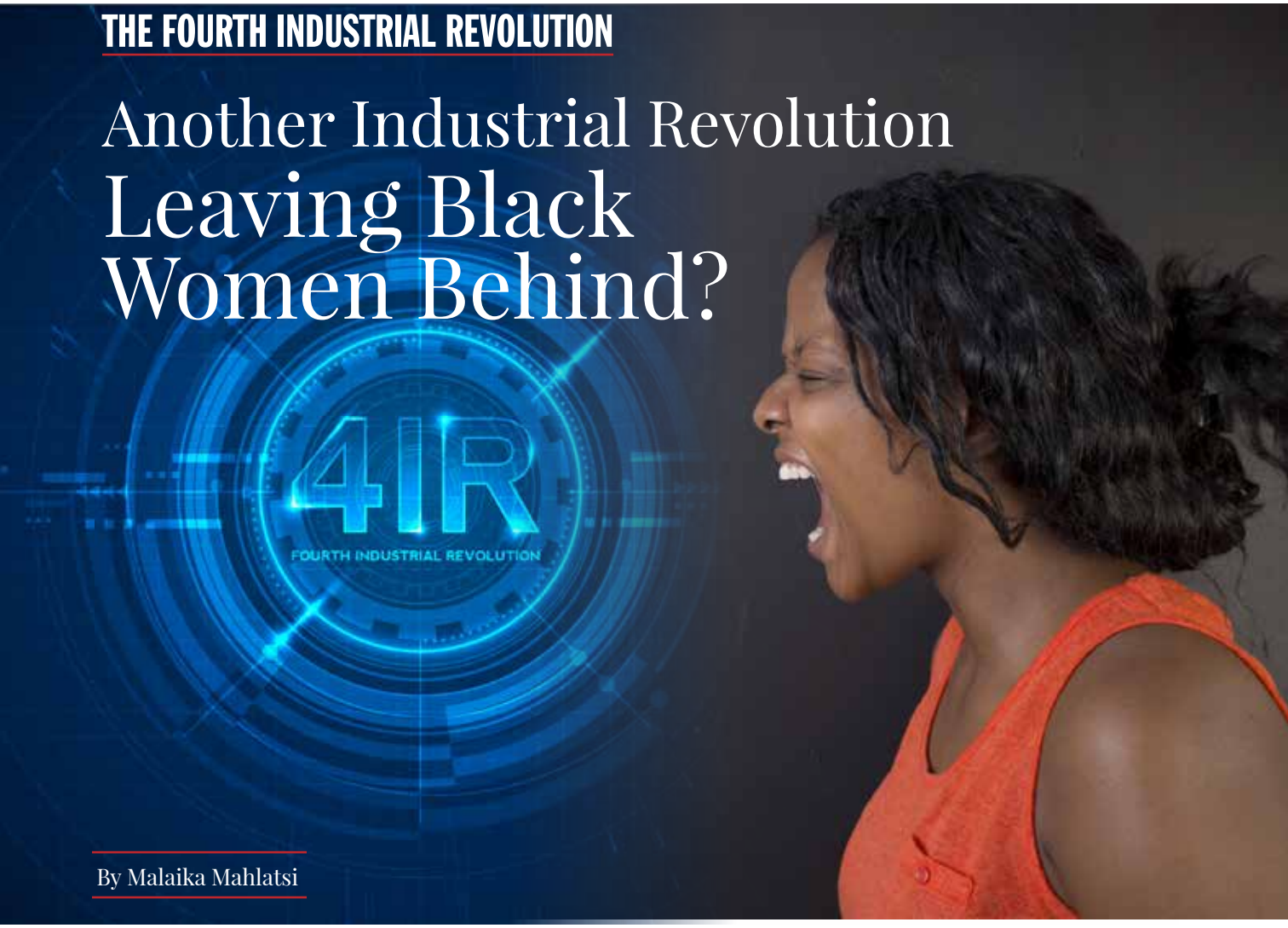
THE FOURTH INDUSTRIAL REVOLUTION

Another Industrial Revolution Leaving Black Women Behind?



By Malaika Mahlatsi

In 2016, Klaus Schwab – founder and Executive Chairman of the World Economic Forum (WEF) – introduced a term that would have significant consequences for global politics, economics, science, and the way in which the world is organised. The Fourth Industrial Revolution (4IR), according to Schwab's book by the same title, would be different in scale, scope and complexity from any that the world had seen before. This fusion of advances in complex technologies, including but not limited to robotics, quantum computing, blockchain, artificial intelligence (AI) and the internet of things (IoT), would affect all disciplines and industries of the modern world. It would reconstruct space, economies, governments and even challenge existing ideas about what it means to be human (Schwab, 2016).

