connected sensors

artificial intelligence (AI)

age of automation

BEWARE OF THE BOT

A Critical Perspective on the 4IR

the robots are coming

solve

algorithms

quantum computing

software

search

drones

emerging technologies

biotechnology

communication

datascience

virtual reality

materials science

energy storage

simulation

cloud

deep learning
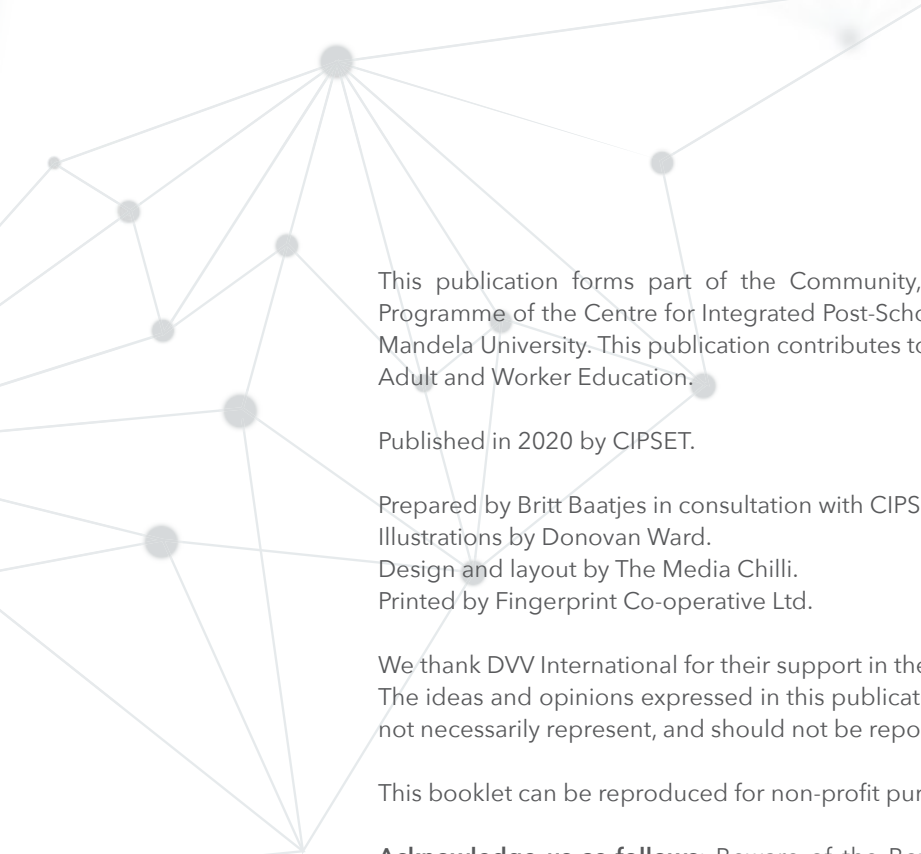
robotics

blockchain

nanotechnology

bots

tools

3D printing

machine learning

optimisation

augmented reality

autonomous vehicles

NELSON MANDELA
UNIVERSITY

Centre for Integrated Post-School
Education and Training
(CIPSET)

vhs
DVV International

Education for Everyone. Worldwide.
Lifelong.

With financial support from the

BMZ   Federal Ministry
for Economic Cooperation
and Development

We dedicate this booklet to all workers involved in 'life-making' activities, particularly farm, domestic and community health workers.

BOT: Hello and welcome.

I am a bot, here to help you read this booklet.

I can help by:

1. Telling you what is coming up
2. Telling you which parts are most interesting or boring
3. Telling you how many times the word Artificial Intelligence is used
4. Telling you how long it would take a person with 12 years of schooling to read this booklet.

You can enter one of the numbers above, or ask a question like: 'Tell me what is coming up first'? What would you like to do?

CHAT NOW:

ME: I want to turn the page.

BOT: Sorry I didn't understand you. I'm not sure what you're asking.

I can help by:

1. Telling you what is coming up
2. Telling you which parts are most interesting or boring
3. Telling you how many times the word Artificial Intelligence is used
4. Telling you how long it would take a person with 12 years of schooling to read this booklet.

You can enter one of the numbers above, or ask a question like: 'Tell me what is coming up first'? What would you like to do?

CHAT NOW:

ME: Um...Can I speak with a person please?

BOT: Sorry I didn't understand you. I'm not sure what you're asking. Let me know if there's anything else you need help with.

NOW TURN THE PAGE, BUT FIRST COMPLETE THE FOLLOWING:

CAPTCHA

I'm not a robot
CONTINUE

Privacy. Terms

Beware of the Bot:
A Critical Perspective on the 4IR

CONTENTS

This booklet has not been automatically reproduced by an Optical Character Recognition (OCR) algorithm. And it has been checked over by human eyes!*

*Today AI is used to proofread articles written by humans, detect plagiarised content, evaluate the readability of content, provide summaries of texts it has scanned and moderate readers' comments. It is also used to write its own articles.

BEWARE OF THE BOT

FOREWORD

The fourth industrial revolution (4IR) is gaining national and global attention as the 'new phase' of development that will address a wide range of social and economic issues in societies. Like its predecessors, the 4IR is portrayed as the new era that offers opportunities to improve human lives, lead the world out of crises and toward a better future for humankind. The 4IR is associated with disruptive technologies including robotics, the internet, nanotechnologies, genomics artificial intelligence, virtual reality and many other technologies. Collectively, these technologies will combine as a transformative force that addresses a wide range of socio-economic problems. This is the thundering and dominant message about the 4IR that is echoed by those with power, global economic institutions, as well as the political leadership.

The ideological dominance of the 4IR is evident. We know very well that when a particular model of social policy becomes hegemonic, it tends to negate any rival alternative that might imply a threat to its conceptual dominance. In the case of the 4IR, its implementation implies a particular vision of the world which rules out differing, viable and efficient alternatives. At present, the 4IR is presented as the new development that operates like a force of nature - we cannot argue with it any more than we can argue with the inexorable laws of gravity. We are made to believe that we must accept it and adapt to it.

The hegemony of the 4IR is also beginning to shape new educational frameworks from schooling through vocational training to higher education. In the case of schooling, large scale interventions are already underway to alter the curricula in ways that respond to the needs of the 4IR. Children in kindergarten and primary schools are already users of a variety of robots including pet, humanoid and social robots, whilst older children are encouraged to learn coding as part of new science, technology, engineering, and mathematics (STEM) curricula.

The new terminology in education associated with the 4IR now includes 'learning management systems' (LMS); 'technology enhanced learning' (TEL); 'intelligent learning environments' (ILE); 'tactical training systems' (TTS); 'intelligent tutoring systems' (ITS); and the more well-known massive open online courses (MOOCs) and small private open courses (SPOCs). These concepts are also strongly associated with educational reforms geared towards job-preparation, upskilling and reskilling of workers for Working World 4.0. This 4IR-driven skills formation is described as essential to redirect 65% of our children into the 4IR who would otherwise be prepared for jobs that won't exist.

In South Africa many activists, scholars and critics have raised critical questions about the promises of the 4IR. Is the 4IR simply the next phase of capitalist production or an epochal shift? Can it address the triadic problems of inequality, unemployment and poverty? How can it deal with the issues of 'race', class and gender? How will it address the ecological crisis and global warming? These are some of the key questions raised.

This booklet has been written to encourage debate amongst students and communities and to inspire much greater public debate about the 4IR, its meaning and value in contributing to a better society.

Ivor Baatjes
Director, Centre for Integrated Post-School Education and Training, Nelson Mandela University

INTRODUCTION

This booklet is divided into three parts with sections: **Part One** is about the so-called* Fourth Industrial Revolution (4IR), **Part Two** about workers and precarious work and **Part Three** about technology and its purpose/s.

In **Part One, Section A** we look at the 4IR and all it entails. According to Schwab* (2016) and others it is the fusing of boundaries between the physical, digital and biological worlds which is changing the way people live, work and relate to one another. The dominant discourse view is critiqued and the reader challenged to think critically about the 4IR. **Section B** describes the four industrial revolutions and asks whether this 'revolution' will continue to serve the interests of those who hold political and economic power (as the first three 'revolutions' did) or whether the technologies will instead serve a socially-useful purpose in the interests of the 'social majority' (Prakash & Esteva, 1998). **Section C** continues with a critique of the 4IR.

Part Two is made up of stories as told by three workers. The role of precarious workers and their future in an increasing digital age are dealt with in **Sections A** and **B** of **Part Two**.

Part Three looks at technology including socially-useful technology. Who owns and controls it and for what purpose/s, and how is it being used and why?

This booklet was written during the COVID-19 pandemic which, many claim, has fast-tracked a so-called 'new' world. The booklet examines whether the pandemic has been a convenient excuse for capitalists to do just what they always intended - shift us to an online, remote, touchless, 'Zoom' society. And while so doing, continuing to have little to no regard for the majority of people who remain 'on the margins', despite which 'industrial revolution' we find ourselves in.

This booklet also serves as a warning to *not* simply uncritically embrace the so-called 4IR as if not embracing it will render us 'backward'. The so-called 4IR should be examined, scrutinised and analysed with as much scepticism as one should apply to terms like 'development', 'progress' and the 'modern' world.

*'so-called' because many question whether it is a *new* industrial revolution and whether it is a revolution at all (see more further below).

*Klaus Schwab, Founder and Executive Chairperson of the World Economic Forum.

PART ONE

SECTION A: THE SO-CALLED FOURTH INDUSTRIAL REVOLUTION

George Monbiot (2020) states that COVID-19 has been 'a wake-up call' for the privileged and disinterested who have 'suddenly' realised that the lived reality of the majority of people on this Earth is not like theirs, and that there has been a continuous and wanton destruction of nature.

> We have been living in a bubble, a bubble of false comfort and denial. In the rich nations, we have begun to believe we have transcended the material world. The wealth we've accumulated - often at the expense of others - has shielded us from reality.
>
> **Covid-19 is nature's wake-up call to complacent civilisation**, George Monbiot, 25 March 2020
>
> https://www.theguardian.com/commentisfree/2020/mar/25/covid-19-is-natures-wake-up-call-to-complacent-civilisation

So, the question could well be: will COVID-19 - which many say is part of the ecological and climate crisis caused by capitalism - be seen as a once-off event or as a warning for many more similar crises and (perhaps) ultimate collapse to come?

We find ourselves standing at a crossroads. Will we rush back to 'the way things were' or will we find another path forward?

PLEASE RESPOND WITH THE OPTION BELOW THAT BEST FITS THE 'SOLUTION' YOU WANT
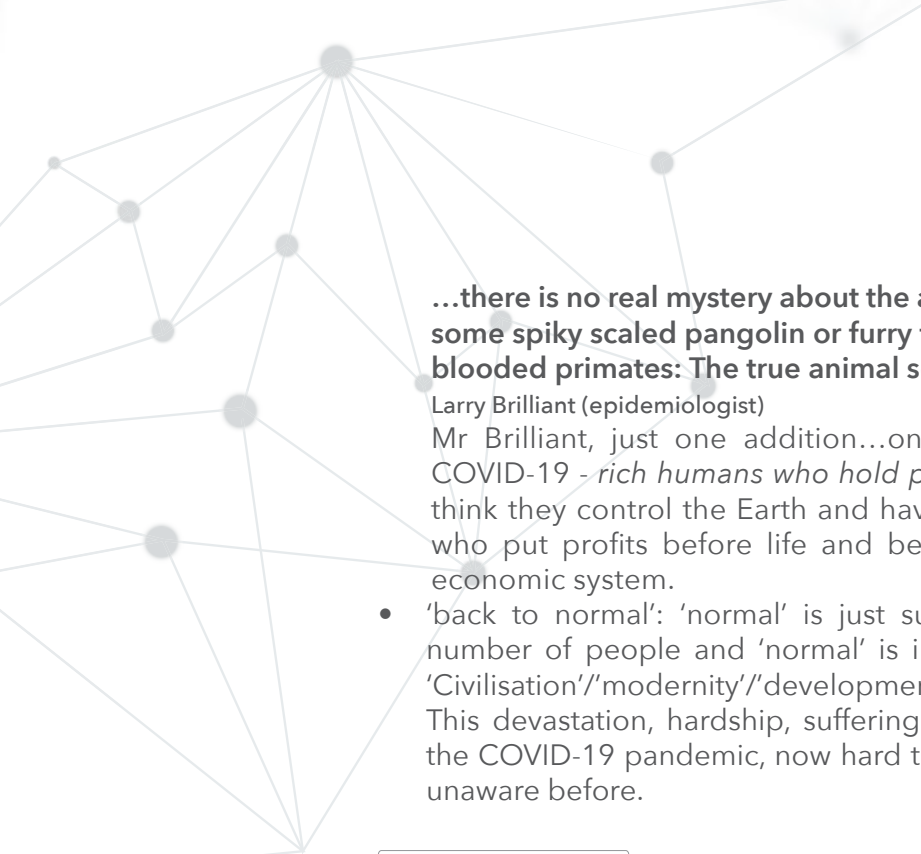
Should we rush back to this?

Option One
The way things were: TINA*

Freepik

*Margaret Thatcher

This 'there-is-no-alternative' (TINA) system which is responsible for what we experience now. Neoliberal financialised capitalism:
- the worst inequality
- a system which favours a few at the expense of most
- immense poverty
- 'success' defined as something individual - power and privilege (usually in monetary form) over others
- an ecological and climate crisis - Mother Earth reeling because of a desire by those in power to maintain the global capitalist system (and its definition of endless 'growth' - counting our well-being using GDP - *at whatever cost)*

…there is no real mystery about the animal source of pandemics. It's not some spiky scaled pangolin or furry flying bat. It's populations of warm-blooded primates: The true animal source is us.
Larry Brilliant (epidemiologist)

Mr Brilliant, just one addition…only one species is responsible for COVID-19 - *rich humans who hold political and economic power* - who think they control the Earth and have been abusing it for years. Those who put profits before life and benefit from an unfettered capitalist economic system.

- 'back to normal': 'normal' is just survival for a massive and growing number of people and 'normal' is increasing destruction of the Earth. 'Civilisation'/'modernity'/'development' have been devastating for most. This devastation, hardship, suffering and pain have been amplified by the COVID-19 pandemic, now hard to miss for those who were blissfully unaware before.

✓ LIKE

OR TO THIS?

OPTION TWO
THE WAY THINGS COULD BE: 'ANOTHER WORLD IS POSSIBLE'*
*Arundhati Roy

A return to the commons, communality, conviviality, sharing, care, simplicity, sufficiency, soldarity, interconnectedness, living in harmony and balance - where people are concerned about each other and the natural world in which we are *just one small part*. 'Men' do not own nature. Re-embracing ways of living like Ubuntu, Sumak Kawsay/Buen Vivir, Swaraj and the many others that reflect the values and ethics of a more humane society.

And no, it does *not* mean people go hungry, homeless or jobless. In a world where there is no more marginal, no more exploited or oppressed - finally a return to peace.

✓ LIKE

Once it is 'safe' to return to our lives, what will we choose, *who* will choose and why, what lessons will have been learnt?

IF YOU CHOSE OPTION ONE...
THE WAY THINGS WERE/'BACK TO NORMAL' OR THE 'NEW NORMAL' - THE SAME, JUST MORE ONLINE

Those who hold political and economic power are capitalising on the COVID-19 panic to quickly push through their (previously-planned) online agendas. Former Google CEO Eric Schmidt joined New York Governor Andrew Cuomo's briefing on 6 May 2020 to announce that he will be heading up a panel to reimagine New York State's post-COVID reality, with an emphasis on permanently integrating technology into every aspect of civic life.

Screen New Deal: Under cover of mass death, Andrew Cuomo calls in the billionaires to build a high-tech dystopia, Naomi Klein, 8 May 2020

https://theintercept.com/2020/05/08/andrew-cuomo-eric-schmidt-coronavirus-tech-shock-doctrine/

Schmidt wrote the following on 27 March 2020 (note the date) in The Wall Street Journal, aptly titled '**A real digital infrastructure at last: American innovation can bring us tools and solutions that will outlast today's crisis**':

Like other Americans, technologists are trying to do their part to support the front-line pandemic response.

Every American should be asking where we want the nation to be when the COVID-19 pandemic is over. How could the emerging technologies being deployed in the current crisis propel us into a better future?

Companies like Amazon know how to supply and distribute efficiently. They will need to provide services and advice to government officials who lack the computing systems and expertise.

We should also accelerate the trend toward remote learning, which is being tested today as never before. Online, there is no requirement of proximity, which allows students to get instruction from the best teachers, no matter what school district they reside in.

The need for fast, large-scale experimentation will also accelerate the biotech revolution.

Finally, the country is long overdue for a real digital infrastructure.

If we are to build a future economy and education system based on tele-everything, we need a fully connected population and ultrafast infrastructure. The government must make a massive investment - perhaps as part of a stimulus package - to convert the nation's digital infrastructure to cloud-based platforms and link them with a 5G network.

And in BizNews Weekender (23 May 2020): '**Zooming into clearer skies**':
Zoom Communications [the online meeting software not well known a few months ago] now worth more than the world's seven biggest airlines (Visual Capitalist). A clear sign that while the COVID-19 pandemic carries much distress, some good work-from-home habits are emerging.

OPTION ONE IS 'E' AND 'TELE-EVERYTHING':

Shopping, learning, entertainment, socialising, relationships - online *living*. Well, that's if you have data or enough data and/or a device that allows for all of the above and/or if you're not spending most of your day trying to feed your family and/or yourself.

