are rooted in epistemologies that leave them unequipped to question existing frameworks and institutions. These frameworks dictate notions of technology and justify institutions based on a constant dependence of some parts of the world over others, thereby promoting a coloniality of knowledge (Mignolo, 2007; Maldonado-Torres, 2007; Quijano, 2007).[2] Third, in the data economy, historical inequities intertwine with new power asymmetries to create newer, and more drastic, degrees of exclusion, thereby promoting what this article terms a new form of techno-imperialism (Veblen, 1915). Making the data economy work for all will require a serious reflection on how we want to frame this debate, and how to align ourselves to a common vision of social progress that technology could help to accomplish.

Technology: an unequalising historical force

The relationship between technology and humanity dates back to the origin of human history. But most historical accounts of technology share an instrumentalist explanation suggesting, in the language of science and technology studies, that the discovery of certain general-purpose technologies successively played a great role in the advance of mankind in each of the industrial revolutions, thus driving entire eras of technical progress and economic growth. Thus, the steam engine encapsulated the progress that then led to the first industrial revolution. The invention of electricity, which led to automation and mass production, heralded the second industrial revolution, and the invention of the internet led to the dawn of a third revolution.

Such accounts not only fail to present technology's role in an organic way, delineating the roles and contributions of different cultures and geographic regions in a historical perspective, but also overlook the power dynamics of the previous industrial revolutions. Two facts are highly relevant. First, each of the technologies associated with its respective industrial revolution – the steam engine, electricity and the internet – is an instance of a technology developed by private actors that led to somewhat chaotic and complex social outcomes before becoming subject to

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[2] The term 'coloniality of knowledge' refers to the process whereby west-centric notions of knowledge legitimise our understanding of the world. It underpins the ways in which knowledge – especially the Western view of seeing, analysing, imagining, reasoning and philosophising – dominates what we know, how we know it and how we understand history, science and society. As Quijano (2007, p. 169) notes: '… in spite of the fact that political colonialism has been eliminated, the relationship between the European – also called "Western" – culture, and the others, continues to be one of colonial domination'.

state control. For instance, in the early stages of the development of the railway system (especially until the mid-nineteenth century), investment and activity were led by private enterprises. The early systems, which were private or a mix of public-private, led to much duplication and confusion, leading to a gradual public takeover of responsibility from the late nineteenth century onwards. These public takeovers happened in different ways but were justified under broader national visions of 'municipal socialism' in Europe or 'progressivism' in the United States for the benefit of public welfare. The advances in electricity underwent a similar process. Edison's Prometheus was first reserved for a privileged few in the New York area in the 1880s, lighting up select homes with the help of inbuilt generators. Private-sector investment by J. P. Morgan was instrumental in making the technology more broadly available, and the first electricity station he constructed later became General Electric.

A second fact that needs to be disambiguated in our historical review is the critical role of technology as a means of colonisation. The success and relevance of technology during the first two industrial revolutions came not just from what these technologies meant at the time for Europe, but from the fact that they enabled the colonial powers ('the states') to reassert themselves worldwide in the fight for new markets. Technology, in fact, became a new force for imperialism, helping to expand the global land area controlled by the Europeans from 35 per cent in 1800 to 84.4 per cent in 1914 (Headrick, 2010, p. 2). Technology's role in this context was unequalising, to say the least, and often used by the colonial state to reverse power relations. It became an instrument to link the 'uncivilised' and uncovered terrain to the more civilised imperial home country, constantly helping to feed the industrial successes of the imperial powers at the expense of the colonised countries.

As a result, the debate on how technology could be harnessed for wealth and prosperity in the first and second industrial revolutions was largely a Eurocentric debate, limited to a handful of countries, for which the resources came to be provided by the colonies. Headrick notes that in the nineteenth century all European colonial powers worked with the intent of explicitly suppressing any industrial activity that could threaten the relationship between the colonial power as a manufacturing exporter and the colonies as raw material exporters (Headrick, 2010). The influx of technology into the colonies, whether in the form of steamboats, steamships, rifles, quinine prophylaxis or the telegraph, served as a tool to re-assert a top-down process of control and power, with the overall goal of maintaining dominance, and was rarely for the benefit of these countries. Wolmar (2018) notes, in this context, that the East India Company eventually overcame its initial reluctance to proceed to introduce railway operations in India only because it wanted to make India economically more viable and militarily more governable.

