



GLOBAL

What can universities do about the future of work?

Michael A Peters 18 May 2019

The nature of capitalism is changing to a fully global-scale digital economy, a single planetary system, shifting from an oil-gas oligarchy to a bio-information configuration and continuing the long evolving cultural trend of formalisation and mathematicisation, based on developments in algebra, digital logics and algorithms.

This is the concept of digital capitalism that emerged from the military, government and education research networks that gave birth to the internet in the early 1990s. Now, less than 30 years later, it sports a handful of soon-to-be US\$1 trillion ‘information’ platform companies – Amazon, Microsoft, Apple and Facebook.

This is ‘the age of digital reason’ – anything that can be automated, will be. This simple realisation is based on the understanding that labour is disappearing because in digital or algorithmic capitalism, the capitalism of the ‘intelligent systems’, labour is no longer a factor of production.

In the age of industrial capitalism, agricultural or farm labour disappeared as a result of mechanisation; in the age of ‘intelligent capitalism’ based on the development and application of intelligent systems, jobs in manufacturing and services are disappearing and will continue to do so.

McKinsey’s 2017 book *Artificial Intelligence: The next digital frontier* begins: “Artificial intelligence [AI] is poised to unleash the next wave of digital disruption, and companies should prepare for it now. We already see real-life benefits for a few early-adopting firms, making it more urgent than ever for others to accelerate their digital transformations.

“Our findings focus on five AI technology systems: robotics and autonomous vehicles, computer vision, language, virtual agents and machine learning, which includes deep learning and underpins many recent advances in the other AI technologies.”

The report recognises how digital capitalism is now dominated by the global giants such as Google and Baidu that spent a combined US\$20 billion to US\$30 billion on AI in 2016, mostly on R&D, and suggest that there are real advantages for early adopters. The report is limited in that it does not comment on the loss of employment or the role of government,

but simply focuses on the transformation of industry.

Mark Purdy and Paul Daugherty's 2017 report *Why Artificial Intelligence is the Future of Growth* considers AI as the missing element that will affect the future of growth.

Capital and labour as the 'factors of production' will give way to a transformative set of technologies known as AI, which can be considered as a capital-labour hybrid where "AI can replicate labour activities at much greater scale and speed, and even perform some tasks beyond the capabilities of humans", it states.

AI can also take the form of physical capital such as the robot and intelligent machine with the additional capacity to improve its capabilities over time through self-learning capabilities. On the basis of their modelling and analysis, the authors claim that AI can be considered a new factor of production with a transformative effect on growth.

Unemployment

By 2019, more than 212 million people will be out of work, up from 201 million now, according to the International Labour Organization's (ILO) report, *World Employment and Social Outlook: Trends 2015*. The ILO predicts income inequality will continue to widen and that already the richest 10% earn 30% to 40% of total income, while the poorest 10% earn around 2% of total income.

The ILO has warned of the severe consequences presented by automation and disruptive technologies, but few agencies have raised questions about the ontological basis for work, its declining importance for capitalism since its symbolic, financial and algorithmic turns, or indeed the social and psychological prospect of workless capitalism.

Under the systematic adoption of intelligent systems in manufacturing, is that labour in the historical process of disappearing? What then becomes the role for education, when in most world systems education, and especially since the advent of neoliberalism, has been conceived increasingly in labour market terms?

'Intelligent systems' draw on machine or 'deep' learning to mark the end of labour and the final stage of automation. The term 'intelligent manufacturing' was first used in the 1980s by Purdue University and the United States released a monograph describing the process as "the process of making use of technologies about knowledge engineering, manufacturing software and robot visual for intelligent robots to accomplish a batch of production missions without artificial interventions".

The evolution of smart manufacturing through AI has given rise to a new version of intelligent manufacturing based on smart technologies such as the internet of things, cloud computing, cyber-physical systems and big data on Industry 4.0.

In China, the 'Made in China 2025' strategy, resembling the German model, has forged ahead with strategic investments in a set of strategically related technologies, including deep learning, AI and quantum computing. In a workless industrial society, what are the possibilities for education when the link between education and labour is broken once and for all?

Higher education in an era of automation

It is not clear what function higher education will serve in the era of final automation once the vocational justification is removed. As a thought experiment it is useful to contemplate: *What is the purpose and function of education in the age of final automation once labour as a set of processes and as a political category has disappeared?*

One traditional response: Once the purely utilitarian options become more difficult to pursue and the general ethos of education for work begins to falter, other possibilities will depend upon *creative policy work*:

- • The expansion of the ‘third sector’ based on corporate-government-community partnerships;
- • The revival of DIY job cultures;
- • The growth of small businesses and self-employment in food, hospitality and other industries;
- • Education for design, media and creative arts that encourage a raft of new platform initiatives;
- • Intensification of all competitive talent programmes in sport, fashion and entertainment;
- • Large-scale sponsored survivalist and cooperative living programmes;
- • The cultivation of traditional arts and crafts;
- • Increasing development of second-hand markets and waste management industries;
- • An environmental education that monitors resource depletion and water and air quality at the local level;
- • And, perhaps, the revival of the liberal arts education with an emphasis on collective processes that aid citizenship and imaginative citizenship projects.