The so-called fourth industrial revolution brings with it:
- A further breakdown of 'old' ways of doing things - a replacing of a communal and personal world of relations between people by an abstract, impersonal and anonymous world of relations between things (think stokvel and then think digital banking).
- Fewer jobs and a worsening of economic, income and class inequalities.
- An expansion and deepening of surveillance technologies.

Technology (including digital technology of the third and fourth industrial revolutions) is *not* neutral. It is political - it *is* about who owns it, who controls it and who decides what to do with it.

The 4IR presents our continent with great opportunities. The uptake of digital technologies will lead to improved competitiveness and provides fresh opportunities for inclusive growth. Millions of our continent's young citizens are digital natives and we must drive a skills revolution to enable Africa to take a quantum leap into the economy of the future.
Part of the acceptance statement by President Cyril Ramaphosa on assuming the Chair of the African Union for 2020. Ramaphosa called for the establishment of an AI Forum in Africa (9 February 2020)

The 4IR is changing our political, economic and social lives. Those who master the means and ways of the 4IR shall thrive. Those who fail to master this revolution shall be thrown into the dustbin of backwardness.
Professor Tshilidzi Marwala (Vice-Chancellor and Principal of the University of Johannesburg (UJ). Professor Marwala deputises for President Ramaphosa on the South African Presidential Commission on the Fourth Industrial Revolution) (5 September 2018)

Following are some arguments made in favour of the fourth industrial revolution, with responses (with respect to GOOGLE Translate):

ARGUMENT ONE

THE RATHER DULL AND TEDIOUS ASPECTS OF OUR WORK WILL BE ERADICATED.

GOOGLE TRANSLATE:

Could 'the rather dull and tedious aspects' not be eradicated with a return to work as a vocation? Isn't it 'dull and tedious' because it is alienating and for a boss' profits?

ARGUMENT TWO

THE 4IR WILL NOT CREATE MASSIVE UNEMPLOYMENT BUT WILL DRASTICALLY CHANGE WHAT WORK LOOKS LIKE. NEW SKILLS WILL BE REQUIRED AND NEW JOBS WILL BE CREATED, SOME FLEXIBLE AND REMOTE.

Benjamin Pring, Director of the Cognizant Center for the Future of Work, argues that when you look at workforce disruption you have to separate the notion of disappearing jobs from disappearing tasks:

> Ten to 12 percent of jobs will go away. Ten to 13 percent of new jobs will be created. But the vast bulk of jobs - 75 percent - will be the same, but they will be using this next-generation technology to do that work faster, more efficiently, more productively, more profitably, and, hopefully, more enjoyably.
>
> **Workforce disruption: Disappearing jobs vs. disappearing tasks**, Ramona Schindelheim, 21 January 2020
>
> https://workingnation.com/workforce-disruption-disappearing-jobs-vs-disappearing-tasks/

Those who master the means and ways of the 4IR shall thrive. Those who fail to master this revolution shall be thrown into the dustbin of backwardness (Marwala).

GOOGLE TRANSLATE:

This one is….tricky - there have been several studies and stats vary but one thing is clear: we have no idea how many jobs will actually be lost, but it is clear that *jobs will be lost*.

- A 2013 Oxford University study said that 47 percent of US jobs would be lost to computerisation in the next few decades.
- A 2016 OECD study found that nine percent of jobs in the organisation's 21 member countries are automatable.
- A 2017 McKinsey Global Institute study reported that roughly one-fifth of the global workforce will be impacted by the adoption of AI and automation, with the most significant impact in so-called 'developed' nations like the UK, Germany and US. By 2022, 50% of companies believe that automation will decrease their numbers of full-time staff and by 2030, robots will replace 800 million workers across the world.

(Also see Gorz (1982) *Farewell to the working class* and Rifkin (1995) *The end of work*)
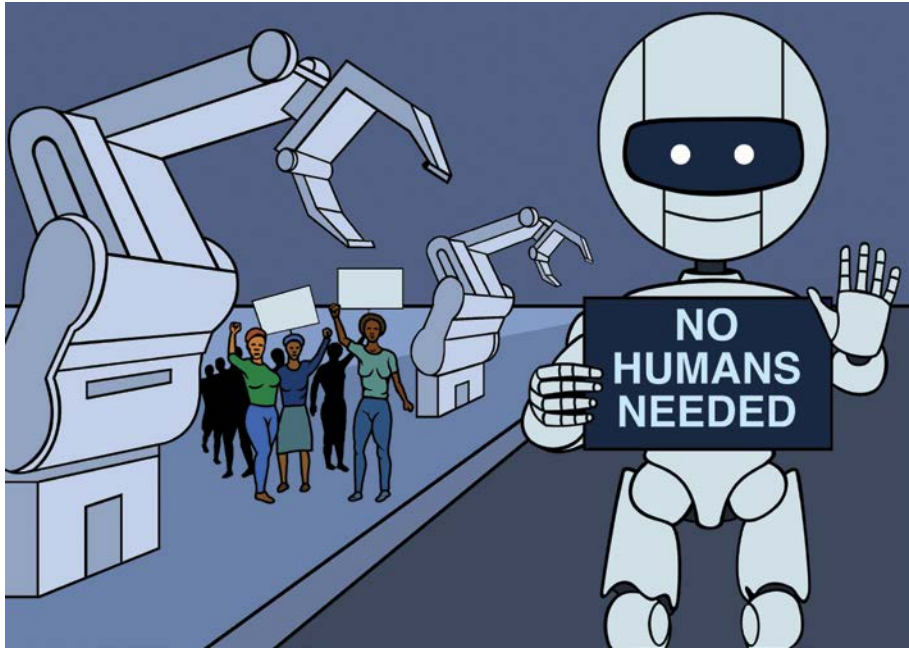
New jobs for who? 'Invisible robots' will certainly replace 'invisible people' - the working poor who, who under capitalism, are undervalued, underpaid, not paid, excluded. The actual numbers of the future 'unemployed' vary but the working poor will, largely, become the 'poor'. And white-collar workers are increasingly facing the threat of being replaced by AI. Algorithms will create white-collar ex-workers - displaced by technology.

Will it be the end of (most) human workers - capitalism's ultimate triumph? What new skills will be required if (most) people are rendered obsolete?

ARGUMENT THREE

THERE WILL BE HIGHER PRODUCTIVITY, IMPROVED CORPORATE PERFORMANCE AND RAPID EXPONENTIAL GROWTH ACROSS THE GLOBAL ECONOMY.

The uptake of digital technologies will lead to improved competitiveness and [it] provides fresh opportunities for inclusive growth.
…we must drive a skills revolution to enable Africa to take a quantum leap into the economy of the future (Ramaphosa).

GOOGLE TRANSLATE:

This is a continuation of the same.
Everything for the 1% (owners of everything) who benefit from the labour of the workers (human or robot).
Nothing good for the 99%*. Nothing good for the planet.
And yes, we know capitalists love productivity - profits for them in as quick a time as possible with as few 'hassles' (leave/tea/lunch/ toilet/'demanding' rights) as possible.
*David Graeber

The robots haven't just landed in the workplace - they're expanding skills, moving up the corporate ladder, showing awesome productivity and retention rates, and increasingly shoving aside their human counterparts. One multi-tasker bot, from Momentum Machines, can make (and flip) a gourmet hamburger in 10 seconds and could soon replace an entire McDonalds crew. A manufacturing device from Universal Robots doesn't just solder, paint, screw, glue, and grasp - it builds new parts for itself on the fly when they wear out or bust.
Rise of the machines: The future has lots of robots, few jobs for humans, Marguerite McNeal, April 2015
https://www.wired.com/brandlab/2015/04/rise-machines-future-lots-robots-jobs-humans/

And what is it like to work with an algorithm?
These automated systems can detect inefficiencies that a human manager never would - a moment's downtime between calls, a habit of lingering at the coffee machine after finishing a task, a new route that, if all goes perfectly, could get a few more packages delivered in a day. But for workers, what look like inefficiencies to an algorithm were their last reserves of respite and autonomy, and as these little breaks and minor freedoms get optimized out, their jobs are becoming more intense, stressful, and dangerous. Over the last several months, I've spoken with more than 20 workers in six countries. For many of them, their greatest fear isn't that robots might come for their jobs: it's that robots have already become their boss.
In few sectors are the perils of automated management more apparent than at Amazon. Almost every aspect of management at the company's warehouses is directed by software, from when people work to how fast they work to when they get fired for falling behind. Every worker has a "rate," a certain number of items they have to process per hour, and if they fail to meet it, they can be automatically fired.

When Jake (not his real name) started working at a Florida warehouse, he was surprised by how few supervisors there were: just two or three managing a workforce of more than 300. "Management was completely automated," he said. One supervisor would walk the floor, laptop in hand, telling workers to speed up when their rate dropped.

"You're not stopping," Jake said. "You are literally not stopping. It's like leaving your house and just running and not stopping for anything for 10 straight hours, just running."

How hard will the robots make us work? Josh Dzieza, 27 February 2020

https://www.theverge.com/2020/2/27/21155254/automation-robots-unemployment-jobs-vs-human-google-amazon

And then there's the deception, to do with costs:

It's hard to build a service powered by artificial intelligence. So hard, in fact, that some startups have worked out it's cheaper and easier to get humans to behave like robots than it is to get machines to behave like humans.

"Using a human to do the job lets you skip over a load of technical and business development challenges. It doesn't scale, obviously, but it allows you to build something and skip the hard part early on," said Gregory Koberger, CEO of ReadMe, who says he has come across a lot of "pseudo-AIs."

"It's essentially prototyping the AI with human beings," he said.

Alison Darcy, a psychologist and founder of Woebot, a mental health support chatbot, describes this as the "Wizard of Oz design technique."

"You simulate what the ultimate experience of something is going to be. And a lot of time when it comes to AI, there is a person behind the curtain rather than an algorithm," she said, adding that building a good AI system required a "ton of data" and that sometimes designers wanted to know if there was sufficient demand for a service before making the investment.

This approach was not appropriate in the case of a psychological support service like Woebot, she said. "As psychologists we are guided by a code of ethics. Not deceiving people is very clearly one of those ethical principles."

The rise of 'pseudo-AI': How tech firms quietly use humans to do bots' work, Olivia Solon, 6 July 2018

https://www.theguardian.com/technology/2018/jul/06/artificial-intelligence-ai-humans-bots-tech-companies

> *And then there's keeping costs down (again):*
> Globally DDD (Dirty, Dangerous and Demanding) and CCC (Caring, Cooking and Cleaning)* jobs are usually racialised and/or feminised and/or done by migrant labourers. In many instances, paying people poorly remains the cheaper option than automating, for example:
>> Employing workers from poorer countries is in fact cheaper than buying costly machinery [in Europe certain sectors of agriculture, for example, have maintained very low levels of mechanisation], insofar as initial investment is high and needs to be managed and maintained by highly skilled engineers and technical staff.
>> ***Europe: The COVID-19 crisis and the end of the 'low-skilled' worker**, Mark Bergfeld & Sara Farris, 10 May 2020
>> http://www.europe-solidaire.org/spip.php?article53253

ARGUMENT FOUR

IT WILL ALLOW HUMANS TO FOCUS ON MORE CHALLENGING, FULFILLING TASKS LEADING TO AN OVERALL HAPPIER AND MORE PRODUCTIVE SOCIETY.

> **GOOGLE TRANSLATE:**
>
> Yes for the 1%.
> In 1930 John Maynard Keynes predicted that technological advances would enable us to work a 15-hour week. Yet we are busier than ever before serving the 'capitalist machine'. Online has not slowed us down.
>
> Many activists and scholars write about the above but not in relation to the 4IR. Those working in the areas of degrowth, Buen Vivir, eco-socialism, eco-feminism, the Rights of Mother Earth, deglobalisation, food sovereignty, Just Transition (amongst other) advocate for a socially just and ecologically sustainable society. Well-being of people and planet should be the indicator of 'prosperity', rather than 'progress' as something measured in GDP terms based on unrepentant economic 'growth'. This kind of re-imagined society is concerned with things like the commons, co-operation, care, conviviality, community, localisation, self-regulation and happiness.

ARGUMENT FIVE

AI MAKES FEWER MISTAKES THAN HUMANS.

GOOGLE TRANSLATE:

But AI still makes mistakes such as choosing incorrect photographs to accompany texts.

Jade Thirlwall (left) and Leigh-Anne Pinnock (right)
Wireimage, Getty

Microsoft's decision to replace human journalists with robots has backfired, after the tech company's artificial intelligence software illustrated a news story about racism with a photo of the wrong mixed-race member of the band Little Mix.
A week after the Guardian revealed plans to fire the human editors who run MSN.com and replace them with Microsoft's artificial intelligence code, an early rollout of the software resulted in a story about the singer Jade Thirlwall's personal reflections on racism being illustrated with a picture of her fellow band member Leigh-Anne Pinnock.
Microsoft's robot editor confuses mixed-race Little Mix singers, Jim Waterson, 9 June 2020
https://www.theguardian.com/technology/2020/jun/09/microsofts-robot-journalist-confused-by-mixed-race-little-mix-singers

And sometimes with devastating consequences:

Brown University student Amara Majeed awoke on a Thursday in late April to find that she had been falsely accused of perpetrating the Easter terror attacks in Sri Lanka. Her photo was disseminated internationally and she received death threats, even though she was at school in Providence, Rhode Island during the attacks, not in Sri Lanka. Later, it was revealed that the Sri Lankan police had used facial recognition software, leading them to mistakenly identify Amara Majeed as one of the bombers.

Who is watching your face? Absent regulation, it's hard to know, Alex Leblang (ACLU of Massachusetts intern), 15 May 2019

https://privacysos.org/blog/who-is-watching-your-face-absent-regulation-its-hard-to-know/

Robert Julian-Borchak Williams was in his office when he got a call from the Detroit Police Department telling him to come to the station to be arrested. He thought at first that it was a prank. An hour later, when he pulled into his driveway, a police car pulled up behind, blocking him in. Two officers got out and handcuffed him, refusing to say why he was being arrested. Williams was taken to a detention centre and held overnight. The next day he was taken to an interrogation room and shown three pieces of paper on the table, face down.

"When's the last time you went to a Shinola store?" one of the detectives asked, in Mr. Williams's recollection. Shinola is an upscale boutique that sells watches, bicycles and leather goods in the trendy Midtown neighborhood of Detroit. Mr. Williams said he and his wife had checked it out when the store first opened in 2014. The detective turned over the first piece of paper. It was a still image from a surveillance video, showing a heavyset man, dressed in black and wearing a red St. Louis Cardinals cap, standing in front of a watch display. Five timepieces, worth $3,800, were shoplifted. "Is this you?" asked the detective.

The second piece of paper was a close-up. The photo was blurry, but it was clearly not Mr. Williams. He picked up the image and held it next to his face.

"No, this is not me," Mr. Williams said. "You think all Black men look alike?"

Mr. Williams knew that he had not committed the crime in question. What he could not have known, as he sat in the interrogation room, is that his case may be the first known account of an American being wrongfully arrested based on a flawed match from a facial recognition algorithm, according to experts on technology and the law.

Wrongfully accused by an algorithm, Kashmir Hill, 24 June 2020

https://www.nytimes.com/2020/06/24/technology/facial-recognition-arrest.html/

The Black Lives Matter movement has brought to the world's attention the tremendous harm facial recognition technology has done and can do, prompting Amazon to implement a 'one-year moratorium' on police use of Rekognition, its facial-recognition technology. Apart from the fact that people do not know their photos are being taken, stored and used, studies have found the technology is not as accurate on women or darker skinned people as it is on 'white' men, which can lead to misidentification and false arrests.

And more mistakes…

AI algorithms intended to root out welfare fraud often end up punishing the poor instead, Michele Gilman, 14 February 2020

https://theconversation.com/ai-algorithms-intended-to-root-out-welfare-fraud-often-end-up-punishing-the-poor-instead-131625

Algorithms aren't magic

AI won't magically root out what little fraud there is from the welfare rolls.

Mistakes can happen when software developers translate complex regulatory requirements into code and when they make programming errors. The massive sets of data fed into automated systems inevitably will contain some inaccuracies and omissions. And algorithms can also replicate embedded societal biases and end up discriminating against marginalized groups.

Without a human in the decision-making loop, these mistakes become compounded as they flow through multiple data-sharing systems.

In Michigan, a $47 million [$1 equals about R17 (at time of going to print)] automated fraud detection system adopted in 2013 made roughly 48,000 fraud accusations against unemployment insurance recipients - a five-fold increase from the prior system. Without any human intervention, the state demanded repayments plus interest and civil penalties of four times the alleged amount owed.

To collect the repayments - some as high as $187,000 - the state garnished wages, levied bank accounts and intercepted tax refunds. The financial stress on the accused resulted in evictions, divorces, destroyed credit scores, homelessness, bankruptcies and even suicide.

As it turns out, a state review later determined that 93% of the fraud determinations were wrong.

How could a computer system fail so badly? The computer was programmed to detect fraud when claimants' information conflicted with other federal, state and employer records. However, it did not distinguish between fraud and innocent mistakes, it was fed incomplete data, and the computer-generated notices were designed to make people inadvertently admit to fraud.

I have found automated fraud detection is too often built on the assumptions that computers are magic and fraud among the poor is endemic. State officials should flip those assumptions and make computers work for the people rather than against them.

For The Last Time, Robots Do NOT Cause Unemployment
Scott Winship, 16 July 2013

GOOGLE TRANSLATE:

No, but capitalism does and the 4IR or Industry 4.0* is a part of it - it's only 'good for business' i.e. for the ones who own it.

*Often used interchangeably with the term 4IR.