The world was excited, and both developed and developing countries were swept into the frenzy. South Africa became deeply invested in cementing itself at the centre of this revolution, with government and the private sector dedicating over R30 billion to research and development (Department of Science and Technology, 2017). But while discourses on the 4IR are locked in the domain of politicians and captains of industry, its consequences extend to ordinary working-class people in our country. For this reason, it is crucial that these ordinary people be centred in this discourse, not as mere spectators, but as participants in a revolution that could, if not well managed, leave a vast majority of the largely poor working-class population behind.

Using a Black feminist philosophical perspective, this essay aims to analyse the ways in which the 4IR could perpetuate existing patterns

of racialised and gendered inequality. The essay demonstrates how the failure to meaningfully transform education and the segmented labour market will set parameters for an industrial revolution of the elite. It contends that the digital inequality paradox must be resolved through the redress of systematic challenges confronting our democratic dispensation so that, ultimately, Black women are not alienated from these inevitable technological developments.

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Industrial Revolutions as Processes of Working-Class Exploitation

Like all preceding industrial revolutions, the 4IR transcends industry, science, technology and economics. While prevailing discourse presents them as isolated, these fields are interdependent structures that evolved historically. This necessitates that we engage the 4IR as both an industrial and an ideological revolution. Fundamental to understanding the importance of grounding discourse on the 4IR in ideological analysis is an appreciation of the historical developments that have led us to this revolution. As such, my starting point is to trace a barometer of the industrial revolutions that have occurred throughout history, in order to situate the 4IR within a broader ideological context.

Linked to this, I want to demonstrate how industrial revolutions have, throughout history, involved working-class exploitation and oppression. This is done in order to contextualise the salient argument of this essay: that the 4IR could potentially perpetuate inequalities and further disenfranchise the poor working-class majority across the world.

The foundational industrial revolution, referred to as the First Industrial Revolution, was characterised by a change from an agrarian economy to an economy based on industry and machine manufacturing. This process started in Britain in the late 18th century, before spreading to other parts of Western Europe and the world. The feature of this revolution was not only technological, but also socio-economic and political. The technological changes that included the use of new basic materials and the invention of new machines impacted the sociology of work. The increased production that led to decreased expenditure of human energy resulted in the development of the factory system that led to the specialisation of functions and the division of labour. This marked the early stages of global capitalism and, simultaneously, laid parameters for colonialism.

The link between the First Industrial Revolution and colonialism is pronounced. The increasing application of science and technology to industry enabled the mass production of manufactured goods. But the manufacturing of goods at this scale needed a huge supply of raw materials and natural resources. The acquisition of these was facilitated through the conquering of countries that were rich with minerals and natural resources – a significant amount of which are located on the African and South American continents. These are parts of the world that were systematically underdeveloped, and which today we refer to as developing countries.

While colonised countries in Africa and South America were used as large agricultural factories to feed the growing populations of industrialising countries, Western Europe itself was experiencing a decline in land as a source of wealth in the face of rising industrial production and international trade. The modern phenomenon of urbanisation gestated during this period as new cities were established in industrial and manufacturing nerve centres such as Manchester in the United Kingdom. This rapid urbanisation had implications not only for the urban landscape, but for the very nature of work in the newly developed industries.

As more factories were built, the demand for labour grew. With the decline of the agricultural economy and migration into urban spaces, there was a long line of people, many of them unskilled, willing to do the difficult work. Working conditions in these factories were appalling. According to the literature, factories were a health hazard characterised by overcrowding and dilapidated infrastructure. But another feature of modern capitalism had begun to emerge: the

super-exploitation of workers by those owning the means of production. Not only were workers underpaid, but the exploited labour also included children (Humphries, 2010). Additionally, women received even less wages than men – a feature of the capitalist labour market that exists to this day.

The Second Industrial Revolution was not radically different in its exploitation of both working class people and natural resources. Beginning in the 19th century, this revolution was also characterised by a modern industry that exploited natural and synthetic resources. A key characteristic of this revolution was the development of new energy sources. It was in the Second Industrial Revolution that we saw an expansion of electricity, steel and petroleum. With this came radical developments and technological innovations that set parameters for the massification of international trade as we know it. But where the First Industrial Revolution led to precarious employment, the Second saw increased levels of unemployment as machines began to replace workers and other forms of fixed capital become antediluvian. This happened alongside rising levels of hunger as cash crops replaced traditional crops grown for subsistence.

Exploitation in the Second Industrial Revolution became grander in scale and, in many significant ways, it was this revolution that cemented the march of imperialism. M Shahid Alam, Professor of Economics at Northeastern University, contends in his study on colonialism and industrialisation that imperialist policies in colonised and dependent countries, largely in Africa and Latin America, worked to concentrate gains from export growth in the hands of foreign factors (1998). This is to say, the underdevelopment of colonised nations was facilitated by European imperial superpowers who repatriated incomes generated from exports of the raw materials of colonised countries to the metropoles. This underdevelopment of African and other countries had devastating effects on women.