In this response that we might call ‘community’ or ‘third sector’, there are many possibilities that will develop out of existing initiatives and practices. In effect, this will signal an ethos of the recognition of the *diversity* of work practices and concerns about the *quality of work*.

The second response that is the easy and unthinking neoliberal typical response is education for digital skills to equip kids (and adults) for the (shrinking) digital economy – more programmers, more internet developers, more entrepreneurial platform providers, ‘digital literacy’, more ed-tech, more technicians, more gamers, etc.

This strategy relies on the largesse of the new trillion-dollar digital providers (please come

here! We offer tax advantages!). It is a strategy that buys into the forces that create the dangers of a labourless and workless society, hastening the prospect of unpaid and free labour while further aggrandising the status of the 'big five'.

Education becomes a digital factory or warehouse serving the digital economy, probably with an emphasis on digital job creation and use of platforms to launch new digital services and apps. This is the no frills neoliberal response that settles on the easy answer.

According to this option, some policy pundits will ask 'why not simply let the big information utilities run education', either privately or in conjunction with the state? The philosophy is that we live in a digital world, we are digital citizens, let's make digital boys and girls so they can grow up to be digital adults.

This is not to say that the digital response is not realistic. It is probably a strong and likely response, but philosophically minded policy scholars need to come to grips with the larger questions about forms of digital labour and questions about digital citizens and digital beings (or rather digital becomings).

Ultimately, this option depends for its credibility and legitimacy on investigating and critiquing bio-informational capitalism – is it a new kind of paternalistic capitalism that envelops its workers from 'cradle to grave'?

Machine-human learning

The third response is focused on augmented intelligence and uses machine-human learning and controls that, directed by humans, AI can achieve data analysis and calculations at the speed of light feeding back the data in a managed form with deep configurations and patterns that would take teams of humans many months, if not years, to complete.

This accommodation works as an augmented system that combines elements from both worlds – the data analytical tools of machine learning and deep learning on the one hand and the creative intelligence of design engineers or technologists on the other.

It tries to achieve a new comfortable working relationship between AI and human beings in the world of work and promotes or profiles this sector as a preferred future that means making the necessary social and political arrangement for the harmonising of humans and machines with legislation to regulate the ethical issue of who controls whom and, of course, data management and privacy issues.

This area requires more research to examine models of harmonisation at the firm and individual level. One aspect might be that the augmented intelligence option is pursued and supported if it shows the generation of new forms of employment.

The fourth response is based on the assumption that the relationship between labour and payment is historically broken, or about to be broken, and that, in particular, there is no guaranteed ongoing relationship between education, labour and wages or salary.

When the policy scholar confronts the possible harsh reality of this event (broken history) only then will we learn how much of the modern world economy and its psychology is tied to the concept of labour. (For the moment we will use labour and work as interchangeable, knowing that Arendt makes an important distinction).

This broken economic and psychological link will not happen immediately but will happen first for large groups of unemployed youth.

Permanent unemployment

Already 20%-30% of youth experience unemployment in some Mediterranean economies. But what would it be like for such groups to experience unemployment as a permanent condition?

This profound existential question that refers to identity issues and also to societal institutions must be rethought at a philosophical level.

Only if this question is treated philosophically can 'we' workless peoples of the future then begin to hypothesise the other positive side of unemployment – and not just the old 1970s notion of 'the leisure society' where benignly machines do all the drudgery work, leaving us humans to pursue the higher creative arts.

In this third response, it makes sense first to examine the influence of labouring and working as a concept that controls the household domain of everyday survival, of going to work or working from home.

The concept defines our everyday life – our working lives, but also our family life, including household arrangements, meals, homework, weekends etc. So much of our individual identities is tied to the concept of labour.

Some thinkers define us – our very being in its essence – in terms of labour. If this was ever true it may have been true of the industrial age.

In the advanced knowledge economy of convergent digital technologies driven by digital giants, our nature is more plastic and tied to the social recognition of new media ecologies.

Universities may well have to revive the concept of labour studies and take seriously their role in relation to the changes of the global scale adoption of intelligent systems that have the power to restructure internal research, teaching and administrative functions of the university as well.

*Dr Michael A Peters is a distinguished professor in the faculty of education, Beijing Normal University, No 19, Xin Jie Wai Street, Haidan District, Beijing, China, 100875.
Email: mpeters@bnu.edu.cn*

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