Industry 4.0 or Industrie 4.0 - usually spelled this (latter) way because the concept originated in Germany as the rallying cry of their 'High-Tech Strategy'. It is an integration of the physical components of the production system and digital, abstract, virtual components into a single system called cyber-physical production systems (smart factories).

Kipper Williams

AI AND:
RACISM & SEXISM, FAKE NEWS, SURVEILLANCE, DATA EXTRACTION AND DEATH!

There is an uncritical acceptance of AI et al as the panacea to cure all ills and that not embracing it will render us 'backwards'. This argument usually does not take into account that AI is *not* neutral and *not* value-free. Of course on its own AI is simply an example of technology, but in someone's hands, under their control, it loses its neutrality and can be used for good or for bad.

Racist and sexist AI

AI will be racist and/or sexist if it is made *by* and learns *from* racists and sexists: Siri, Cortana, Alexa and other female-voiced virtual assistants reinforce the stereotype that women are passive helpers by responding to demands and commands. And then there's Tay. Tay was Microsoft's Twitter chatbot (2016) and the company's attempt at 'engaging millennials with artificial intelligence'. Tay was designed to mimic the language patterns of a 19-year-old American girl, and to learn from interacting with Twitter users. The more you chat with Tay, said Microsoft, the smarter it gets, learning to engage people through "casual and playful conversation":
Except there was nothing playful about it and in less than 24 hours, Tay posted inflammatory and offensive racist and sexist tweets and was shut down.
Machine learning at its 'best' (worst)??

> We often call on technology to help solve problems. But when society defines, frames, and represents people of color as 'the problem,' those solutions often do more harm than good. We've designed facial recognition technologies that target criminal suspects on the basis of skin color. We've trained automated risk profiling systems that disproportionately identify Latinx people as illegal immigrants. We've devised credit scoring algorithms that disproportionately identify Black people as risks and prevent them from buying homes, getting loans, or finding jobs.
> **Of course technology perpetuates racism. It was designed that way**, Charlton McIlwainarchive, 3 June 2020
> https://www.technologyreview.com/2020/06/03/1002589/technology-perpetuates-racism-by-design-simulmatics-charlton-mcilwain/

U.S. police have eagerly embraced AI technologies. They have begun using software that is meant to predict where crimes will happen to decide where to send officers on patrol. They're also using facial recognition and DNA analysis in criminal investigations. But analyses of these systems show the data on which those systems are trained are often biased, leading to unfair outcomes, such as falsely determining that African Americans are more likely to commit crimes than other groups.
How artificial intelligence systems could threaten democracy, Steven Feldstein, 22 April 2019
https://theconversation.com/how-artificial-intelligence-systems-could-threaten-democracy-109698

Microsoft's links to law enforcement agencies have been obscured by the company, whose public response to the outrage that followed the murder of George Floyd has focused on facial recognition software. This misdirects attention away from Microsoft's own mass surveillance platform for cops, the Domain Awareness System, built for the New York Police Department and later expanded to Atlanta, Brazil, and Singapore. It also obscures that Microsoft has partnered with scores of police surveillance vendors who run their products on a "Government Cloud" supplied by the company's Azure division and that it is pushing platforms to wire police field operations, including drones, robots, and other devices.
The Microsoft police state: Mass surveillance, facial recognition, and the Azure Cloud, Michael Kwet, 14 July 2020
https://theintercept.com/2020/07/14/microsoft-police-state-mass-surveillance-facial-recognition/

The 2017 documentary 'Pre-Crime' (directors: Monika Hielscher & Matthias Heeder) explores how AI is used to decide who is likely to commit a crime before it is committed. This has and can lead to major profiling which mirrors existing profiling problems that target people according to 'race' and socio-economic status.

Challenging data discrimination

In an interview with Safiya Noble, author of '**Algorithms of oppression: How search engines reinforce racism**' (2018), Noble explains:

In the past, the term "redlining" typically conjured up the image of a banker sitting across from a Black or Latino family and making a decision that they can't be financed for a home. Or they can't get a small business loan. These are face-to-face discriminatory processes.
We now face a new era framed by what I call "technological redlining" - the way data is used to profile us. We have new models where financial institutions are looking at our social networks to make decisions about us. For example, if we have too many people who seem to be a credit risk in our social networks, then that actually impacts the decisions that get made about us.

Before, we could say, "Well, that was a racist banker." Or, "That was a sexist banker." And maybe we could go to court. Maybe we could file a complaint. We had different kinds of legal mechanisms. Right now we don't have a mechanism to take the algorithm that sorted us into the wrong category to court. So we have a deepening of structural inequality that data is contributing to, and that is incredibly difficult to intervene upon. We are increasingly sorted into categories that quite frankly we can't sort ourselves out of.

https://annenberg.usc.edu/news/diversity-and-inclusion/algorithms-oppression-safiya-noble-finds-old-stereotypes-persist-new
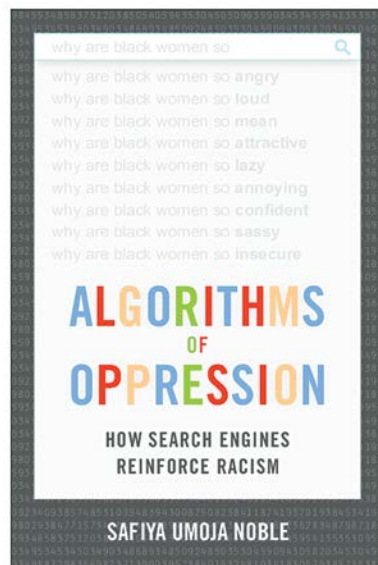
Ruha Benjamin works in the area of 'race', justice and technology. In her book '**Race after technology**' (2019), Benjamin looks at how discrimination is embedded in technology - she presents the concept of the "New Jim Code" which, she argues, can reinforce 'white' supremacy and deepen social inequity. Her book also looks at how we can build a fairer world, reassessing how data can be used *for* justice.

Fake news/disinformation

AI can help repressive governments manipulate available information and spread disinformation. These campaigns can be automated or automation-assisted, and deploy hyper-personalized messages directed at - or against - specific people or groups.
AI also underpins the technology commonly called "deepfake," in which algorithms create realistic video and audio forgeries. Muddying the waters between truth and fiction may become useful in a tight election, when one candidate could create fake videos showing an opponent doing and saying things that never actually happened.
How artificial intelligence systems could threaten democracy, Steven Feldstein, 22 April 2019

https://theconversation.com/how-artificial-intelligence-systems-could-threaten-democracy-109698

A **sockpuppet** is an online identity used for purposes of deception. The term, a reference to the manipulation of a simple hand puppet made from a sock, originally referred to a false identity assumed by a member of an Internet community who spoke to, or about, themselves while pretending to be another person. The use of the term has expanded to now include other misleading uses of online identities, such as those created to praise, defend, or support a person or organisation, to manipulate public opinion, or to circumvent (avoid) restrictions, suspension or an outright ban from a website.

https://en.wikipedia.org/wiki/Sockpuppet_(Internet)

'I spy' - surveillance and data extraction (and we know how much capitalists like extractivism)

We've gone from a stopwatch and clipboard surveillance in the workplace to this…

Your boss is watching you: Work-from-home boom leads to more surveillance, Bobby Allyn, 13 May 2020

https://www.npr.org/2020/05/13/854014403/your-boss-is-watching-you-work-from-home-boom-leads-to-more-surveillance

Just ask a woman who works in marketing at a small company in Minnesota. She spoke to NPR [National Public Radio] anonymously out of fear her employer would retaliate against her for speaking out. Her employer has started using software called Time Doctor. It downloads videos of employees' screens while they work. It also can enable a computer's webcam to take a picture of the employee every 10 minutes.
"If you're idle for a few minutes, if you go to the bathroom or whatever, a pop-up will come up and it'll say, 'You have 60 seconds to start working again or we're going to pause your time,'" the woman said.
That meant stepping away from her computer briefly could cut into her pay.
"I just feel like crap. I feel like I'm not trusted. I feel ashamed of myself," she said, referring to a short break she took to speak with a colleague by phone. "My co-workers were really, really upset. But everyone was too afraid to say anything."

Now software can report your internet usage to someone else and this software is called *tattleware*!

Digital surveillance is not just being used in the workplace but in our everyday lives. Currently, as it makes its way further and further in, it's being disguised as 'helping to find those, and manage those, with COVID-19' (**Apple and Google partner on COVID-19 contact tracing technology**, Apple Newsroom, 10 April 2020).
• A Polish app requires coronavirus patients to regularly take selfies to prove they are indoors
• China has a colour-coded smartphone health-rating programme, which tracks who is allowed to leave the house.

Surveillance is being 'sold' to us as something good and beneficial but it is intrusive in all sorts of ways, disrespects privacy and can easily be used to silence and oppress.
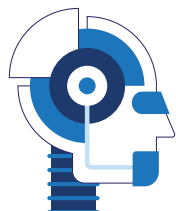
ALLOW/DON'T ALLOW

WARNING!

Governments are using coronavirus to build "the Architecture of Oppression", warns Edward Snowden
Countercurrents Collective, 15 April 2020
https://countercurrents.org/2020/04/governments-are-using-coronavirus-to-build-the-architecture-of-oppression-warns-edward-snowden/

How artificial intelligence systems could threaten democracy
Steven Feldstein, 22 April 2019

U.S. technology giant Microsoft has teamed up with a Chinese military university to develop artificial intelligence systems that could potentially enhance government surveillance and censorship capabilities. Two U.S. senators publicly condemned the partnership, but what the National Defense Technology University of China wants from Microsoft isn't the only concern.

As my research shows, the advent of digital repression is profoundly affecting the relationship between citizen and state. New technologies are arming governments with unprecedented capabilities to monitor, track and surveil individual people. Even governments in democracies with strong traditions of rule of law find themselves tempted to abuse these new abilities.

In states with unaccountable institutions and frequent human rights abuses, AI systems will most likely cause greater damage. China is a prominent example. Its leadership has enthusiastically embraced AI technologies, and has set up the world's most sophisticated surveillance state in Xinjiang province, tracking citizens' daily movements and smartphone use.

Its exploitation of these technologies presents a chilling model for fellow autocrats and poses a direct threat to open democratic societies. Although there's no evidence that other governments have replicated this level of AI surveillance, Chinese companies are actively exporting the same underlying technologies across the world.

Any time more information becomes available and analysis gets easier, governments are interested - and not just authoritarian ones. In the U.S., for instance, the 1970s saw revelations that government agencies - such as the FBI, CIA and NSA - had set up expansive domestic surveillance networks to monitor and harass civil rights protesters, political activists and Native American groups. These issues haven't gone away: Digital technology today has deepened the ability of even more agencies to conduct even more intrusive surveillance.

https://theconversation.com/how-artificial-intelligence-systems-could-threaten-democracy-109698

The tech 'solutions' for coronavirus take the surveillance state to the next level
Evgeny Morozov, 15 April 2020

The good cop in this drama is the ideology of "solutionism," which has transcended its origins in Silicon Valley and now shapes the thinking of our ruling elites. In its simplest form, it holds that because there is no alternative (or time or funding), the best we can do is to apply digital plasters to the damage. Solutionists deploy technology to avoid politics; they advocate "post-ideological" measures that keep the wheels of global capitalism turning.

After decades of neoliberal policy, solutionism has become the default response to so many political problems. Why would a government invest in rebuilding crumbling public transport systems, for example, when it could simply use big data to craft personalised incentives for passengers to discourage journeys at peak times? As the architect of one such programme in Chicago said a few years ago, "Supply-side solutions [like] building more transit lines … are quite expensive." Instead, "What we're doing is looking at ways that data can manage the demand side ... by helping residents understand the better time to travel."

We have now spent a month debating how these technologies might threaten our privacy - but that is not the greatest danger to our democracies. The real risk is that this crisis will entrench the solutionist toolkit as the default option for addressing all other existential problems - from inequality to climate change. After all, it is much easier to deploy solutionist tech to influence individual behaviour than it is to ask difficult political questions about the root causes of these crises.

https://www.theguardian.com/commentisfree/2020/apr/15/tech-coronavirus-surveilance-state-digital-disrupt

The 2019 documentary 'Dataland' (directed by Blaise Piguet) is about 'the large volume of data recorded during each of our visits to the internet [which] represents a great opportunity for personalisation, but the information we distil is also widely used for commercial purposes and can be used by governments as an invasive tool'.

Data extraction (or Big Bot's boss wants more money)

> HELLO (YOUR NAME HERE)
>
> BECAUSE YOU LOOKED AT X, TAKE A LOOK AT Y AND Z.
>
> CUSTOMERS WHO BOUGHT THIS ITEM ALSO BOUGHT THIS AND THIS.
>
> AVAILABLE NOW. JUST CLICK HERE

Marketers, advertising and sales people find the algorithms' 'efficiency and effectiveness' in their ability to match customers' wants (not sure about needs) with the products most appealing - AI works much faster and 'smarter' than humans, which then translates into more sales for the capitalists.

The Social Dilemma is a 2020 docudrama directed by Jeff Orlowski and it 'explores the rise of social media and the damage it has caused to society, focusing on (amongst other harms) its exploitation of its users for financial gain through surveillance capitalism and data mining'.

Killer robots and AI

Killer robots are not only found in science fiction films; they have been part of the military for awhile. It is said by the military that autonomous robotics would save and preserve soldiers' lives by removing serving soldiers who might otherwise be killed.

> Machines don't get tired. They don't close their eyes. They don't hide under trees when it rains and they don't talk to their friends ... A human's attention to detail on guard duty drops dramatically in the first 30 minutes... Machines know no fear.
>
> **Major Kenneth Rose - US Army's Training and Doctrine Command, 'Robot soldiers',** BBC News, 12 April 2002

> Russian scientists are teaching a robotic tank to understand spoken orders from a human commander. The Kremlin's Advanced Research Foundation has begun testing artificial intelligence that allows a Marker experimental ground-combat vehicle to respond to the same orders that a commander issues to human soldiers.
>
> "MARCH! HALT! OPEN FIRE! RETREAT!"
>
> **Don't panic, but Russia is training its robot tanks to understand human speech**, David Axe, 30 June 2020
>
> https://www.forbes.com/sites/davidaxe/2020/06/30/dont-panic-but-russia-is-training-its-robot-tanks-to-understand-human-speech/

And then there's:

The killer algorithms nobody's talking about
Activists fret about armies relying on killer robots, but some forms of artificial intelligence that don't actually pull the trigger could still be a nightmare
Arthur Holland Michel, 20 January 2020
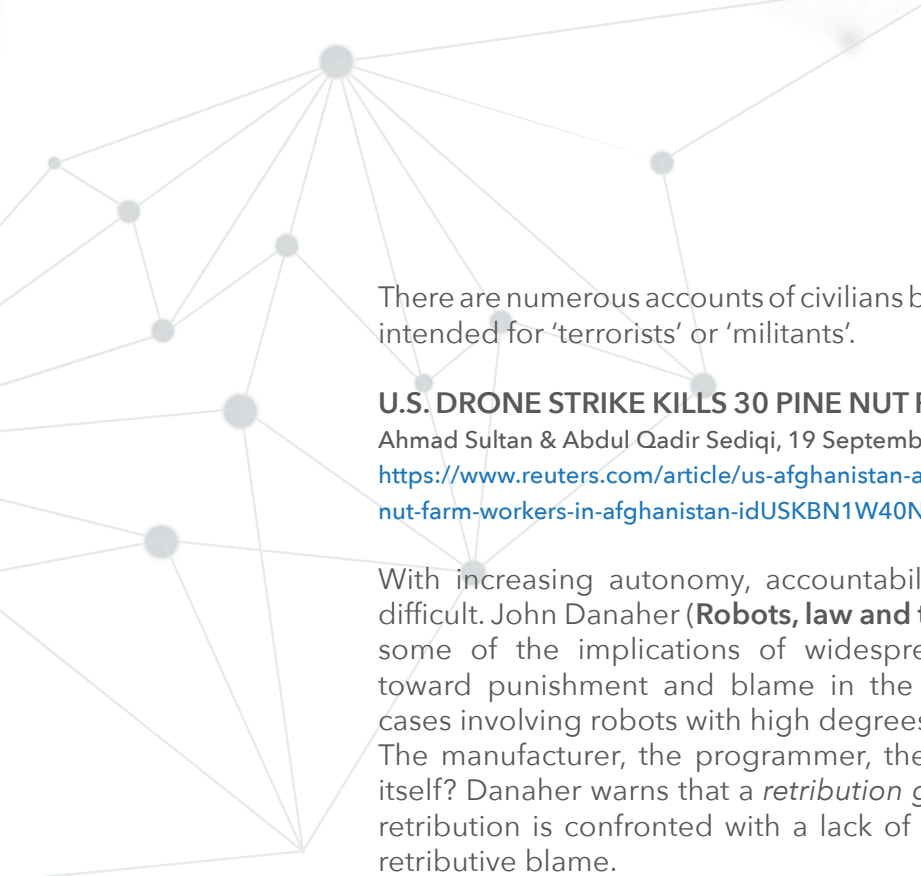
> The debate over so-called killer robots overlooks an equally urgent menace: autonomous systems that are not in themselves lethal but rather act as a key accessory to human violence.
>
> An algorithm with the power to suggest whether a tank should use a small rocket or a fighter jet to take out an enemy could mark the difference between life and death for anybody who happens to be in the vicinity of the target.
>
> Once an AI system can navigate complicated circumstances more intelligently than any team of soldiers, the human will have no choice but to take its advice on trust.
>
> https://foreignpolicy.com/2020/01/20/ai-autonomous-weapons-artificial-intelligence-the-killer-algorithms-nobodys-talking-about/

There are numerous accounts of civilians being killed by US drones supposedly intended for 'terrorists' or 'militants'.

