Debating the Fourth Industrial Revolution: first things first

By Mondli Hlatshwayo

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The author points out that the 4IR has been introduced into the labour process to give the capitalists greater power and control over the production process, and warns that the failure to unpack the role of the new technologies in South Africa, and the Global South as a whole, is likely to deepen existing technological, economic and social gaps.

A Los Angeles-based author, Brian Merchant, recently published a book on the activities of Foxconn, a Chinese company that assembles Apple's iPhones in Shenzhen. Workers in the plant in which highly sophisticated iPhones are produced were so unhappy about their working and living conditions that in 2010 incidents of suicide began to be widespread.[1] Last year, in Durban, an engineering plant shop steward was taken to a warehouse and shown brand new robots. The manager pointed at the robots and said mockingly, "Here are NUMSA [National Union of Metalworkers of South Africa] members who do not get tired. These members don't go on strike".[2]

Human stories like these tend to be ignored when scholars present grand narratives about the Fourth Industrial Revolution (4IR) at conferences, in seminars and workshops. In April 2019, the South African government launched the Centre for the Fourth Industrial Revolution – an institution for conducting and coordinating research on "artificial intelligence (AI), machine learning, the Internet of Things (IoT), blockchain, distribution ledge technology and precision medicine".[3]

The Principal of the University of Johannesburg (UJ), Professor Tshilidzi Marwala, addressed the event and urged South Africa to move speedily in embracing the 4IR. UJ is already viewed as a pioneer of the 4IR in South Africa and in Africa generally with Marwala announcing in October 2019 that all first year students will be required to take a short course in AI.

However, a failure to unpack the role of technologies in capitalism makes it appear as though, in the final analysis, there are no winners or losers in the 4IR game. If current social relations remain unchanged, the 4IR is likely to reinforce existing inequalities. Not all countries and classes participate in the 4IR as equal partners and therefore are able to derive equitable gains from their participation in it. Workers, women and the marginalised, especially in countries of the Global South, are most likely to be the losers. Unless action is taken to ensure otherwise, the 4IR is most likely to deepen the existing technological, economic and social gaps.

WHAT IS THE 4IR?

According to Klaus Schwab, a founder and executive chairman of the World Economic Forum (WEF), the First Industrial Revolution began in 1784 in England, facilitated by the use of water and steam to mechanise the production of goods; the Second, based on electrical energy, began in 1870; while the Third was concerned with the use of information technology and electronics in production processes in the 1960s. Schwab asserts that the 4IR started in the middle of the 1900s, building on the Third Revolution's electronic, data and computer technology.[4]

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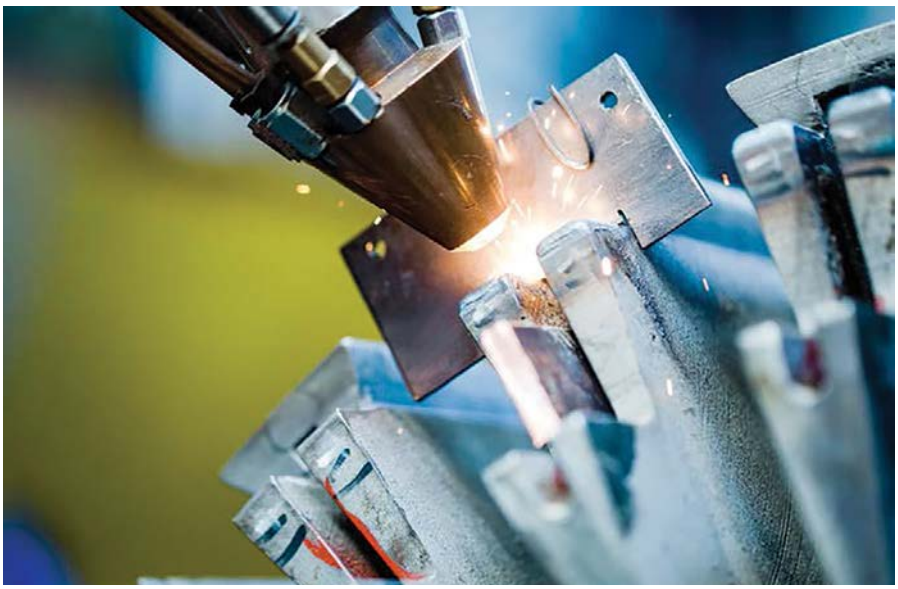