But in stark contrast with the imperial period, the third and the fourth industrial revolutions have occurred in a world that sees itself largely as post-colonial, although still largely structured around the industrial North and the developing South as analytical categories. The Internet's origin and expansion were initially led by two features that were widely considered to be democratic and participatory: an open architecture and the lack of centralised control.

The new data economy created by the fourth industrial revolution privatises these very features by way of two parallel phenomena that reinforce certain historical, technological constructs. Global companies based in a handful of countries now develop and introduce as many applications, platforms and other digital products/services as possible in order to extract the maximum amount of data. Thus, although the internet is widely available, its use is not really free. Users pay through a variety of means that promote data extraction by companies. While this creates a loss of freedom and autonomy that are equally disempowering for all users globally, the degrees of disempowerment and dispossession are larger for those who are

already marginalised. At a global level (along the traditional North-South dimension), data extraction and lack of ownership have significantly different implications for technological change, and to some extent dampen the hopes of economic catch-up. So even if the Southern countries were brought up to speed with the Information and Communications Technology (ICT) revolution, a level playing field where they could become equal technological adversaries in the fourth industrial revolution would actually necessitate that: (a) new competitors have access to Big Data of comparable size and diversity to pose a threat to incumbent market players, and (b) the technological first-mover advantages linked to the data economy are actually wiped out. In the absence of this, the dependence of some countries on the others continues, alongside the fact that at a personal level, the data economy continues to permeate and promote notions of subordination and dispossession that are similar to the earlier epochs in history. Only, we have larger groups of people left behind than ever before.

Unveiling the politics of knowledge: hegemonies and frameworks

This brings us to a fundamental dilemma. Even when technological change has resulted in generating wealth and prosperity, led to the tremendous advancement of humanity, and helped reduce poverty in the previous industrial revolutions, it has been far removed from a vast majority of people. The exclusivity we are currently discussing in the nature of economic change, and the technological divides we are seeking to bridge, therefore, are not modern phenomena: they are historical artefacts.

Problematically, even while acknowledging this, approaches to understanding the relationship between technology and society continue to view the problems of knowledge production and technological change through an analytical lens where technology and industrial 'leaders' and 'followers' are still more or less aligned with earlier categories of the colonisers and colonised. This is reflected in many things – most notably in current debates to the problem of the widening technological divide that simply point to the technological backwardness of the global South as a long-standing explanation, without addressing why decades of policy experimentation and investments have failed to produce results in many countries worldwide. It also manifests in the argument of economic and industrial 'catch-up' that assumes convergence and growth as the goal and prescribes a path (and a policy model) for development similar to the one that has been set out by the industrialised North and some successful countries of the South.

Framing the debate in this manner has far-reaching consequences. At the normative level, we neither question nor unmask the largely Western epistemology of knowledge creation that is carefully hidden in social sciences, humanities, natural sciences and current global political coalitions (Mignolo, 2007). It also legitimises age-old centre-periphery relationships of the developed and developing countries in a paradigm of technological dependence, as captured by Prebisch in his analysis of the international trading system (Prebisch, 1950; see also Hirschman, 1968). These constructs limit our capacity for reflection and continue to prevent us from exploring why we know what we know, and what assumptions this knowledge is grounded on.

At a practical, positivist level, they prevent the exploration of comparative or multiple development pathways, obscuring the fact that it is harder to enter into a sequence of technological advance without producing and owning your own technology (Mbembe and Nuttal, 2004). In fact, when you do not own technology, no gains from its development and use will directly accrue to you (Young, 1928; Rayment, 1983). North-South models of manufacturing, for example, show that pricing of production in the South is not determined by a mark-up price set by the Southern producer, but continues to be dependent on the demand generated in Northern

export markets. This raises critical issues of technological independence through exports, particularly since there can be no individual investment functions that dictate technological activities in the South (Dutt, 1989; Taylor, 2004). They also discourage a wider, open discussion of the role of technology in promoting social change in the data economy with a full consideration of contextual factors such as traditional or communal knowledge (Coburn et al, 2013), different notions of privacy and joint social responsibility.