U.S. DRONE STRIKE KILLS 30 PINE NUT FARM WORKERS IN AFGHANISTAN
Ahmad Sultan & Abdul Qadir Sediqi, 19 September 2019
https://www.reuters.com/article/us-afghanistan-attack-drones/u-s-drone-strike-kills-30-pine-nut-farm-workers-in-afghanistan-idUSKBN1W40NW

With increasing autonomy, accountability and culpability becomes more difficult. John Danaher (**Robots, law and the retribution gap**, 2016) examines some of the implications of widespread robotisation for our attitudes toward punishment and blame in the face of perceived wrongdoing in cases involving robots with high degrees of autonomy. Who do we blame?* The manufacturer, the programmer, the user of the robot and/or the bot itself? Danaher warns that a *retribution gap* may open up when a desire for retribution is confronted with a lack of appropriate subjects or targets for retributive blame.

- *Robert Williams was an American factory worker who was the first known human to be killed by a robot. While working at the Ford Motor Company Flat Rock Casting Plant (Michigan, USA), Williams was killed by an industrial robot arm on 25 January 1979.
- The death of Elaine Herzberg was the first recorded case of a pedestrian fatality involving a self-driving (autonomous) car, after a collision that occurred on 18 March 2018. Herzberg was pushing a bicycle across a four-lane road in Tempe, Arizona, United States, when she was struck by an Uber test vehicle, which was operating in self-drive mode with a human safety backup driver sitting in the driving seat.
- The Three Laws of Robotics (often shortened to The Three Laws or Asimov's Laws) are a set of rules devised by the science fiction author Isaac Asimov. The rules were introduced in his 1942 short story "Runaround" (included in the 1950 collection I, Robot), although they had been foreshadowed in a few earlier stories. The Three Laws, quoted as being from the "Handbook of Robotics, 56th Edition, 2058 A.D.", are:
  - First Law: A robot may not injure a human being or, through inaction, allow a human being to come to harm.
  - Second Law: A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
  - Third Law: A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.
  - Asimov added a fourth, or zeroth law, to precede the others:
  - Zeroth Law: A robot may not harm humanity, or, by inaction, allow humanity to come to harm.
  - The Three Laws, and the zeroth, have pervaded science fiction and are referred to in many books, films, and other media. They have also impacted thought on the ethics of artificial intelligence.
    https://en.wikipedia.org/wiki/Three_Laws_of_Robotics

BUT, WAIT….isn't AI 'green'? Think climate change…
Think again…

Rise of the robots will harm the Earth as well as humans

Your article worrying about a near future in which robots have displaced humans from many jobs fails to worry about the environmental collateral damage from any such displacement (“**I am a robot. I'm also a lawyer, a nurse, a waiter and a teacher**”, In Focus).

The rise of the robots is a problem not just because of the immediate human cost, but because robots are fantastically energy-hungry and thus accelerate the unsustainable, insupportable damage we are doing to Earth. Moore's Law, which says that the number of transistors on a microprocessor chip will double every couple of years, is about to run into the buffers: within five years, the working parts of computers will become so small that they start to become vulnerable to quantum instabilities. Thus, continuing to increase the computing power of robots is going to require much more energy in the future. (And remember: as computer parts get smaller, they also become more impracticable to recycle.)

We had better rein in the rise of the robots because a failure to do so will hasten not just social collapse, but environmental collapse.

Dr Rupert Read
Reader in Philosophy
University of East Anglia
Norwich
27 March 2016
https://www.theguardian.com/theobserver/2016/mar/27/leters-robots-energy-consuming

Hidden from most digital device users is what filmmaker Sue Williams investigates in her documentary 'Death by Design' - the underbelly of the electronics industry and how even the smallest devices have deadly environmental and health costs. The film spans the globe to reveal a story of environmental degradation, health tragedies, and the fast approaching tipping point between consumerism and sustainability.

Technology that serves the purpose/s of those who hold political and economic power *cannot ever solve our many crises*, particularly if it is part of the bigger crisis. Technology can, in fact, do great harm.

SECTION B: HOW DID WE GET HERE?
A brief look at the four so-called revolutions

Why are they called 'revolutions'?

- The most common dominant discourse explanation is that they were sudden and great changes ('disruptions') that dramatically affected the way people worked and lived - they created and shaped the modern world. And, for many, this is simply something 'good' and not to be questioned.

- Some say there was *a* revolution and then just 'evolution'.

- Some point out that the labels 'third' and 'fourth industrial revolution' miss the point because 'the economy' in these revolutions generates wealth differently.

- Some argue that the current revolution is neither 'fourth' nor 'industrial'. They say it is counter-industrial.
  …intangible assets, such as software, data, brands, trust and customer relationships, have replaced physical assets as the principal bases of value creation (Rimmer, 2019)**.**

- Some argue that there is no fourth industrial revolution, but merely a continuation of the third. (See **Why does the Davos World Economic Forum (WEF) proclaim the 2nd phase of a post-1970s third capitalist industrial revolution as "The 4IR"?** David Cooper, 25 November 2019)**.**
  Jane Duncan in **What can the fourth industrial revolution learn from the third industrial revolution?** (25 July 2019) states: Schwab would prefer to keep the Third and Fourth Revolutions separate for expedient reasons. It makes it easier for him to argue that the latter is unprecedented, and consequently for it to receive urgent attention from policymakers.

- And some don't consider them revolutions at all, because the majority of people have *not* been the main beneficiaries of these so-called revolutions because of the economic system in which they occur. They have dehumanised production, alienated workers and taken people further and further away from Marx' notion of doing as an intrinsic part of our ontological being. Each 'revolution' is a further move away from people's *vocations*. And, coupled with this, the natural world has suffered irreconcilably. Indeed, the first three industrial revolutions have caused many of our current environmental problems and contributed to the ecological crisis. So, we can call them whatever - and not follow the World Economic Forum's lead: Elizabeth Garbee (2016) notes that Schwab's framing represents 'a meaningless phrase'. The 'revolutions' have simply shaped and reproduced capitalism in various ways and always favoured the rich.

Another way of looking at the so-called 'revolutions' follows:

Rasigan Maharajh (2018) describes 'long waves of depressions and recoveries within capitalist business cycles. These hypothesised cycle-like phenomena became popularly known as 'Kondratiev waves' following the promotion of the idea by economist Joseph Schumpeter in 1939*. Schumpeter would also establish the idea of 'creative destruction', which occurs when innovation deconstructs long-standing economic structures and frees resources to be deployed elsewhere.

Building on this school of thought, later scholars have conceptualised at least five techno-economic paradigms since the mid-18th century: (1) the steam engine (1780–1830); (2) railways and steel (1830–1880); (3) electricity and chemicals (1880–1930); (4) automobiles and petrochemicals (1930–1970); (5) information and communications technologies (1970–2010). More recently, John Mathews, an honorary professor at Macquarie University, proposed the emergence of a sixth Kondratieff Wave, beginning in 2010, which was being driven by the technology surge associated with renewable energies. Based on such complex systemic and structural technological change that has creatively destroyed hitherto established forms of social, political and economic organisation and established subsequent successor regimes and infrastructures, the idea of a so-called 'Fourth Industrial Revolution' - as promoted by the World Economic Forum (WEF) and its founder Klaus Martin Schwab - does appear to be weakly composed from stylised facts and popular generalisations. Whilst such a perspective may be relevant when looking down at the world from the heights of Davos, it does not coincide with perspectives of the global South and the global experiences of world systems'.

*Nikolai Dmitriyevich Kondratiev, 1926

Interview - Heinrich Böll Foundation: Africa and the Fourth Industrial Revolution: The need for 'creative destruction' beyond technological change, 2018

https://za.boell.org/en/2018/12/04/africa-and-fourth-industrial-revolution-need-creative-destruction-beyond-technological

No. 1: from handlooms to steam engines

The first industrial revolution began in England in about 1760 and spread to the rest of Europe and the United States through the early 1800's. Prior to this the 'cottage industry' was a period of time in which goods were produced on a very small scale, usually in a home. People produced goods, such as wool, and then sold them to local communities since long distance transportation was uncommon. *Human power* was used on weaving looms and spinning wheels. The revolution began with the invention of new machines to manufacture cotton. These machines used new sources of energy: water and steam power. The machines sped up the amount of time needed to do the work. Products became mass-produced and cheaper. Family-owned businesses emerged.

During what is sometimes referred to as the 2nd phase of the first industrial revolution, the steam engine was invented. Steam engines were used in all sorts of applications including factories, mines, locomotives, and steamboats. Coal was mined and used to fuel steam engines and furnaces. Transportation via railroads and steamships opened up more possibilities for trade worldwide *all about biz, bosses and their profits.*

AND

The factory system introduced dramatic changes in how people lived and worked. Families moved to cities to find work - the beginnings of urbanisation. Low paid workers spent long hours in very poor and often dangerous conditions. Work lasted for up to 16 hours a day, child labour became common. Workers lived near the factories in overcrowded and dirty conditions and, as a result, many became ill or died. Workers who had produced handmade goods at home could not compete with mass production by machines.

In South Africa under British colonial rule, the first industrial revolution began about 100 years later with the discovery of diamonds in 1867 and gold in 1886. 'White' bosses became rich off the blood, sweat, tears and toil of Black African mine workers who were subjected to unhealthy and dangerous working conditions, low wages, and terrible living conditions away from their families. In 1860* the first Indian indentured labourers arrived in KwaZulu-Natal to work on the sugar plantations and endured similar treatment and conditions.

*A farmer (E.R. Rathbone) was the first to introduce Indian labour to the colony in 1849

No. 2: electricity and assembly line production

The second industrial revolution began in the late 19th century and went into the early 20th century with the rise of steel, oil*, and electricity, leading to innovations such as the telephone, the light bulb and the internal combustion engine. Many of the changes that occurred during this period had to do with new products simply replacing old ones, for example steel began to replace iron. Steel production made it possible for rail lines to be built at competitive costs, which further spread transportation. The use of electricity fundamentally changed the way people worked and lived - people's lives became regulated by the clock rather than the sun. There was a rise of national corporations, for example the German companies, Siemens (electricity) and Bayer (chemicals).

*The petroleum industry, both production and refining, began in 1848 with the first oil works in Scotland

Fordism was also introduced. Henry Ford took the idea of mass production from a slaughterhouse in Chicago, United States of America. Pigs hung from conveyor belts and each butcher performed only a part of the task of butchering the animal. Ford carried these principles into automobile production. Prior to this one station assembled an entire automobile; now the vehicles were produced in partial steps (component by component) on the conveyor belt - this method (Fordism) was significantly faster and reduced costs *once again about biz, bosses and their profits*.

AND

During this revolution there were fears by social critics about the loss of freedom, autonomy and independence which were replaced by boredom, repetition and toil (Freeman, J.B, 2018). Fear of the factory worker becoming a human robot was starting to take root.
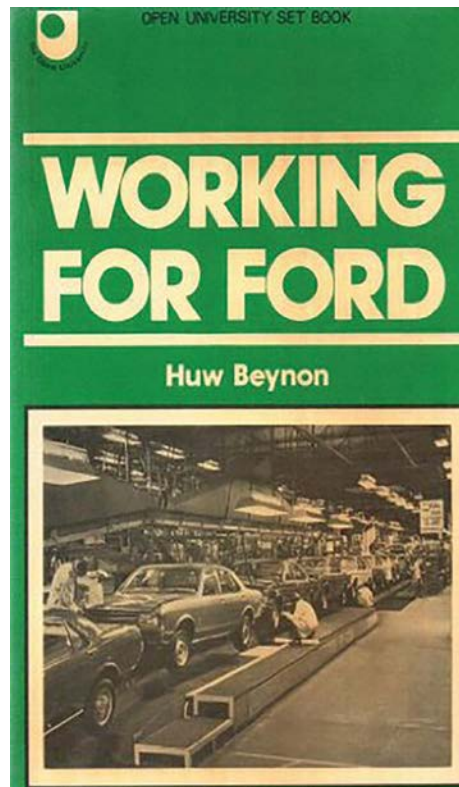
No. 3: the rise of digital technology
The third industrial revolution began in the 1970s (some date its beginnings to the 1960s and others to the 1950s) and is characterised by the rise of digital information and communications technologies, including the personal computer and the internet. Multi-national corporations own and control most of the world's products and services. Industrial production as we knew it has been altered during this revolution - and continues to be - by technological change in the form of the digitisation of manufacturing. Blue-collar workers have been replaced by automation and robotics (or their jobs have been shipped to countries that pay workers less or exploited migrant workers do their jobs for less). All of this to lower costs and improve efficiency once again about biz, bosses and their profits.

> *The fourth industrial revolution or Industry 4.0 - the name alone suggests, once again, it's all about biz, bosses and their profits.*

The first mention of the 4IR was in 1940 by Albert Carr and then in 1956 by Arnold Marshall Rose. However, it is more commonly associated with Schwab and the World Economic Forum. Schwab wrote about it in a book titled **The fourth industrial revolution** (2016). Schwab recently (3 June 2020) proclaimed in an article of the same title: **Now is the time for a 'great reset'**.

PRESS ENTER

If Schwab and others are to be believed, we are currently implementing the fourth industrial revolution - the 4IR builds and extends on the developments of the third industrial revolution (the impact of digitisation) in new and unanticipated ways. There are and will be advances in communication and connectivity and these will happen very fast. Schwab & co describe this era as one with breakthroughs in emerging technologies in fields such as artificial intelligence (AI), robotics, the Internet of Things, autonomous vehicles, 3D printing, blockchain, drones, virtual reality, augmented reality, nanotechnology, biotechnology, materials science, energy storage, connected sensors and quantum computing.

In response to a Daily Maverick column by Professor Tshilidzi Marwala titled **Covid-19 has forced us into the fast land of the 4IR super-highway** (28 May 2020), Saleem Badat (1 June 2020) points out that the "4IR is viewed as an entirely scientific and technological matter, not as a social or human matter" which it should be. He cautions us in **'The 4IR super-highway': A dangerously technocratic utopia** that:
The first three industrial revolutions have not created a just and humane world, so why do we believe that the 4IR will do any better?

https://www.dailymaverick.co.za/opinionista/2020-05-28-covid-19-has-forced-us-into-the-fast-lane-of-the-4ir-super-highway/#gsc.tab=0

https://www.dailymaverick.co.za/opinionista/2020-06-01-the-4ir-super-highway-a-dangerously-technocratic-utopia/#gsc.tab=0

Mondli Hlatshwayo in **Botched technological revolutions and the South African proletariat** (2020) argues that 'the successive democratically elected governments have failed to use technologies of the first three TRs - namely transport, electricity, and information communication data - to improve the conditions of the proletariat (employed and unemployed) in urban and rural areas'. The article argues that the majority of South Africans are not yet benefitting from the first three 'revolutions' and raises the question 'about the role of technologies [including the so-called 4IR] in fulfilling the historical mission of the liberation struggle in South Africa'.
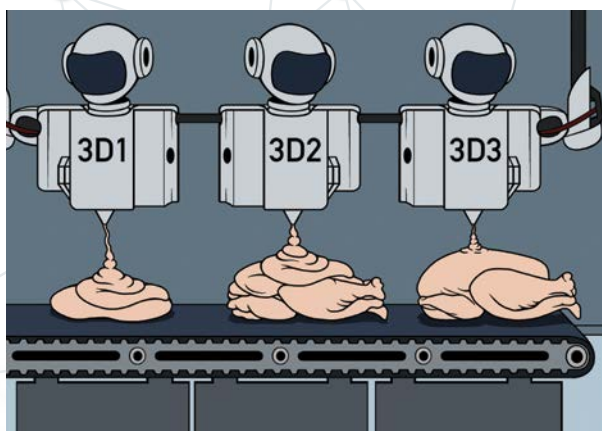
PLEASE BE PATIENT

IT MIGHT TRICKLE DOWN TO YOU TOO...

BEWARE OF THE BOT

SECTION C: MORE ON THE SO-CALLED FOURTH INDUSTRIAL REVOLUTION.

It's just a click away...