Several studies of women's work during this colonial and imperial period, including the seminal work of Iris Berger, demonstrate that the introduction of cash crops led to women losing economic autonomy (2003). In addition to this, the exclusion of women from the global market ensured that international commerce completely benefitted men, who beyond having an unfair footing in this labour and business market, were also able to rely on the unremunerated labour of women. This was especially pronounced in African societies where gender relations had shifted to reflect the heteronormative patriarchal power relations imposed by the European patriarchal division of labour that were imposed on their own often patriarchal systems.

Like the revolutions that preceded it, the Third Industrial Revolution, also known as the Digital Revolution, impacted not just the labour market and global economies, but the social and political constructs of our society. The digitisation of manufacturing and other industries set parameters for a monumental shift in the very nature of the global economy, and South Africa was not left untouched. By the mid-1990s, it was becoming evident that the country's economy was transitioning from being industry-based to being knowledge-based, and that this was having a great impact on the already segmented and gendered labour market.

The evolution of information communications technologies (ICT) in South Africa, a key feature of the Third Industrial Revolution, has been steady and – to a great degree – on par with the rest of the developing world. Computers were introduced as far back as 1921, and the internet was introduced in 1991. But this progress has occurred within the context of heightened inequalities and discrepancies at the level of development between sectors in the economy. Access to information remains a great impediment – according to Statista, South Africa had an internet penetration rate of just 54 percent by January 2019 (Clement, 2019). A study done months prior, by the same institution, found that men made up over 50 percent of internet users in the country (Clement, 2018). When we factor in the racialised patterns of income in South Africa, we can deduce that from the overall lower percentage of women who have

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The 4IR in Racist South Africa

Having determined that industrial revolutions have, throughout history, left women (particularly African women) behind, we must necessarily reflect deeply on whether the 4IR can re-write this narrative. But we must do this contextually, for we cannot hope to pose a view without an appreciation of the point of view. This is to say, the frame is a type of context, and so in framing discourse around the 4IR in South Africa, we must have a deep appreciation of the country's history and the prevailing material conditions that shape its contemporary realities.

The history of South Africa, like the history of all colonised nations, is a history of dispossession, dehumanisation and de-civilisation. It is a history of colonial conquest and imperial devastation, at the heart of which was the segregation of people. This was done through the instituting of legislation that set parameters for separate development – leading to the further disenfranchisement of the majority of the country's population. The impact of this history on the institutionalisation of poverty and underdevelopment in the post-apartheid dispensation is well documented. For the purpose of this essay, however, there are two specific legacies of this history that necessitate critical engagement in the context of the 4IR. The first is the segmented labour market and the second is the inequalities in higher education.

The South African labour market is reflective of our apartheid past, where White men and women enjoyed preferential employment, while Black men and women were at the bottom of the ladder, both in terms of the remunerative scale and prospects for upward mobility. According to Stats SA, the wage gap between South Africa's racial groups has been on the increase in the democratic dispensation. Not only do Black households have the highest rate of unemployment, they also earn the lowest wages. In addition to this, on average, White people earn three times more than their Black counterparts – even with the same level of qualifications, for the same jobs. White people also have the highest annual median expenditure – ten times higher than that of Black South Africans (Stats SA, 2019).

But the inequalities are not just racialised, they are also gendered. The same report by Stats SA indicates that women earn around 30 percent less on average than men, and that their share of income is significantly lower than that of men, despite them being a demographic majority, at just over 51 percent of the total population. In the technology industry, men are paid 22.9 percent more, and 21.8 percent more in the financial sector. Importantly, the report also found that Black people have the lowest levels of access to the internet and health insurance cover (Stats SA, 2019).

These racialised and gendered inequalities in the labour market are a microcosm of the broader inequalities that Black women in particular must negotiate. They express themselves in education as well. According to a recent report, while South African women outnumber men by a ratio of 3:2 at post-secondary level, women are less likely to enrol for higher degrees. Additionally, while universities admit more women than men at undergraduate level, there are more men at Masters and Doctoral level than women (Department of Women, Youth and Persons with Disabilities, 2015).

But it does not end here. According to a study conducted by the audit firm PricewaterhouseCoopers (PwC), the proportion of men to women who graduate with science, technology, engineering and mathematics (STEM) related degrees is astounding. The ratio of representation in maths and statistics is 4:5, in ICT and technology it stands at 2:5, while in engineering, manufacturing and construction it stands at a low 3:10 (PricewaterhouseCoopers, 2018). The numbers are debilitating when it comes to Black women, who account for less than 30 percent of women STEM graduates. These disciplines are crucial to the economy of the 4IR, and so the realities of the racialised labour market and the inequalities in higher education have great implications for women, particularly Black women. If higher education is not producing the graduates needed to compete in this revolution, and the labour market is not promoting or remunerating Black women adequately, then the 4IR, like those before it, will leave Black women behind.