Righting the wrongs: can there be a different outcome this time?

In sum, although the fourth industrial revolution is set in a new world, many older realities persist. We continue to live within a broader coloniality of knowledge production, now reinforced by data extraction at a global level, in a process of domination that intertwines 'the political' and 'the technological' to replicate a new form of techno-imperialism (see also, Quijano, 2007). The open and horizontal Internet is now in the process of birthing a new power structure that represents a new way of governing and a new way of being. In the data economy, the boundlessness of the Internet is being reconstructed to redistribute power from the many to the few. To be clear, the power asymmetries are now far graver because they combine historical inequities with new power and wealth imbalances, as reflected in the debates on the geopolitics of data control and techno-surveillance (Bauman and Lyon, 2013; Zuboff, 2015; Zuboff, 2019). The benefactors are not just nation states; they include corporations and private actors, who now influence which projects are taken up, not just nationally but globally (Farrell and Newman, 2019).

The key role of technology in this configuration, while delivering progress and prosperity to many, is to serve as a sophisticated tool of control, manipulation and dominance of most. More generally, these changes are economically evident in recent trends in technology markets, with high prices, rising concentration and a distortion of public policy objectives such as market transparency and fairness (Mattli, 2019, p. 4). They are socially evident in power asymmetries that reinforce and deepen gender, race and cultural stereotypes in the guise of efficiency, such as in the case of algorithmic policing, or algorithmic decision-making in judicial systems (Umoja Noble, 2018). They are militarily/ hegemonically evident in efforts such as AI deployment for maintaining and promoting technological leadership of countries in security issues (Hoadley and Lucas, 2018).

But there are some new dynamics too. Most notably, the rise of China as a dominant digital force, as well as some other countries, begs the question whether the earlier distinctions of the North and the South still hold, and if not, are we in the process of a new categorisation of the world? Studying the rise of China in the data economy through the lens of coloniality of knowledge and power, can it be inferred that a dominated country will itself assume the role of a dominator if it succeeds? If so, how do we address the new role of science and technology for political ambition in global governance, while still extrapolating from China's success to create a new roadmap for other countries aspiring to do so?

Although this article has raised more questions than answers, these reflections are critical to our times. Particularly given that the more we digitise, the more unequal our society becomes, on the one hand, and policymakers often seem keen to explain these inequalities away in a flurry of protectionism and nationalism, on the other.

This article suggests that the way ahead is not to protect some more, without a full account and assessment of the uneven effects of such policy making. What is needed instead is a reflection on real social change and how technology can deliver it. To achieve this, we need to proceed

from an understanding that what has historically been considered to be legal, and institutionalised through formal rules, is not necessarily moral or desirable for an equitable future. We need a new discourse on technology that moves away from techno-imperialism to one that deconstructs our notions of knowledge and reflects on how it should serve society. The emerging cracks in the international trading system - symptomatically reflected in the growing disenchantment of countries with the global trading system – are the result of the technology power-plays discussed in this paper. To fix it systemically, we need to arrive at a new vision of science and technology for the future. We need to change the institutions that have historically been set up as tools of advancement and control for some, to the exclusion of many, and not just tweak it or look for ways to create space. Without this, advancement of science and technology will continue to benefit those who governed historically at the expense of those who were excluded. Because in the end, most of them will never catch up enough to win the race.

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Author: Padmashree Gehl Sampath is a Fellow and Senior Advisor of the Global Access in Action Program at the Berkman Klein Center for Internet and Society at Harvard University. She is an Adjunct Professor at the University of Aalborg, and a Professorial Fellow at the United Nations University-MERIT.

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For more information, please contact Anna Bernardo of the South Centre: Email bernardo@southcentre.int**, or telephone +41 22 791 80 50.**