4IR is characterised by developments in artificial intelligence, 3-D printing, quantum computing, nanotechnology, robotics and synthetic biology.[5] In calling on the Global South and higher education institutions to embrace the 4IR fully and use it to their advantage, they argue that, "higher education in the fourth industrial revolution (HE 4.0) is a complex, dialectical and exciting opportunity which can potentially transform society for the better".[6] Xing, Marwala and Schwab concede that the 4IR will present challenges such as jobs losses, but the overall picture is of an era of prosperity for all sectors of global society.

MARXISM AND TECHNOLOGY: GOING BACK TO THE SOURCE

It is important to interrogate the role of technology in relation to the capitalist mode of production that is based on profit maximisation. Marx argued that the fundamental role of technology in capitalism is to produce goods at a faster rate at the same paid-for labour power. Therefore, a worker operating high-speed machinery must take less time to produce the goods necessary to cover his or her wage, allowing for the greater extraction of profit for the employer.[7]

Marx further argues that technology alienates workers by turning them into appendages of machines. In other words, the pace of work and the labour process tend to be dictated by machinery, further limiting workers' control of the labour process. Following in the footsteps of Marx, Braverman conducted an ethnographic analysis of machinery in the context of monopoly capitalism and observed 'deskilling' – a process in which certain functions in the production process are taken over by machines.[8] Therefore, technology enters the workplace not as a neutral tool, as is often assumed by those who uncritically embrace the 4IR. In fact, technology is introduced into the labour process to give the capitalists greater power and control over the production process. Technology increases the pace of work, which also has implications for workers' health, as in the case of iPhone production mentioned above.

THE ROBOTS

The use of robotics has a long history. In the USA in the 1930s motor vehicle assembly lines employed industrial robots to carry out the pushing, pulling and carrying formerly done by workers.[9] However, the prime focus now is on the potential introduced by AI.

AI uses computer systems to enable machines – from those employed on everything from automated assembly lines, to those conducting economic analysis and processing planning – to reason and self-correct during production.

WINNERS AND LOSERS IN THE GAME OF THE 4IR

It is countries and companies of the Global North that stand to benefit hugely from the 4IR. American company, Fanuc, for example, is the world leader in the supply of computer numeric control (CNC) systems and robotics that are applied to factory automation. CNC systems enable the automated control of machine tools. The Chinese market is now being targeted by Fanuc while Asea Brown Boveri (ABB), a European company ranked amongst the top ten industrial robot manufacturers in the world, states candidly that it is "driving the digital transformation of industry" worldwide. Despite Africa being one of the biggest producers of unprocessed metals and minerals used in the manufacture of these 4IR technologies, the continent remains generally underdeveloped. Africa, for example, contains 80% of the known

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reserves of coltan (columbite-tantalum) used especially in cell phones. The Democratic Republic of Congo (DRC) contains 80% of the continent's coltan reserves while remaining one of the poorest countries in the world.

South Africa has some of the world's biggest mineral reserves, which are consumed by the manufacturing sectors of the world, but there has been a significant decline in manufacturing capacity in the post-apartheid era.[10] According to Groenendaal: "In the 1980s, manufacturing's contribution to GDP was 27%. By 2015 this had fallen to below 13%."[11] Based on these figures, South Africa is unlikely to be a leader in the production of the technologies of the 4IR, as the country does not have the strong and sophisticated manufacturing base needed for this development.