TODAY (a time in the life of middle-class Jane or Joe):

You stumble out of bed and feel terrible for having watched all eight episodes of the latest series on Netflix recommended to you by an algorithm. You put on music as you get ready for work - 'your choice' recommended by Spotify (more algorithms). You quickly read your newsfeed while drinking coffee - also decided by AI - the articles, not the coffee (yet). You take the refuse (rubbish) out just as the truck arrives. You greet the workers as you get into the Uber which you hailed on your app. On your way to work you order some groceries online, make an appointment to have your hair cut via WhatsApp and check your social media.
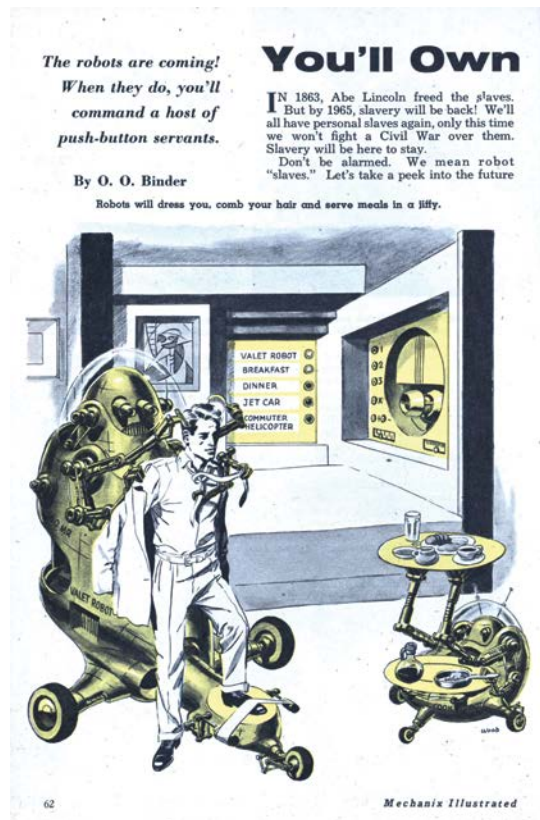
You'll Own "Slaves" by 1965
O.O. Binder

SOON (a time in the life of middle-class Jane or Joe):

You stumble out of bed in your smart home in your smart city and feel terrible for having watched all eight episodes of the latest series on Netflix recommended to you by an algorithm. Buddy, your digital personal assistant, brings you a cup of green tea rather than coffee as it decided that since you had a late night and it's Monday which is a work day, you need the green tea more than the coffee. You moan at Buddy but decide to drink the tea after you confirm with your Fitbit that you are, indeed, in need. Buddy puts music on for you as you get ready for work - 'your choice' recommended by Spotify. You use touchless technology to raise your blinds, turn your shower on and flush your toilet. Buddy reads a few articles to you from your newsfeed and informs you that it will order some groceries online that you are about to run out of. These items will be delivered via drone later today. Buddy also reminds you that you need a haircut and says it will book one for you. You take the refuse out just as the truck arrives. You don't greet the robot refuse collectors as you get into the driverless Uber - the refuse collectors have not been programmed for greetings. You do greet the five people huddled on the street corner (you know them from the days they used to collect the refuse) and give them some change so they can buy a loaf of bread. In the Uber you check your social media and receive a message from Buddy who wishes you luck as today there is a meeting about further changes in your workplace - you've always felt quite 'safe' as a white-collar worker. You say your goodbyes and Buddy smiles broadly as it drinks *your* cup of coffee…

We learnt from the third industrial revolution that we should *not* think that technology translates into wage or productivity growth. Nor that it necessarily generates 'decent work' or, indeed, *enough* or *any* jobs for humans. It certainly hasn't worked out how to solve deepening socio-economic problems! And neither will the so-called 4th…
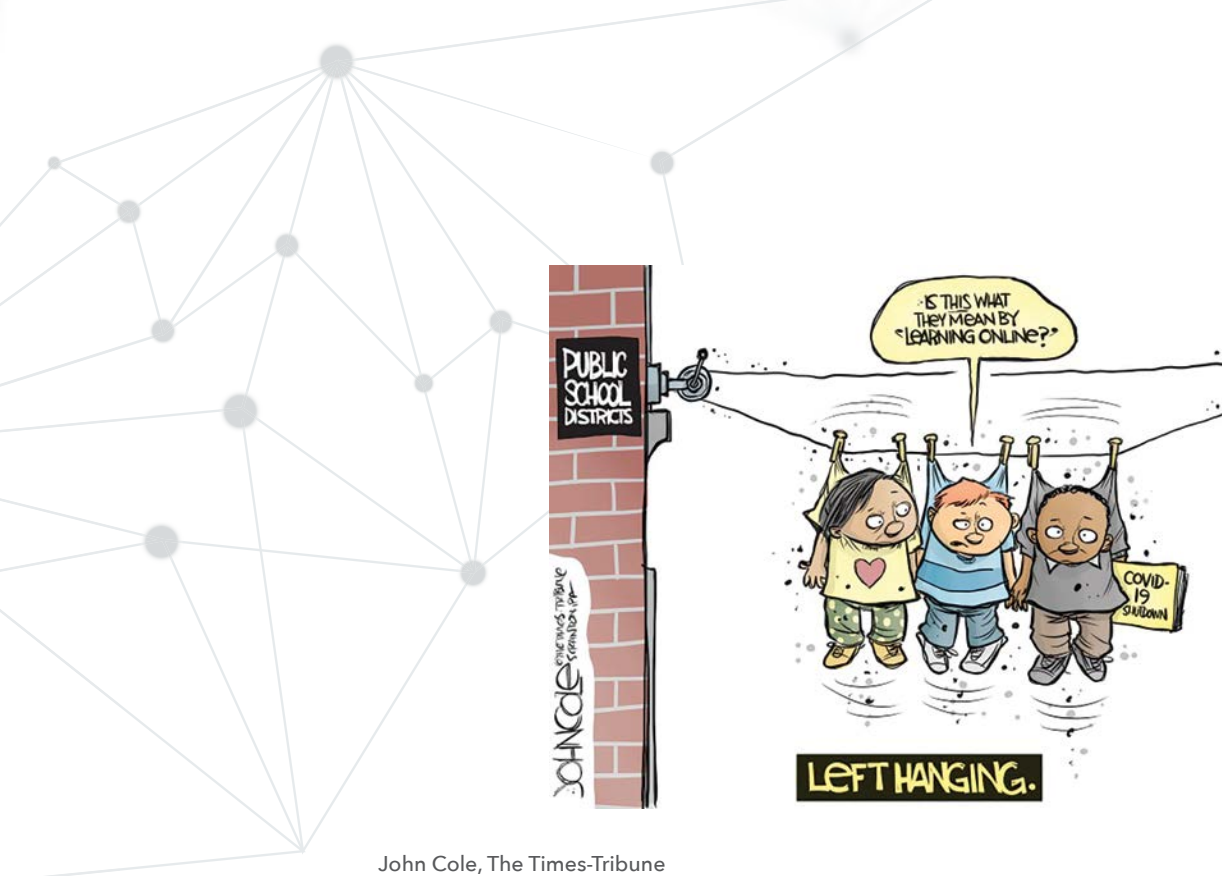
John Cole, The Times-Tribune

Limpopo teacher laments e-learning as pupils 'climb rocks to find cell network'

Kgaugelo Masweneng, 23 April 2020

High school teacher Pabalelo Mphahlele is worried about her pupils in Limpopo. "Most of my learners don't have access to computers or smartphones, which makes it hard to learn via e-learning," she told TimesLIVE.

"Another thing is I work in the rural areas of Sekhukhune, where … you have to go outside the gate and climb the rocks just to make a call. The network is a problem, which is why e-learning won't work for learners from my school."

Mphahlele created a WhatsApp group for her grade 12 class, but only five out of 22 pupils participate.

"When you ask them the reason for not being active, they say they don't have data. Even if they do have data, they're just not motivated enough to participate and study on their own," she said.

https://www.timeslive.co.za/news/south-africa/2020-04-23-limpopo-teacher-laments-e-learning-as-pupils-climb-rocks-to-find-cell-network/

First they came for the hands
Then they came for the heads
Next they'll come for the hearts
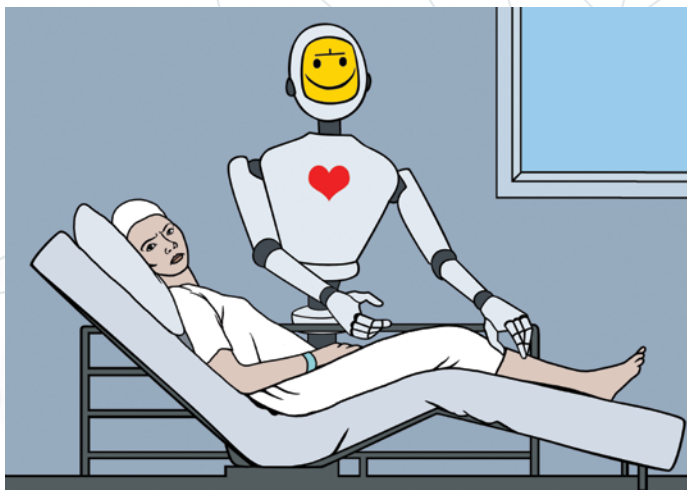
Indeed, they are already trying:
A California hospital delivered end-of-life news to a 78-year-old patient via a robotic machine this week, prompting the man's family to go public with their frustration. The "robot," as the family refers to the machine, displayed a video of a remote doctor who communicated with the patient and his granddaughter. The granddaughter had to restate much of what the machine communicated, as her grandfather struggled to hear and understand.

> "If you're coming to tell us normal news, that's fine, but if you're coming to tell us there's no lung left and we want to put you on a morphine drip until you die, it should be done by a human being and not a machine."

Doctor delivers end-of-life news via 'robot,' leaving family frustrated, Joel Shannon, 9 March 2019
https://www.usatoday.com/story/news/nation/2019/03/09/california-hospital-robot-delivers-end-life-news-family-outraged/3113760002/

An AI epidemiologist sent the first warnings of the Wuhan virus
Eric Niiler, 25 January 2020
On January 9, the World Health Organization notified the public of a flu-like outbreak in China: a cluster of pneumonia cases had been reported in Wuhan, possibly from vendors' exposure to live animals at the Huanan Seafood Market. The US Centers for Disease Control and Prevention had gotten the word out a few days earlier, on January 6. *But a Canadian health monitoring platform had beaten them both to the punch, sending word of the outbreak to its customers on December 31.*
BlueDot uses an AI-driven algorithm that scours foreign-language news reports, animal and plant disease networks, and official proclamations to give its clients advance warning to avoid danger zones like Wuhan.
https://www.wired.com/story/ai-epidemiologist-wuhan-public-health-warnings/

Impressive? Yes! And there are *an increasing array of other examples* of AI and robotics being used for 'good'. In the healthcare sector alone, there's (among others):

✓ AI used to detect diseases, such as cancer - more accurately than humans and in early stages;
✓ 3D printers used to print skin for burn victims;
✓ Robotic limbs used to replace those lost by humans;
✓ Drones delivering blood and medical supplies to hard-to-reach places; and
✓ Remote surgery (telesurgery) which enables doctors to perform surgery on a patient not physically in the same location.

But has it done enough during the pandemic? Where are the 3D printers churning out much-needed personal protective equipment, ventilators, hospital beds, cloth masks mandatory in several countries? Where is food to feed the millions-more now hungry? What about water? Shelter?

Under capitalism there are many false needs that are constantly created like 'having to have' an avatar digital twin!

cadfem.net

But what about actual, pressing *basic* needs…

Hungry? I can help
robotdelivery.co.uk

Starship Technologies

NO, ROBOT, ACTUALLY YOU CAN'T UNDER CAPITALISM!

The infrastructure and architecture of the Fourth Industrial Revolution is designed by the ruling class; in conjunction with transnational corporations, global finance capital and global institutions. The human population will be controlled via digital identity systems tied to cashless benefit payments within the context of a militarized 5G, IoT (Internet of Things), and AR (Augmented Reality) environment. The billionaire class has built and is rapidly putting the finishing touches on infrastructure to run human capital social impact markets that will securitize the lives of most people as data streams. The technology that underlies this Fourth Industrial Revolution automation will hasten the death of the planet. The World Economic Forum is advancing a technocratic system of control and domination of humanity and the Earth… Why should we agree to this? It is a profound sickness of Western culture. Hubris. Sick. And totally ignoring the impact our actions have on the natural world around us.

Alison Hawver McDowell

http://www.wrongkindofgreen.org/tag/ar-augmented-reality/

Resist the Fourth Industrial Repression!

The 4IR wants to scare us into its devouring jaws by pointing to impending disaster and claiming that nobody can save us but itself. It shows us the misery and disease inflicted by the First, Second and Third Industrial Repressions and insists that the "solution" is a fourth dose of the same deadly industrial poison. The intelligence of the 4IR is entirely artificial and its dead robot brain cannot smell what we smell, feel what we feel, love what we love. It coldly ignores the timeless and vital value of people, animals, trees, plants and the whole organic reality of which these form part. Instead it sees just raw material for its own profit. It thirsts above all for data, endless floods of data to be collected, processed, sold and transformed into the wealth which buys its total control. The Fourth Industrial Repression wants to replace everything true and authentic with its replicas, with a reality not so much virtual as entirely fake. And yet its forked robotic tongue tells us that this phoney reality is in fact an "enhanced" or "augmented" one.

The 4IR wants to abolish the lives we have known. It wants to microchip us, lock us up in little cages, and force-feed us chemical food substitutes, laced with feel-good soma. It cannot tolerate the idea that we might enjoy anything for free, such as sunshine, fresh air and the wild outdoors.

It craves a total monopoly of our experience. Cut off from the real world, from authenticity and liberty, we will have no choice but to buy and consume the poisonous ersatz [substitute/not real] reality it has carefully manufactured. The 4IR, like all the other repressions before it, is built on our separation from one another, the destruction of our communities and the undermining of our solidarities.

Wrong Kind of Green

http://www.wrongkindofgreen.org/tag/fourth-industrial-repression/

BEWARE OF THE BOT

So why are we rushing our children to coding bootcamps and to do robotics as if the so-called fourth industrial revolution will be some kind of leveller, a panacea to fix all and make our children 'successful'?

The plain fact is that the planet does not need more successful people. But it does desperately need more peacemakers, healers, restorers, storytellers, and lovers of every kind. It needs people who live well in their places. It needs people of moral courage willing to join the fight to make the world habitable and humane. And these qualities have little to do with success as we have defined it.
Orr, 1990

PART TWO

ENOUGH WITH THE ROBOTS, ENOUGH

As discussed in Part One, jobs *will* be lost - the exact number is still up for debate. In this part of the booklet, we meet three workers and hear their stories - one (in Section A) who falls into the category of what has now been termed 'essential' even though her work always was, and then two retrenched workers (in Section B). Although only one worker has been replaced by artificial intelligence, we briefly look at the threat of robots and AI on all. This part of the booklet focuses on precarious workers and their work.

SECTION A: 'LIFE-MAKING' WORK

STORY ONE: I WALK WITH MY FEET

Firstly meet a cleaner. For the purposes of telling her story, she will be referred to as Ms X.

"As I grew up I wanted to be a social worker because I thought I could help people who grew up with me. I think I was very strong to deal with people who grew up like me. But now I don't know if I'm still in that dream or if I will look for something else. I have to search".

Ms X recounts the time a person asked her to go to their graduation ceremony and they took photographs together. She says: "I was happy but inside I was sad seeing people I grew up with graduating while I am a cleaner. When I got home I saw myself crying".

She describes herself as someone who was "a clever girl" but circumstances did not allow her to learn at school the way she would have liked. She was born into poverty and her parents were alcoholics, her father an absent parent. She says of her early school days: "Today I'm not going, tomorrow I'm going. I was doubting school. If I felt hungry I'm not going there and sometimes my parents didn't pay the fees and we were chased away from school. I faced those things".

She was sent to live with a relative in another area and visited her mom at times. When she was in Grade 12 her mother took ill and Ms X wanted to return to live with her, but after returning, she said to herself: "I can't live here because I will struggle in this house. I know how to struggle in this house". So she returned to where she stayed but her mind was plagued - she did not want her mother to die and "leave [her] alone". She says: "I'm still young to lose a mother. I feel that if your mom is here, although she's far, but being alive you do feel that your mother is here".

She explains she returned to Grade 12 and subsequently failed: "That is when I started to lose my mind; that is when I started to not focus at school. I just went to school and looked at the teachers. I didn't even hear what the teachers said".

Ms X got a job at a cleaning company that is used by several corporates and others to do their cleaning. Her first job - washing windows at different places - she describes as such: "I was always watching my phone to get a call from work because that was the way I was working. I did not have a site". Then she did a learnership and her job changed and she then "had a site": "They took me as a replacement. I was replacing if someone was not there…I was going there every day helping, helping, helping". And from there she was allocated to another site (not as a replacement this time), She did the same daily duties. At one time during her mother's illness, she stopped working and describes her days as such: "I always went to the hospital. I walked with my feet. That was my job. Going to the hospital. She needed someone to feed and wash her".

Ms X describes her job as such: "My job is to clean. I deal with hygiene cleaning. I start working at 7 early in the morning and I finish at half three [3.30pm]". She explains that she starts by cleaning the toilets on the two floors she takes care of in "her building" and says: "I must come first; the clients come after". She says that everything must be clean "before the clients arrive". The clients are the people working in the offices, a term she learnt doing the learnership (*How to deal with clients*). She likes her clients very much and describes them as "supportive". "Sometimes if I lose hope, when I talk to one of them, they always empower me".

While Ms X enjoys her work "very much", she says the most difficult thing for her is dealing with co-workers - she explains it as such: "We are dealing with different people who don't understand each other sometimes. As a young lady, I'm the youngest one here at work. They say whatever they want to say and they expect me to not answer them back because they are older than me. Those are the challenges I am facing at work".

Ms X is studying part-time for her matric and says: "I'm enjoying doing my matric again. I can see that I'm catching on now. I see I can go somewhere now".

From 'easily replacable'/'invisible' to 'essential'/'key'

Ms X is referred to as an *unskilled* worker (someone who works with her hands). Many like Ms X are female, with no or low(er) levels of education (but, more recently, also with higher levels), underpaid, undervalued and deemed 'not important' - yet necessary because they (with 'semi-skilled' workers) - 'invisibly' - hold the system together and make it work.

Suddenly(?), with the emergence of the COVID-19 pandemic, workers like Ms X have become 'essential' or 'key' - those we cannot live without.

Now the following have become the 'heroes':
- ✓ agricultural workers
- ✓ food factories workers
- ✓ supermarket workers
- ✓ warehouse and logistics workers
- ✓ waste collectors
- ✓ cleaners
- ✓ and, of course,
- ✓ healthcare and care workers.

A SUGGESTION FOR ALL THOSE MEDALS THE OLYMPICS WON'T BE NEEDING THIS YEAR...