What Is to Be Done?

The starting point for centring Black women in the march towards the 4IR is to ensure the protection of industries that are dominated

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by women, as these are the biggest victims of automation and mechanisation. These include the retail and hospitality sectors, as well as the agricultural sector in Africa. While we cannot halt the march of time and technological developments, and therefore must accept that some jobs will be rendered obsolete by the advanced technologies of the 4IR, our government must make concrete choices about regulations to protect worker's rights. Companies must be compelled, legislatively, to contribute to social protection, so that workers are not reduced to a state of vulnerability. In addition to this, companies must be encouraged to equip their workers with skills that can be marketable and useful in the 4IR economy.

As argued, the 4IR is not just about industry and economics, it is also ideological. As such, the solution to the potential crisis of the 4IR leaving Black women behind lies in the transformation and decolonisation of higher education. Institutions such as the National Research Foundation (NRF) and other funding bodies must develop gender-biased quotas in terms of post-graduate funding, to ensure that Black women in particular are given the needed financial and academic support to excel. The ways in which knowledge is created in the age of the 4IR must also change. In this regard, we must look to solutions as provided by such scholars as Professor Tshilidzi Marwala, who has introduced an African module in Artificial Intelligence at the University of Johannesburg, in order to develop solutions to African problems using technology that recognises the phenotypes and languages of African people (Molele, 2019). This is an example of the decolonisation of technology, and it must be at the centre of efforts to include Black women in the 4IR.

But it is not higher education alone that requires transformation. 4IR technologies must also be transformed. Joy Buolamwini, a researcher at Massachusetts Institute of Technology (MIT) Media Lab, discovered that facial recognition technology does not see dark-skinned faces accurately, and as a result established the Algorithmic Justice League to advocate for more humane uses of technology and to call for legislation to protect against racial bias in algorithms. Work of this nature must be supported, and scientists must be encouraged to approach science with a conscience and a moral obligation to fashion a higher civilisation.

In addition to this, the Department of Labour must aim not at the reduction but rather at the criminalisation of the gender and racial pay gap. Like the European country of Iceland, paying men more than women must be made illegal, and companies who continue the practice must be heavily fined or forced out of business. This is the only way in which capital can be held accountable for its continued facilitation of income inequality. Ultimately, we must fashion a 4IR that bestows upon the historically marginalised and disenfranchised women of South Africa the greatest gift possible: a more human face. ■

References

Alam, S, M. (1998). *Colonialism and Industrialization: Empirical Results.* MPRA Paper No. 37866.

Berger, I. (2003). African Women's History: Themes and Perspectives. *Journal of Colonialism and Colonial History (2)1.*

Clement, J. (2019). *Digital population in South Africa as of January 2019.* Statista [online]. Available at: https://www.statista.com/statistics/685134/south-africa-digital-population/ [Accessed 25 Dec. 2019]

Clement, J. (2018). *Distribution of internet users in South Africa as of March 2017, by gender.* Statista [online]. Available at: https://www.statista.com/statistics/253490/distribution-of-internet-users-in-south-africa-by-gender/ [Accessed 25 Dec. 2019]

Department of Science and Technology, in partnership with Stats SA and the Human Sciences Research Council, (2017). *South African National Survey of Research and Experimental Development Statistical Report 2015/16.* South African Government [online]. Available at: https://www.gov.za/documents/south-african-national-survey-research-and-experimental-development-statistical-report.

Department of Women, Youth and Persons with Disabilities, (2015). *The Status of Women in the South African Economy.* Pretoria: Government Printing.

Humphries, J. (2010). *Childhood and Child Labour in the British Industrial Revolution.* Cambridge: Cambridge University Press.

Molele, C. (2019). *UJ's Marwala jets for innovation through decolonisation in higher education.* Inside Education [online]. Available at: https://insideeducation.co.za/ujs-marwala-jets-for-innovation-through-decolonization-in-higher-education/

PricewaterhouseCoopers, (2018). *Women remain under-represented in emerging tech.* PricewaterhouseCoopers [online]. Available at: https://www.pwc.co.za/en/press-room/changing-gender-perceptions-and-behaviours-in-the-workplace.html

Schwab, K. (2016). *The Fourth Industrial Revolution.* London: Penguin UK.

Stats SA (2019). *Inequality Trends in South Africa: A Multidimensional Diagnostic of Inequality.* Report No. 03-10-19. Pretoria: Department of Statistics.