With regard to unemployment, the intensification of the 4IR in South Africa is likely to bring another bloodbath. Using data from Statistics South Africa and an automation index of the University of Oxford, a recent study concluded that, "occupations performed by almost 35% of South African workers – roughly 4.5 million people – are potentially automatable in the near future".[12] This already follows significant job losses in various manufacturing sectors. For example, ArcelorMittal South Africa (formerly Iscor), the biggest steel producer in Africa, shed 50 000 jobs between 1989 and 2014, largely due to the introduction of sophisticated technology but compounded by the reorganisation of work, through measures such as outsourcing.[13]

The question of skills is also crucial. Ngcwangu, who conducted a comprehensive study on skills in the car manufacturing sector in South Africa, noted a deskilling process among workers engaged in boring, repetitive tasks in the plants.[14] Elsewhere, I have argued that technology leads to "massive deskilling" of particular workers while upskilling a smaller layer of technicians, process controllers, data scientists, computer programmers and those technicians who work in technological design and production.[15]

During a debate on the 4IR at the Jozi Book Fair last year, a coordinator of collective bargaining in one of the unions said, "These robots are also spies. They collect information on the movement of workers."[16] Besides the range of automated solutions, new technologies have made the surveillance of workers pervasive and intrusive. An interviewee who is a former unionist involved in formulating union responses to technologies, notes: "The technology is deskilling us; it's overloading us with work because, remember, the machine is reporting … Now they are able to track your movements in the plant".[17]

SOME SUGGESTIONS

Developing an understanding of the role of technology in the capitalist mode of production is crucial as it helps to temper the high expectations of the 4IR. In the long term, technologies will have to be appropriated by the working classes and the marginalised peoples of the world to make sure that they are of service to economic, ecological and gender justice. Understanding the fact that technologies under capitalism are primarily used to increase the profitability of companies and their owners should encourage progressive scholars and policymakers to develop counter-hegemonic projects that can minimise the levels of exploitation in the medium- and short-terms.

Wage struggles by workers reveal that the development agenda of the state can be contested. For example, the welfare state in Europe emerged as a compromise between contending class forces, labour and capital. From the "dark, satanic mills" of the early phases of capitalism – characterised by extreme levels of precarity, unhealthy and dangerous working conditions – to the squeaky clean Mercedes-Benz plant in Bremen in Germany, there lie protracted struggles to improve the working conditions – of those who labour.[18]

Unions in South Africa do not treat technology as a serious collective bargaining issue during negotiations with employers; they do not demand consultation before technology is introduced in production. In fact, in many instances in South Africa, robots and other forms of automation are introduced without the knowledge of workers. This is contrary to the proactive approach adopted by unions in Germany and in Scandinavian countries, where technological change and the reorganisation of work cannot happen without full consultation with the unions. Unions therefore need to incorporate these issues into bargaining over wages and working conditions. This approach requires building union ➤➤

capacity to conduct research into production issues and technology – something that the South African unions have ignored.[19] Rapid technological innovations, the easy movement of capital, financialisation and investment flight also compel labour to prioritise international solidarity.

Technology is not just a shop floor issue. It also affects the quality of life of working class and poor communities who need access to electricity, transport, housing, health and other social services. While there have been significant gains in electricity generation post-apartheid, many South Africans still lack access due to high costs or poor infrastructure. There are also serious concerns about access to data and weak and unreliable internet connections, which make it difficult for many South Africans to even think about participation in the 4IR.

For example, one gigabyte of data in South Africa cost seven times more than in Egypt in 2018.[20] Digital rights movements like #Datamustfall are crucial to ensure more equitable access. The same principle applies to transport, housing and other social services. These are also issues that require progressive technological innovation. For value to be unlocked to enable the state to harness technologies that can help solve housing, transport and other social problems created by colonialism and apartheid, there has to be a massive redistribution of resources from the super-rich and the big companies to marginalised communities.

CONCLUSION

In essence, technologies that can improve the quality of life for the working class and the marginalised sections of South African society require the rebuilding of democratic, non-sectarian, grassroots structures that can hold the state accountable. Social agencies of the state must be pressurised to facilitate the design of socially useful technologies that can lighten the social and economic burden of all those who are victims of the digital and technological divide. One must agree with Ngcwangu when he contends that the state has to strengthen skills development programmes that support the work of those involved in grassroots development.[21]

I am further arguing that development has to include designing technologies that can deal with local problems. It is the responsibility of intellectuals and activists in social movements, women's formations, student organisations, progressive non-governmental organisations and trade unions to democratise the debate on the 4IR by taking it to the grassroots, to ensure the people make proposals about technologies that can help improve their lives.

ENDNOTES

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