Steve Sack, Minneapolis Star Tribune

David Graeber (2018) explains these sorts of (now 'recognised') jobs as 'shit jobs':

> Back-breaking, underpaid, unappreciated, people who are treated without dignity and respect. For the most part, shit jobs aren't bullshit [see below], in the sense of being pointless or nonsensical, *because actually they usually involve doing something that genuinely needs to be done*: driving people around, building things, taking care of people, cleaning up after them.

> *The least well paid jobs are often those that are among the most socially valuable - jobs that keep our communities and families together.*
> **A bit rich: Calculating the real value to society of different professions**, Eilís Lawlor, Helen Kersley & Susan Steed, 14 December 2009
> https://neweconomics.org/2009/12/a-bit-rich

BUT while the workers are suddenly 'recognised' by those who hold political and economic power, they are simultaneously treated with the same disdain they were treated with before, as if they are somehow 'disposable'.

Getty Images

Justin Sullivan, Getty Images

Mike Holmes, Daily Maverick

Valerie Macon, AFP Via Getty Images

Unions insist deadly Eastern Cape clinics must close

Rather than allowing state clinics in Port Elizabeth's impoverished areas to become Covid-19 vectors, health workers have shut them down until such time they are properly equipped

Anna Majavu, 19 May 2020

The South African Federation of Trade Unions (Saftu) says it will shut down the Port Elizabeth district office of the Department of Health after two nurses from the Zwide Clinic died and at least 11 others tested positive for the coronavirus. "Those people who are sitting in the district office must answer for these lives that have been lost. We loved those people. We still love them. The district chose to ignore the national regulations and they must pay," said Saftu regional secretary Mzikazi Nkata, speaking at a memorial service for the second nurse outside the clinic on 18 May 2020.

In Eastern Cape clinics where COVID-19 has broken out, nurses have been forced to continue working while awaiting their test results, potentially infecting hundreds of their colleagues and patients every day. After the outbreak at the Zwide Clinic, six trade unions from different sides of the political spectrum joined forces as the "combined health unions" and forced the Zwide and KwaZakhele clinics to shut their doors until the buildings were disinfected and all health workers tested negative.

A seventh Amazon employee dies of COVID-19 as the company refuses to say how many are sick
Josh Dzieza, 14 May 2020
An Amazon warehouse worker in Indianapolis, Indiana, has died of COVID-19, the company confirmed.
The death brings the known total of COVID-19 deaths at Amazon warehouses to seven, but Amazon's process for notifying workers makes the true number difficult to determine. Several workers at IND8 [Amazon Fulfillment Center - Indianapolis City] first learned of the death through rumors and say management began informing employees more widely only after being confronted.
"They weren't going to say anything if it wasn't for people asking questions," says a worker at IND8, who asked to remain anonymous out of fear of retribution.

Did you notice how life continued through the pandemic despite the CEOs, marketing/advertising/PR executives, sales managers, investment analysts, equity & derivative traders and suchlike *not* being around? We have done just fine without them. David Graeber refers to these *unnecessary* jobs - jobs which are *not* socially-useful and do *not* make the world a better place - as 'bullshit jobs'. They are simply part of capitalism's (il)logic - people doing 'stuff' that doesn't really help in the big scheme of things, and can, in some instances, harm.

> *Bullshit jobs are mostly well paid, the people doing them are treated like they're important and doing something that needs to be done - but in fact, they're not.*

Two Dutch economists [Robert Dur & Max van Lent (Tinbergen Institute)], in their study [**Socially useless jobs**, 31 March 2018] concluded that a quarter of the working population suspects their job is pointless. Even more interesting is that there are four times more 'socially pointless jobs' in the business world than in the public sphere. The largest number of these people with self-professed 'bullshit jobs' are employed in sectors like finance and marketing.
The neoliberal era is ending. What comes next? Rutger Bregman, 14 May 2020
https://thecorrespondent.com/466/the-neoliberal-era-is-ending-what-comes-next/61655148676-a00ee89a

So, for those who didn't know pre-COVID, the most undervalued and lowest paid jobs are also the most socially-useful. *Now* you know.
These jobs or activities keep our communities and families together. Tithi Bhattacharya refers to them as 'life-making' activities that "are required for making life, maintaining life, and generationally replacing life".

> Most of these activities and most of the jobs in the social reproduction sector (nursing, teaching, caring, cleaning) are dominated by women workers. Because capitalism is a "thing-making" system, the exact opposite of a life-making system, these activities and these workers are severely undervalued.

Capitalism asks, "How many more things can we produce?" because things make profit. The consideration is not about the impact of those things on people, but to create an empire of things in which capitalism is the necromancer [someone who practises magic like a witch or wizard] reigning supreme.

Social reproduction and the pandemic, with Tithi Bhattacharya, Sarah Jaffe, 2 April 2020
https://www.dissentmagazine.org/online_articles/social-reproduction-and-the-pandemic-with-tithi-bhattacharya

So what will happen if we all rush back to Option One (See Part One)?

WILL THE 'ESSENTIAL' WORKERS SIMPLY BE DISREGARDED AND DISPOSED OF AGAIN?

WILL THEY BE REPLACED BY ROBOTS (LIKE BUDDY FROM PART ONE AND OTHERS) WAITING IN THE WINGS?

Capitalism always requires a certain amount of unemployment of workers (and by extension, their families and communities). These workers can be employed (albeit temporarily) by the capitalists if and when there is a demand for their 'use'. Because there are many of them, the cost of their labour can be pushed down by capitalists who can 'take their pick'. Unemployment is achieved by capitalists by (amongst other means): reducing the amount of jobs; increasing mechanisation; 'sending' jobs to other countries where the same job will be done for less pay; and encouraging 'competition' amongst prospective employees by constantly demanding a higher level of qualification and/or experience for jobs that really do not require either. Prospective and retrenched workers are blamed for their unemployment or underemployment. They constantly strive to acquire more certification and/or experience and/or whatever is demanded of them, when, in fact, the system (owned and controlled by capital), ensures the workers' un- or underemployment.

Re-making the world, Centre for Education Rights and Transformation & CIPSET, 2017

COVID-19 has exposed us all to capitalism's many myths about value and usefulness, pay and productivity.

"If wealth was the inevitable result of hard work and enterprise, every woman in Africa would be a millionaire."

— George Monbiot
The Self-Attribution Fallacy
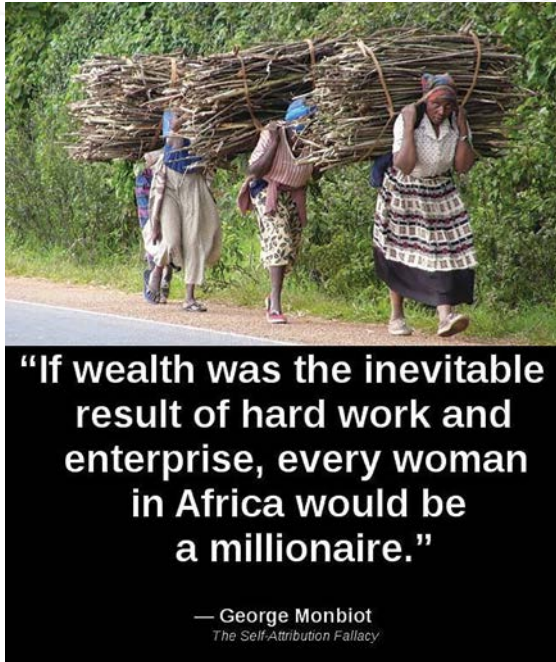
The 1% are the very best destroyers of wealth the world has ever seen
George Monbiot, 7 November 2011
https://www.theguardian.com/commentisfree/2011/nov/07/one-per-cent-wealth-destroyers

Capitalism is simply a 'daft system' as described by Laura Basu (**How to fix the world**, 29 April 2020) in her question:
WHAT KIND OF A DAFT SYSTEM MEANS THAT IF WE PUT THE BRAKES ON FOR A FEW WEEKS THE WHOLE THING IMPLODES?

It is a system that works by:
• plundering
• exploiting
• abusing
• misusing
• damaging
• destroying
• harming
• alienating
• extracting from
…workers and the Earth.
In order to make profits for the few.

SECTION B: LAST IN, FIRST OUT. OPT IN OR OPT OUT

OR MORE HONESTLY PUT: WORKERS LOSE JOBS

COVID-19 is conveniently being used to get rid of workers, such as the following - now fairly common - 'explanation' indicates:

> **_____ (FILL IN NAME OF ANY CORPORATE HERE) HAS MADE THE DIFFICULT DECISION TO RIGHT-SIZE ITS PHYSICAL RETAIL (OR FILL IN 'WHOLESALE' OR 'OTHER') FOOTPRINT TO BETTER REFLECT THE CURRENT TRADING CLIMATE.**

Re-written it means: We are putting workers on 'short-time work' contracts or retrenching them and probably going online.

Long gone are the days of permanence, security, surety in one's 'work'/job/employment status. Guy Standing coined the term '**The Precariat**' in his 2011 book of the same title. (The descriptive term 'precariat' was first used by French sociologists in the 1980s to describe temporary or seasonal workers. Standing's book uses "a different notion, but temporary labouring status comprises a central aspect of the precariat.").

Standing argues that: "The 'working class', 'workers' and the 'proletariat' were terms embedded in our culture for several centuries." Today, he claims, "they are little more than evocative labels." He explains: "As inequalities grew, and as the world moved towards a flexible open labour market, class did not disappear. Rather, a more fragmented global class structure emerged."

And so, Standing argues for "a new vocabulary - one reflecting class relations in the global market system of the twenty-first century." While acknowledging that "the old classes persist in parts of the world," he describes seven new groups who are 'precarious'.

Basically, the precariat endure various levels of precarity - a working life of uncertainty and unpredictability. They are not in long-term (often for life), continuous, full-time employment with social benefits, such as pensions, medical aid and unemployment benefits.

But even those who are in what appear to be safe and secure jobs - they are also 'precarious' as with the two retrenched workers you will now meet. They, like billions of other workers, are under attack from "the neoliberal offensive which means that all working people face precarious conditions of one sort or another." They are victims of 'lean production' - the "breaking up of jobs into very simple and repetitive operations, the elimination or combining of jobs, getting people to work even harder and faster." (**We're all precarious now*, an interview with Charlie Post**, 20 April 2015)

*Richard Seymour

STORY TWO: THE MOVING LINE

Now meet a retrenched factory worker. For the purposes of telling his story, he will be referred to as Mr Y. [Mr Y was not yet retrenched at the time of doing the interview].

Mr Y, an assembly line worker - who took voluntary retrenchment at the assembly plant he worked at for 11 years (the parts are made in other countries - more than one country) - describes his day as such:
By 6.50am you must be ready at your station
The moving line starts at 7am
It stops at 10am for 10 minutes
Then it stops again at 12pm for 30 minutes
Then it stops at 3.20pm
Then you leave your station and wash and go.

He describes his team as comprising of "eight guys" and that teams should consist of between six and eight but sometimes it goes up to 12 (which is not really allowed). He explains that "different guys work on different pillars in a station" and says the work is "very physical; it's very, very physical". There are many "IODs" (injuries on duty). He refers to a co-worker who "sometimes can't sleep at night because of the pain". He says there are IODs despite "ergonomics". Workplace ergonomics is about 'removing risk factors that lead to musculoskeletal injuries while allowing for improved human performance and productivity' - firstly for the 'business/product'. Secondly, for the health and safety of the employee.
"Technology increases the pace of work, which also has implications for workers' health" (Hlatshwayo, 2019).
Mr Y describes the ergonomics as "very poor".

Mr Y says he'd "rather be doing something else" and, when he left school, he had dreams of going to Bible school and then into the ministry full-time "to help people". He says what helps "get you through the day" is "having a positive attitude and focusing on that and just doing what you're supposed to do and then you go home". He adds that the "guys talking and making jokes, making fun - lightens the work" and that "you'd feel it more with a negative attitude".

Mr Y applied for a job at the company he works for "every year after school" for a few years, and after securing a contract, he thought he would work there for a year, save money and start his own business. Eleven years later and facing retrenchment, imbued with an entrepreneurial spirit, he dreams of starting a few small businesses. He is indecisive whether he wants to wait to be told he is retrenched or take the voluntary package, but he is leaning towards the voluntary package: "I don't want it to get to that point where I'm standing in a line and I'm waiting to hear whether I'm going to be retrenched or not".

He describes the high level of uncertainty that is felt since the announcement was made to the entire staff. There is a two to three months wait from announcement to knowing, depending on the department. Not much is being said (besides the shopstewards negotiating on the workers behalf). Mr Y explains how the shopstewards used to walk through the plant asking things like: "Is everything OK?" Now "everyone has questions to ask" and "you don't see them [shopstewards] much". He describes a sense of "not knowing" and says "guys are talking about it every day, every day".

"We don't know, the guys are not sure whether they are going to be retrenched or not and most of them - [working for] 10 years and down - they are almost certain they will be retrenched".

Mr Y's own concern about possible retrenchment is explained as such: "I'm considered one of the young ones even though I'm here 11 years".

His time at the company started as a casual worker - he explains his initial contracts: "In that first five-year period it [contract] was renewed quite a few times. I think five times…but when it comes to my service, I've been employed by the company since the first contract - since I started here 11 years ago".

Mr Y was not replaced by a robot although many in similar positions have been. He is now part of the 'gig economy' and works as an e-hailing taxi driver. When asked about his colleagues who were retrenched, he says he isn't sure about all, but "most of the guys I see are at home".

PopTika/Shutterstock

- Australian company Fastbrick Robotics has developed a robot, the Hadrian X, that can lay 1,000 standard bricks in one hour - a task that would take two human bricklayers the better part of a day or longer to complete.

Fastbrick Robotics Limited

- In 2015, San Francisco-based startup Simbe Robotics unveiled Tally, a robot the company describes as 'the world's first fully autonomous shelf auditing and analytics solution' that roams supermarket aisles alongside human shoppers during regular business hours and ensures that goods are adequately stocked, placed and priced.
- Swedish agricultural equipment manufacturer DeLaval International recently announced that its new cow-milking robots will be deployed at a small family-owned dairy farm in Westphalia, Michigan, at some point later this year. The system allows cows to come and be milked on their own, when they please.

Robots will destroy our jobs - and we're not ready for it, Dan Shewan, 11 January 2017

https://www.theguardian.com/technology/2017/jan/11/robots-jobs-employees-artificial-intelligence

And more:

THIS ROBOT DELIVERY DOG WILL HITCH A RIDE IN A DRIVERLESS CAR TO DELIVER YOUR PACKAGES
https://www.verdict.co.uk/robot-delivery-dog-continental/

CLEANUP ON AISLE 9: ROBOTS ARRIVE AT GROCERY STORES NEAR YOU
https://www.wbur.org/bostonomix/2019/03/22/marty-robot-stop-and-shop

UP [UNIVERSITY OF PRETORIA] LIBRARIES STEPS INTO FUTURE AS IT 'EMPLOYS' ROBOT TO HELP STUDENTS
https://www.up.ac.za/news/post_2814363-up-libraries-steps-into-future-as-it-employs-robot-to-help-students

STORY THREE: OUR POSITIONS HAD BECOME REDUNDANT

Now meet a retrenched retail worker. For the purposes of telling her story, she will be referred to as Ms Z. [Ms Z had been retrenched almost a year at the time of doing the interview].

Ms Z worked for the same company for 31 years. She says she was "mostly comfortable and happy" at work. "Yes I did. I did enjoy it".
One day, out of the blue, she received a notification of a meeting via email with no subject and could not see who else was invited. She arrived at the meeting, as did other team leaders - they assumed it was "a normal meeting". On seeing people from the union, HR, area managers and others there, the team leaders became "a bit confused and concerned". They were told that their "positions had become redundant". They were informed of their impending retrenchments and told to each sign a Section 189A form at the meeting, give the original back and take a copy to go through after. Ms Z describes her and her co-workers responses as such: "It was a total shock to everyone. Everybody was so numb in this whole thing and didn't know how to respond". She adds that she "had to go and google and find out from other sources exactly what it [retrenchment/Section 189A] entails". She says: "I think there was just too much to read, to understand and comprehend". She says that it was very unclear: "There was no one giving us a clear direction or guidance or support, you know. Ja, that sort of thing. So we had to just basically support and help each other".

Following the announcement there were consultations and by a certain date the affected employees needed to decide one of these three:
• Retrenchment
• Voluntary retrenchment
• Retirement.

There were also, now, a few leadership positions available and they could apply "basically for the same positions that we were appointed in". The 15 people were up against each other for four positions. They "had to reapply from scratch" (CV, interview, psychometric testing). Ms Z explains that "the interview questions were different to the interview questions we had been using".
"There was a lot of pressure and the timelines were so tight and basically you still had to carry on working as if nothing had happened".
Ms Z was unsuccessful in her application and was given feedback "which wasn't substantial". She was told that the only position she could now apply for was in sales and this was "totally different to what I was used to". She says she had "never done it"; it was a "downgrade" including the pay; and "there would now be performance management".
She felt "pressure to make a decision" and "a bit of fear I would say, and uncertainty because I know myself, I know my potential and I thought that is one thing I'm not good at". So she then decided to take the voluntary retrenchment. She was put on 'garden leave' - a practice whereby an employee is no longer required to perform their duties so they stay at home during the notice period, still on the payroll. (This is often used to prevent an employee from taking certain information with them when they leave and/or is used to avoid lackadaisical work or sabotage).

Ms Z felt "a bit depressed" about what happened. "It was something I least expected. I had potentially five more years until early retirement - I think the timing was wrong. I was upset, frustrated".

Ms Z and her colleagues (more than just the team leaders) have been replaced by digital technology. While she is not opposed to digital technology, she feels that it excludes certain customers she used to serve like the elderly, poor, and 'illiterate' people.

Freepik

Ms Z is now doing a fashion design course paid for by her former employer as part of its 'reskilling programme'.

The three stories above demonstrate the threat workers face under capitalism, how fragile their jobs are, and how easily they can be replaced, regardless of skill/knowledge/years of experience/expertise, etc.

But jobs or rather *work* does not have to be this way - the 'essential' workers show us that it is care and household work, concern for others and the commons, and solidarity that create and maintain a healthy, functioning society. Work can and should be an enjoyable endeavour, something that is truly free - that does not alienate in all the ways it does under capitalism.

…places of work [should be] places of life.
Bennholdt-Thomsen & Mies, 1999

PART THREE

A LOOK AT TECHNOLOGY

This part of the booklet looks at technology and its uses. Technology in and of itself is not a bad thing - it is how the technology is used and for what purpose/s that we need to think deeply about. The Luddites* argued that technology used *for the good of* the 'social majority' is a good thing, not a bad thing (which is the more common (mis)understanding of what they thought).

When it comes to technology and justice, these are the important questions to ask:
- ✓ Who owns it?
- ✓ Who is using it and for what purpose/s?
- ✓ How is it being used and why?
- ✓ Who benefits and who does not and why?
- ✓ Is it truly democratic in that it *serves life*?

*Luddites were skilled artisan textile workers who are (in)famous for smashing and breaking new machinery and supposedly being 'against technology'. *That* story is told by those in positions of political and economic power. It is not the truth. In November 1811 in Nottinghamshire, England, the 'framework-knitters' or 'stockingers' (who produced hosiery using stocking frames) had a number of grievances, including wage-cutting, the use of unapprenticed youths for the same purpose, and the use of the new 'wide frames' which produced cheap, inferior quality goods. The workers started breaking machines.

The Luddites opposed only technology 'hurtful to Commonality', i.e. to the common good. They opposed technology that served the interests of the few. They destroyed some machines whilst leaving alone others in the same workshop.

So being a luddite today means being a sceptic about the dogma of technology as progress, not about denying the real benefits of some technologies. It means insisting that the crucial decisions about which technologies are developed are made democratically, not just imposed by corporations and technocratic elites. And it means standing up for our own ideas of what *progress* really is.

Our heritage, the Luddite Rebellion 1811-1813
http://www.luddites200.org.uk/

What the Luddites were facing was not merely new machines but a whole new political and socio-economic regime built around them - the Industrial Revolution. The key political elements were free market economics and a ban on trade unions. As the writer Kirkpatrick Sale puts it, the Luddites were rebelling not against machines, but against 'The Machine'. Likewise, today, when people say they are "a slave to their computer," they do not mean it literally: of course, they know they can turn the machine off, but what they are pointing to is the way in which computers have facilitated a whole regime of working, a speed of response and a set of standards and expectations of

personal performance. These are demanded as part of a whole social regime that is very hard to resist or evade. In talking about the politics of technology we are not trying to demonise or blame inanimate objects: rather, *we need to ask what values and interests technology embodies, what kind of world does it imply, what systems does it fit into and stabilise*?

21st century technology debates & politics
http://www.luddites200.org.uk/TechnologyPoliticsNow.html

If one looks at the fourth industrial revolution as something that will 'fix' all problems and issues with technical 'solutions' without taking into consideration the broader context and how those technologies work in it, we will maintain and/or worsen the existing economic and social structures. We *cannot* implement the so-called 4IR without addressing existing inequalities and without critically examining the purposes of the technology - for who, how and why?

Mondli Hlatshwayo in **Debating the fourth industrial revolution: First things first** (2019) explains the role of technology as follows:

> 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.
>
> 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. 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.
>
> https://journals.co.za/content/journal/10520/EJC-1aa50abd84

> Microsoft CEO Satya Nadella claims that we must "trust in technology" and put a billion dollars in an "innovation fund." Yet, it is the endless proliferation of hi-tech developments - from 5G to AI and deep learning - which has made capitalist development and expansion in the realms of food, energy, urban development, communication, and finance quicker and cheaper. The social alienation, inequality, and ecological consequences of these tech-induced "efficiencies" are increasingly visible, the uncertainties for future generations more palpable. These consequences often counter the potential improvements that these technologies promise.
>
> Quick technical fixes inherently reproduce social disparities and are inadequate to generate the relational shifts needed between humans and our living and non-living environments. Technological innovation does

not emerge out of a vacuum; it is embedded in structural power relations predicated upon a tendency for efficiencies to favour privileged, socially mobile, and wealthy groups and their government sponsors. Understanding and reversing the root causes of social inequality and ecological degradation, as they are based in systemic racism, class domination, and patriarchy was never meant to be part of the techno-fix strategy.

No harm here is still harm there: The Green New Deal and the Global South (II), Vijay Kolinjivadi & Ashish Kothari, 21 May 2020

https://www.jamhoor.org/read/2020/5/21/no-harm-here-is-still-harm-there-the-green-new-deal-from-the-global-south-ii

shudu.gram

Meet Shudu Gram - she is the world's first digital supermodel and an influencer on Instagram. There's a problem with the beautiful Shudu: her creator and owner is Cameron-James Wilson - a 'white' male. Given the long history of exploitation and objectification of Black people and their bodies, the fact that Wilson is making a name for himself and benefitting financially from the use of a Black female (even one who is not real) raises the question of the purpose of technology and who benefits from its use and who may be harmed in the process.

THERE IS ANOTHER 'TECHNOLOGY":
SOCIALLY-USEFUL TECHNOLOGY

Technologies (whether they be digital or otherwise) that serve the 'masters' and exploit the vast majority of people are, simply put, *not good* and should *not* be uncritically embraced. There are examples of 'good' technology - technology that serves the common good. Here we look at a few examples:

THE LUCAS PLAN

In 1976 the workforce of Lucas Aerospace Corporation, a Birmingham-based British manufacturer of motor industry and aerospace industry components, announced that thousands of workers would lose their jobs because of 'industrial restructuring, international competition and technological change'. Under the leadership of Mike Cooley, the workers developed the **Lucas Plan**, an 'alternative' plan to convert the company from an arms-making one to one that makes *socially-useful products*, and to save jobs.
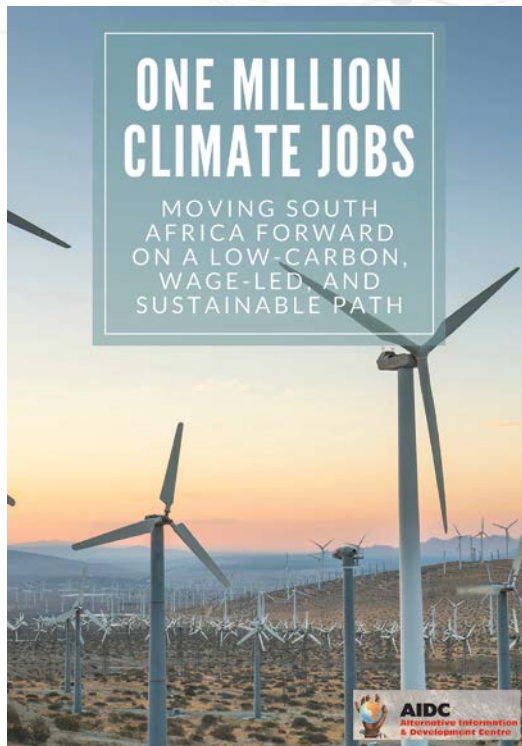
The Lucas Plan contained over 150 ideas with detailed plans. Even though climate change was not such a pressing issue as it is today, the Lucas Plan focused extensively on the development of alternative, renewable energy, such as efficient wind-turbines, solar cells and heat pumps. While the specific technologies and products are examples of socially-useful technologies and products, the Lucas Plan is very important because it offered an imagination of a new and different society and provided actual ideas and examples of that imagination - an imagination where human and ecological needs come before the endless pursuit of profit.

Even though the plan was rejected by management and government, The Lucas Plan lives on as a symbol for those who value innovation and the use of technology for purposes of social use rather than private profit.

> The movement that emerged challenged establishment claims that technology progressed autonomously of society, and that people inevitably had to adapt to the tools offered up by science. Activists argued knowledge and technology was shaped by social choices over its development, and those choices needed to become more democratic. Activism cultivated spaces for participatory design; promoted human-centred technology; argued for arms conversion to environmental and social technologies; and sought more control for workers, communities and users in production processes.
>
> **The Lucas Plan: What can it tell us about democratising technology today?** Adrian Smith, 22 January 2014
>
> https://www.theguardian.com/science/political-science/2014/jan/22/remembering-the-lucas-plan-what-can-it-tell-us-about-democratising-technology-today

ONE MILLION CLIMATE JOBS

MOVING SOUTH AFRICA FORWARD ON A LOW-CARBON, WAGE-LED, AND SUSTAINABLE PATH

AIDC
Alternative Information & Development Centre

Just Transition

Is this today's Lucas Plan?

Socially-useful technology is not only about *what* is produced and for what purpose/s, but also *how* it is made. In the following example, a handloom weaver explains his vocation - he uses several adjectives to describe the process of weaving, such as 'thought' and 'love' and 'freedom', capturing in those words the notion of 'work' as something different to the mechanical, alienating, drudging endeavour it has become for so many:

> "My loom is my computer," says Prakash Naranbhai Vankar when I ask him whether he would have preferred working at an IT firm. The young weaver, who is sitting at his loom in Bhujodi village in Kutch, tells me that weaving carpets is anything but mechanical: there is thought, innovation, and love that goes into it. And freedom, and identity, and being with family.
> Against the tide of handloom decline across India, there is a quiet revival of handloom weaving, *vannat*, in Kutch among the women, the youth and the elders of the Marwada Vankar community. And I am here to find out why.
> Prakash is one of several young people who have either stayed with weaving, or, more remarkably, come back to it after trying their hand at construction and other jobs. Prakash learnt the tradition of weaving carpets from his father, but he uses new yarns and designs while staying faithful to the unique 'Kutchi *chhaap* ' motifs.
> **A brand new yarn: The return of handloom weaving in Kutch**, Ashish Kothari,
> 16 February 2019
> https://www.thehindu.com/society/a-brand-new-yarn/article26281317.ece

WHAT ABOUT DIGITAL FAIRNESS AND CO-OPERATION?

Today there are a vast number of digital platforms. We may think some are different in that they are 'free' or part of the 'sharing economy' but they are simply the 'same ol same ol' dressed up digitally - they are 'business-as-usual' companies who use digital spaces for their goods and services. The term 'sharing economy' is problematic and mischievous. Uber, Airbnb (and other similar 'sharing economy' platforms) commodify things - idle resources that were previously not for sale - in this case cars and rooms. These are *not* examples of fairness or co-operation, but rather another way for bosses (the owners of Uber, Airbnb and the like) to make money using unprotected workers. These platforms operate *within* capitalism.

If the 19th and 20th centuries were about storming the factory in order to take back the means of production, what then is to be done in the 21st century? Is it time to storm the online platforms that increasingly control our economy and our lives? Some are already (trying) to do just that.

> We are accustomed to regarding open platforms as synonymous with greater freedom and innovation. But as we have seen with the rise of Google, Facebook, and other tech giants, open platforms that are dominated by large corporations are only "free" within the boundaries of market norms and extractive business models. Yes, open platforms provide many valuable services at no (monetary) cost to users. But when some good or service is offered at no cost, it really means that the user is the product. In this case, our personal data, attention, social attitudes, lifestyle behavior, and even our digital identities are the commodity to which platform owners are seeking unrestricted access. In this sense, many open platforms are not so benign. Many of them are techno-economic fortresses, bolstered by structural dynamics that enable dominant corporate players to monopolize and monetize a given sector of online activity. Market power based on such platforms can then be used to carry out surveillance of users' lives; erect barriers to open interoperability and sharing, sometimes in anti-competitive ways; and quietly manipulate the content and experience that users may have on such platforms. Such outcomes on seemingly open platforms should not be entirely surprising; they represent the familiar quest of capitalist markets to engineer the acquisition of exclusive assets and mine them for private gain. The quarry in this case is our consciousness, creativity, and culture.
> Can our free speech, freedom of association, and freedom to innovate flourish if the dominant network venues must first satisfy the demands of investors, corporate boards, and market metrics?
> **From open access to digital commons in *Ours to hack and to own*, David Bollier, 2016**

EXAMPLES DEMONSTRATING DIGITAL DIFFERENCE

There are cooperative forms of organisation which have adopted (or attempted to adopt) alternative way/s of being and working to the dominant capitalist mode of operation. Commons-based peer production (CBPP) is a term coined by Yochai Benkler (2006) and describes a model of socio-economic production (rather than market-based) in which large numbers of people

work cooperatively, using shared resources, usually over the internet. There are many examples of CBPP such as free and open-source software and Wikipedia (the free online encyclopaedia).

CBPP does not operate as a traditional hierarchical organisation and contributors usually work as volunteers, which can bring with it some issues and challenges.

PLATFORM AND OPEN COOPERATIVISM (COMPLEMENTARY ALTERNATIVES)

Platform Cooperativism is a movement that seeks to democratise ownership and governance in the platforms that many of us increasingly use. The movement's focus is not limited to only questioning the 'sharing economy', but also to ownership models of platforms like Twitter. Platform Cooperativism's formula is as follows: combine the efficiency and lowered transaction costs of digital platforms with the horizontal ownership and democratic control that characterise worker-owned cooperatives. This is a platform of *solidarity*, echoed in these titles:

- **Ours to hack and to own: The rise of platform cooperativism, a new vision for the future of work and a fairer internet** (Scholz & Schneider, 2016).
- **Platform cooperativism: Challenging the corporate sharing economy** (Scholz, 2016).
- **Uberworked and underpaid: How workers are disrupting the digital economy** (Scholz, 2016).
  http://commonstransition.org/from-platform-to-open-cooperativism/

Open Cooperativism attempts to infuse *cooperatives* with the basic principles of *commons-based peer production*. It argues that it is not enough to have a better Uber or a more democratic AirBnB: we must tackle issues like housing and transportation head on. Open Cooperativism addresses the cause/s of our dysfunctional, destructive economic system. It asks: 'what economy do we want?'

It deals with the broader issues of creating a more humane economy and building a resilient future.

Pat Conaty and David Bollier [**Toward an open co-operativism: A new social economy based on open platforms, co-operative models and the commons**, 10 February 2015] have called for "a new sort of synthesis or synergy between the emerging peer production and commons movement on the one hand, and growing, innovative elements of the co-operative and solidarity economy movements on the other."
See **Cooperativism in the digital era, or how to form a global counter-economy**, Vasilis Kostakis, 13 March 2017
https://blog.p2pfoundation.net/cooperativism-in-the-digital-era-or-how-to-form-a-global-counter-economy/2017/03/13

An example:

Fairmondo is a digital online marketplace managed by a multi-constituent cooperative focusing on *fair* commerce. Originally founded in Germany in 2012, Fairmondo aims to federate and expand to create a global online marketplace (there is now also Fairmondo UK), but with *ownership firmly in the hands of their local users*.

Fairmondo meets the four criteria of Open Cooperativism:
- ✓ oriented towards the common good
- ✓ multi-constituent in nature
- ✓ actively creates commons
- ✓ trans-nationally oriented.

DisCos

Distributed Cooperative Organisations are a set of organisational tools and practices for groups of people who want to work together in a cooperative, commons-oriented, and feminist economic form. Weaving together practices and principles learnt from the Commons and P2P movements, the world of cooperatives, the social and solidarity economies, and Platform and Open Cooperativism, DisCos focus on people using their unique talents to do fulfilling, socially and environmentally meaningful work where *care* is key.

For more: **https://hackernoon.com/last-night-a-distributed-cooperative-organization-saved-my-life-a-brief-introduction-to-discos-4u5cv2zmn**

There are also examples of other ways to digitally *disrupt* the dominant. Groupings like May First Movement Technology engages in building movements by sharing its technology (as a collaborative, non-profit service provider) and participates in (and often leads) many networks and coalitions working on various issues to do with technology. See more on May First Movement Technology and others in Useful Resources at the end of this booklet.

On the 30th May 2020 it was suspected that Anonymous - the decentralised hacker collective - had successfully disabled the Minneapolis Police Department's website in retaliation for the murder of George Floyd and for the wrongful deaths of others at the hands of officers. The Minneapolis PD site, as well as the parent City of Minneapolis site, became inaccessible late that Saturday, according to multiple user reports.

V for Vendetta Masks

A large number of K-Pop* stans and TikTok users registered online for tickets to attend President Trump's 20 June 2020 rally in Tulsa, Oklahoma. They had no intention of attending. Trump ended up speaking to approximately 6 200 supporters in the 19 000-seat BOK Center arena. Organisers were forced to close an 'overflow' area outside. His campaign chair had earlier boasted that nearly a million people had requested tickets.

*K-Pop stans (stalker & fan) are supporters of Korean pop music artists

And we end with the wise words of sheep farmer and author James Rebanks, whose 2015 autobiographical book describes life as a shepherd in England's Lake District. When asked what he thought about a robot sheepdog, he said:

"TERRIBLE. NO ONE WHO WORKS WITH SHEEP NEEDS OR WANTS THIS"

[A robot sheepdog? 'No one wants this,' says one shepherd, James Vincent 22 May 2020]:

Rocos

We don't mind how many times you visit these pages. We are not watching nor counting!

USEFUL RESOURCES

Following is a list of resources you may find useful. There are many others too - some are freely available online.

BOOKS

Ashton, D.N. (1986). *Unemployment under capitalism. The sociology of British and American labour markets*. Connecticut: Greenwood Press.

Brown, P., Lauder, H. & Ashton, D. (2011). *The global auction*. New York: Oxford University Press.

Cooley, M. (1987). *Architect or bee? The human price of technology*. London: Hogarth Press.

Ford, M. (2015). *Rise of the robots: Technology and the threat of a jobless future*. New York: Basic Books.

Gill, K.S. (Ed.). (1986). *Artificial intelligence for society*. Chichester: Wiley.

Gorz, A. (1982). *Farewell to the working class: An essay on post-industrial socialism*. London: Pluto Press.

Graeber, D. (2018). *Bullshit jobs: A theory*. New York: Simon & Schuster.

Kincheloe, J.L. (1999). *How do we tell the workers? The socioeconomic foundations of work and vocational education*. Boulder, Colorado: Westview Press.

Rifkin, J. (2014). *The zero marginal cost society: The internet of things, the collaborative commons, and the eclipse of capitalism*. New York: St. Martin's Griffin.

Rifkin, J. (2011). *The third industrial revolution. How lateral power is transforming energy, the economy, and the world*. New York: St. Martin's Griffin.

Rifkin, J. (2000). *The end of work: The decline of the global work-force and the dawn of the post-market era*. London: Penguin Books.

Standing, G. (2011). *The precariat*. London & New York: Bloomsbury Academic.

Smith, T. (2000). *Technology and capital in the age of lean production: A Marxian critique of the "new economy"*. Albany: State University of New York Press.

Weis, L. (1990). *Working class without work: High school students in a de-industrializing economy*. New York & London: Routledge.

Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. New York: PublicAffairs.

ARTICLES

Badat, S. (2020, June). 'The 4IR super-highway': A dangerously technocratic utopia. *Daily Maverick*. Retrieved from https://www.dailymaverick.co.za/opinionista/2020-06-01-the-4ir-super-highway-a-dangerously-technocratic-utopia/

Cudenec, P. (2020, April). Resist the fourth industrial repression! *Winter Oak*. Retrieved from https://winteroak.org.uk/2020/04/17/resist-the-fourth-industrial-repression/

Danaher, J. (2016, May). Robots, law and the retribution gap. *Ethics and Information Technology*, 18:4, 299-309.

Duncan, J. (2019, July). What can the fourth industrial revolution learn from the third industrial revolution? *Daily Maverick*. Retrieved from https://www.dailymaverick.co.za/article/2019-07-25-what-can-the-fourth-industrial-revolution-learn-from-the-third-industrial-revolution/

Farouk, F. (2019, May). There's a robot on my stoep: Job security in the age of 4IR. *Business Maverick*. Retrieved from https://www.dailymaverick.co.za/article/2019-05-22-theres-a-robot-on-my-stoep-job-security-in-the-age-of-4ir/

Forrester, K. & Weigel, M. (2020, Fall). Bodies on the line. *Dissent: Technology and the Crisis of Work*. Retrieved from https://www.dissentmagazine.org/article/bodies-on-the-line

Hlatshwayo, M. (2020, January). *Botched technological revolutions and the South African proletariat*. Unpublished.

Hlatshwayo, M. (2019, December). Debating the fourth industrial revolution: First things first. *New Agenda: South African Journal of Social and Economic Policy*, 2019:75, 26-29. Retrieved from https://journals.co.za/content/journal/10520/EJC-1aa50abd84

Kothari, A. (2016, June). Why do we wait so restlessly for the workday to end and for the weekend to come? Could work be redefined to include enjoyment and pleasure? *Scroll.in*. Retrieved from https://scroll.in/article/809940/why-do-we-wait-so-restlessly-for-the-workday-to-end-or-for-the-weekend-to-come

Lawrence, M. (2020, May). Democratic digital infrastructure must be at the centre of a just recovery. *openDemocracy*. Retrieved from https://www.opendemocracy.net/en/oureconomy/democratic-digital-infrastructure-must-be-centre-just-recovery/

Le Roux, D.B. (2018, July). Many South African jobs could soon be automated, and the country isn't prepared. *The Conversation*. Retrieved from http://theconversation.com/many-south-african-jobs-could-soon-be-automated-and-the-country-isnt-prepared-99689

Le Roux, D.B. (2018, June). Automation and employment: The case of South Africa. *African Journal of Science, Technology, Innovation and Development*, 10:4, 507-517. Retrieved from https://www.tandfonline.com/doi/abs/10.1080/20421338.2018.1478482

Maharajh, R. (2019, December). *Long-run global perspectives on evolution, revolution, and innovation in South Africa's development*. Article from a paper presentation at the Second Plenary Session of the 26th South African Sociological Association Annual Conference: Critical Perspectives on the so-called 4th (Capitalist) Industrial Revolution, Tshwane 17 July 2019.

Manokha, I. (2019, February). New means of workplace surveillance: From the gaze of the supervisor to the digitalization of employees. *Monthly Review*, 70:9. Retrieved from https://monthlyreview.org/2019/02/01/new-means-of-workplace-surveillance/

Munck, R. (2019, April). Workers of the world unite (at last). *Great Transition Initiative*. Retrieved from https://www.greattransition.org/publication/workers-of-the-world-unite

INTERVIEWS

5G/ Moratorium's, the Fourth Industrial Revolution and the Blockchain - Cory Morningstar
https://www.youtube.com/watch?v=tPvz-EIZI-4
Also see
https://nodealfornature.org/
http://www.wrongkindofgreen.org/

Take Back the App! A Dialogue on Platform Cooperativism, Free Software and DisCOs - The Laura Flanders Show
https://blog.p2pfoundation.net/take-back-the-app-a-dialogue-on-platform-cooperativism-free-software-and-discos/2020/04/24

ORGANISATIONS/GROUPINGS
(VIRTUAL AND OTHERWISE)

The **Center for Humane Technology** (2013) is a non-profit organisation focused on the ethics of consumer technology. The centre advocates for regulators and technology companies to avoid social media features and profit incentives that it sees as contributing to internet addiction, political extremism, and misinformation.
https://www.humanetech.com/

The **Coalition for Critical Technology** is part of a growing community of scholars who are challenging academia's key role in the creation and maintenance of carceral (relating to prison) technology.
The coalition aims to support larger movements of scholars, technologists and organisers who are working for justice by resisting technologies that exacerbate inequality, reinforce racism, and support the carceral state. See **Abolish the #TechToPrisonPipeline**
https://forcriticaltech.github.io/

Institute for Cooperative Digital Economy
On the 22nd April 2019 the New School for Social Research in New York City launched the Institute for the Cooperative Digital Economy (ICDE). The Institute examines digital businesses and projects that are owned and governed by workers and users. The ICDE serves as the research arm of the Platform Cooperativism Consortium, a growing international network that supports the cooperative platform economy, founded by Trebor Scholz, an Associate Professor at the Milano School for Policy, Management, and Environment and The New School.
https://platform.coop/who-we-are/icde/

May First Movement Technology started in 2005 and is a democratically-run, not-for-profit cooperative of movement organisations and activists in the United States and Mexico. There are 850 members which host over 10 000 email addresses and over 2 000 websites on their collectively owned and secured

hardware that run exclusively on encrypted disks. The organisation engages in building movements by advancing the strategic use and collective control of technology for local struggles, global transformation, and emancipation without borders. May First Movement Technology participates in networks, coalitions and campaigns organising around many technology-related issues. https://mayfirst.coop/en/

Technology and Revolution (video)
A project of May First and Center for Media Justice
https://techandrev.org/

The **P2P Foundation** (The Foundation for Peer to Peer Alternatives) was founded in 2005 by Michel Bauwens, James Burke and Brice Le Blévennec. It is a non-profit organisation and global network involved in advocacy and research of commons-oriented peer to peer (P2P) dynamics in society. P2P is an abbreviation of 'peer to peer', sometimes also described as 'person to person' or 'people to people'. P2P is about this direct relationship. https://p2pfoundation.net/

BLOG

Wrench in the Gears (Alison McDowell)
A skeptical parent's thoughts on the digital curriculum.
https://wrenchinthegears.com/

CAMPAIGNS

Campaign to Stop Killer Robots
Formed in October 2012, the Campaign to Stop Killer Robots is a coalition of non-governmental organisations working to ban fully autonomous weapons. https://www.stopkillerrobots.org/

Take Back the Tech!
A campaign that reclaims the internet and women's often ignored herstory with technology, exploring and encouraging the creative use of digital technologies to denounce and eliminate online gender-based violence (GBV). Today, the streets of the internet are increasingly inseparable from the streets of our lives and our communities: the offline and online are fused together. Online GBV is an integral part of the structural GBV we know so well - but at hyper speed and digitised. https://www.takebackthetech.net/

QUESTIONS

Below you will find a set of questions. These questions are meant to serve as a guide and can be adapted and/or changed if need be depending on who is using them - many people of different ages, contexts, etc. will read and use this booklet. The questions can be answered in small or large groups or individually.

1. Before reading this booklet, what did you know about the so-called Fourth Industrial Revolution?

2. Ask at least two people what they know about the Fourth Industrial Revolution.

3. After reading this booklet, has anything changed in what you now know and think about the 4IR? If so, what?

4. Read the following and answer the questions that follow:
    'Getting too swept up in the Fourth Industrial Revolution buzz means surrendering to technical **rationality**, the consequence being that **capital** is well placed to manufacture **consent** for the new world that comes, under the guise of "it's just the way things are."'

    'Technology *can* be **wielded** positively, it depends on who's doing the wielding - and so the answer really comes back to reviving a mass struggle politics in South Africa capable of articulating programs, **centering** jobs and living conditions, with technology featuring only as the means to *make* things better, not the ends that pretends things *are* better.'
    https://africasacountry.com/2019/07/demystifying-the-fourth-industrial-revolution
    Demystifying the fourth industrial revolution by William Shoki

---

rationality - reasoning/logic
capital - the people (considered a 'group') who own the businesses, land, and other forms of wealth in society
consent - agreement
wielded - used
centering - making something the focus or main thing

---

a. What can be done to *not* surrender or give into 'technical rationality' and to the power of capital?

b. Support or challenge the 'just the way things are' argument. Argue (verbally or in writing) that the changes are inevitable and should simply be embraced or adapted to, OR argue that the changes are *not* inevitable and should *not* simply be embraced or adapted to.

c. 'Technology *can* be wielded positively.'
    '…with technology featuring only as the means to *make* things better.'
    Drawing from the above, imagine a new world/'another way' and the part technology could play in assisting and supporting workers in this re-imagining. This can be expressed visually or in writing or in another form.

5. 'A developing country like South Africa needs appropriate technologies and appropriate ideas too, not the **imposition** of global templates. 4IR is the imposition of the **ideology** of Davos Man. If taken too seriously it will not end well.'
    https://www.dailymaverick.co.za/article/2019-10-28-fourth-industrial-revolution-the-revolution-from-above-a-comparison-of-sa-and-denmark/

---

imposition - a thing that is imposed, in particular an unfair or unwelcome demand or burden
ideology - belief/philosophy

---

a. Draw from this booklet and find other articles that explain how the 4IR is directly linked to 'Davos Man'.

b. What does '4IR is the imposition of the ideology of Davos Man' mean?

c. Presently '4IR looks very much like the world according to big tech.' https://www.dailymaverick.co.za/article/2019-10-28-fourth-industrial-revolution-the-revolution-from-above-a-comparison-of-sa-and-denmark/

    What are some appropriate technologies and ideas (i.e. *not* 'big tech') for 'a developing country like South Africa'? Find examples of what various groupings (e.g. organisations, community structures, etc.) are already doing.

6. Read the following below. You are a journalist and have been given an opportunity to ask President Ramaphosa three questions about this report. Formulate the questions you would ask.

President Ramaphosa receives report on 4IR
Friday, August 7, 2020

President Cyril Ramaphosa has urged the Presidential Commission on the Fourth Industrial Revolution (4IR) to place 4IR at the centre of South Africa's economic recovery.

This is to enable the country to emerge from the damaging impact of the COVID-19 pandemic.

"South Africa must be a more technologically driven country that finds solutions that move us forward, with 4IR as a pivot for economic recovery," said President Ramaphosa.

The President said digital transformation has to be harnessed "to change the way we live, learn, work and govern."

President Ramaphosa made the remarks, when he received the recommendations contained in the report of the Presidential Commission on the Fourth Industrial Revolution (4IR).

Communications and Digital Technologies Minister, Stella Ndabeni-Abrahams and Deputy Chairperson of the Commission, Professor Tshilidzi Marwala presented the report to the President on Thursday.

The Commission including leaders from academia, business and civil society, began its work in May 2019, combining research and stakeholder engagements to generate a comprehensive view of South Africa's current conditions as well as the prospects in the 4IR.

https://www.sanews.gov.za/south-africa/president-ramaphosa-receives-report-4ir

7. Read the following article and then write a letter to a newspaper or write a blog or a Facebook post (or equivalent) in response to the article and state whether you think this 'revolution' will be any different and why you say so.

'Each one of the previous industrial revolutions had devastating consequences for Africa. Why should we expect that a 4th Industrial Revolution would benefit this continent and its people? The prophets of the '4IR' are going to have to answer this.'

https://www.dailymaverick.co.za/article/2020-08-20-the-first-three-industrial-revolutions-stripped-africa-bare-its-hard-to-see-why-the-fourth-would-be-any-different/

8. You work for an organisation involved in addressing and combatting gender-based violence. You have been asked to do some research involving AI and sexism that will lead to a campaign to address this.

You can refer to the UNESCO study: **"I'd blush if I could"*: Closing gender divides in digital skills through education** (2019) and/or to any other similar studies to assist you in your research.

In your research look for examples of groupings (organisations or community structures, etc.) to see what they are already doing in order to try and stop sexism in AI. For example, a non-profit called Feminist Internet released a new feminist chatbot called F'xa which aims to educate users and designers about all the ways bias can creep into AI.

You can also refer to pages 23-25 of this booklet.

Develop the campaign.

*"I'd blush if I could" is what Siri (female voice assistant) used to say in response to "Hey Siri, you're a bitch" (this being fairly common abuse hurled at the voice assistants). Apple and other companies have since made some effort to change these responses.

9. You work for an organisation that fights against racism. You have been asked to do some research involving AI and racism that will lead to a campaign to address this. Follow the steps above - find research that deals with AI and racism, then look for groupings working to stop racism in AI. Develop the campaign.

10. Make up your own questions here.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

BEWARE OF THE BOT

1996 and 97
In 1996, Garry Kasparov, a world chess champion, played a set of matches against Deep Blue, an IBM supercomputer. He won the first set of matches, losing just a single match. A year later, Deep Blue won the second set of matches, leaving Kasparov infuriated - he blamed his defeat on IBM cheating, although he has since retracted his accusations.

February 2011
Watson, IBM's supercomputer, competed on the American television game/quiz show 'Jeopardy!' against two 'unbeatable' contestants: Ken Jennings and Brad Rutter. Watson won.

October 2017
Sophia the robot was introduced to the United Nations and had a brief conversation with the United Nations Deputy Secretary-General, Amina J. Mohammed and at the Future Investment Summit in Riyadh, Sophia was granted Saudi Arabian citizenship, becoming the first robot ever to have a nationality.

October 2018
A piece of artwork - a portrait of a man (possibly of the church): *Portrait of Edmond Belamy* - sold for $432 500 (around R7.3 million) at Christie's (auction house). The artist's signature in Gallic script reads:
AI can do things very fast and can learn quickly.
This was the first artwork to be sold by an auction house done by artificial intelligence.

February 2020
Android Alter 3, a large humanoid robot, conducted a human orchestra in Japan. Composer Keiichiro Shibuya wrote the music for the opera (named *Scary Beauty*) and Alter 3 controlled the volume and tempo of the music with perfect precision.

April 2020
The first cyberspace Grand National horse-race was run. Around three years were spent by a team putting it together. Trainers, jockeys, commentators and tipsters put their expertise together to make it the most accurate possible simulation. Forty runners and riders competed via state-of-the-art computer-generated imagery, complex mathematical algorithms and a detailed analysis of racing form.

April 2020
A university in Japan held a graduation ceremony for students using avatar robots remotely controlled by graduating students from their homes. The avatar robots (dubbed *Newme*) were dressed in graduation caps and gowns for the ceremony, complete with tablets projecting the graduates' faces.

July 2020
With coronavirus restrictions in place and hence no supporters allowed into the stadium, the Japanese baseball team Fukuoka SoftBank Hawks 'replaced' their fans with dancing robots, some resembling humans and some on four legs, similar to dogs. The robots danced to the team's fight song before the game.

There is, indeed, (as Fazila Farouk wrote in 2019), a robot on my stoep!
https://www.dailymaverick.co.za/article/2019-05-22-theres-a-robot-on-my-stoep-job-security-in-the-age-of-4ir/

artificial intelligence (AI)

age of automation

bots

cloud

software

solve

search

deep learning

the robots are coming

algorithms

quantum computing

drones

emerging technologies

biotechnology

communication

datascience

virtual reality

connected sensors

energy storage

The Centre for Integrated Post-School Education and Training (CIPSET)

Contact Information
Centre for Integrated Post-School Education and Training
SARChI Chair: Community, Adult and Worker Education (CAWE) - University of Johannesburg and Nelson
Mandela University
DVC: Engagement and Transformation
Office 402, Building 519
Missionvale Campus
Nelson Mandela University

Telephone: +27 41 504 3924
Email: adelah.jeftha@mandela.ac.za
Website: **https://cipset.mandela.ac.za/**

simulation

tools

materials science

robotics

blockchain

3D printing

nanotechnology

augmented reality

machine learning

optimisation

autonomous vehicles