

EDITORIAL

Ben Roberts and Patrick Crogan

This special issue of *New Formations* explores contemporary cultural anxiety about new forms of automation. Automation anxiety, in the widest sense, could perhaps be applied to cultural debates and concerns about machines from the creation of factories at the beginning of the industrial revolution to the implementation of fully-automated manufacturing in the 1980s. Coinage of the contemporary term automation, however, is usually attributed to Ford vice-president Delmar S. Harder in 1948.¹ Harder's neologism became the topic of widespread debate in the 1950s and 1960s, taking over from 'mechanisation' as the object of concern (and of utopian dreams) regarding the machinic substitution of human labour. Automation in the postwar era meant something more systematic and extensive than mechanisation: the creation of closed feedback loops to control whole production processes, as well as the addition of electronics and digital computers to mechanical solutions. Most importantly, the term automation was applied not just to actually existing developments. When Harder said that 'what we need is more automation' he was referring to relatively modest improvements to the way worked materials were transferred from process to process on Ford's production line (p149). But the term was quickly taken up to refer to future technological developments, developments which promised – or threatened – dramatic changes in both the quantity and quality of tasks that machines could accomplish. This sense of automation as something *to come*, an essentially speculative dimension of technological progress became inseparable from a certain anxiety about the imagined future and its implications for work and leisure.

From self-driving cars, through high-frequency trading to military drones and organised swarms of shelf-stacking robots our era is seemingly characterised by a new wave of automation. The wider topic of automation is a pressing subject with various existing academic responses, particularly in relation to the future of work, the automation of warfighting, and the algorithmic management of social existence.² The focus of this special issue is to address, as a topic in its own right, the cultural and social anxiety generated by these new forms of computational automation. Automation anxiety here can equally imply, for us, automation fever: instrumental or utopian demands that 'what we need is more automation'.

The current 'rise of the machines' is characterised by the replacement of complex cognitive tasks and human decision-making by algorithms, machine learning and other computational techniques. Automation anxiety concerning these developments is evident in many contemporary public debates and political interventions. In their 2013 working paper 'The Future of Employment: how susceptible are jobs to computerisation', Carl Benedikt Frey

1. Margaret Wiley Marshall, "'Automation' Today and in 1662", *American Speech*, 32, 2, 1957, pp149-151.

2. Grégoire Chamayou, *A theory of the drone*, J. Lloyd (trans.), New York, The New Press, 2015; Carl Benedikt Frey and Michael A. Osborne, *The future of employment: how susceptible are jobs to computerisation*, Oxford Martin Programme on Technology and Employment, Oxford, Oxford Martin School, University of Oxford, 2013; Antoinette Rouvroy and Thomas Berns, 'Gouvernementalité algorithmique et perspectives d'émancipation', *Réseaux*, 177, 2013, pp163-196. (Hereafter *Gouvernementalité algorithmique*).

3. Carl Benedikt Frey and Michael A. Osborne, *The future of employment: how susceptible are jobs to computerisation*, Oxford Martin Programme on Technology and Employment, Oxford, Oxford Martin School, University of Oxford, 2013.

4. Melanie Arntz, Terry Gregory and Ulrich Zierahn, *The Risk of Automation for Jobs in OECD Countries*, OECD Social, Employment and Migration Working Papers, Paris, OECD, 16 June 2016, p5 <https://www.oecd-ilibrary.org/social-issues-migration-health/the-risk-of-automation-for-jobs-in-oecd-countries_5jlz9h56dvq7-en> (accessed 4 July 2018).

5. Tyler Cowen, *Average Is Over: Powering America Beyond the Age of the Great Stagnation*, London, Penguin, 2013.

6. Martin Ford, *Rise of the Robots: Technology and the Threat of Mass Unemployment*, London, Oneworld Publications, 2015; Jerry Kaplan, *Humans Need Not Apply: A Guide to Wealth and Work in the Age of Artificial Intelligence*, New Haven, CT, Yale University Press, 2015.

7. Paul Mason, *Postcapitalism: A Guide to Our Future*, London, Allen Lane, 2015.

and Michael A. Osborne tried to predict the impact of recent developments in machine learning on the automation of different occupations.³ Their analysis arrived at the startling conclusion that 47 per cent of current jobs in the US could be performed by computers within the next two decades. Frey and Osborne's work was much quoted and widely disseminated publicly. In September 2015 the BBC applied their findings to UK occupational data and created a web page which provided searchable estimates of its readers' jobs being automated. According to this web page, train and tram drivers had a 68 per cent chance of having their role performed by computers in the next two decades. On the other hand, the chance of 'higher education teaching professionals' being replaced was only 3 per cent.

Frey and Osborne's analysis relied on a workshop held at Oxford University Engineering Sciences Department where machine learning researchers were asked to classify the likelihood of occupations being automatable in the near future. This classification was then used to build a predictive model of the likely attributes of automatable jobs and applied it to information about job roles in O*NET, an occupational database originally created for the US Department of Labor. Both elements of Frey and Osborne's approach have come under sustained critique since 2013. As Melanie Arntz, Terry Gregory and Ulrich Zierahn argued in a working paper for the OECD in 2016, Frey and Osborne rely on engineering experts to judge the automatability of occupations, despite good evidence to suggest that such experts tend to overestimate the potential of new technologies. Moreover by applying the resulting insights to *occupations* rather than to more narrowly defined *tasks*, they elide the fact that 'occupations labelled as high-risk occupations often still contain a substantial share of tasks that are hard to automate'.⁴

If the actual economic impact of automation is rather uncertain, the idea that machine learning and other forms of computation represent a distinctive new threat to the future of employment has taken a firm hold in public culture. Tyler Cowen's *Average is Over* (2013) depicts a dystopian future in which the job market is divided between a highly educated and skilled elite capable of harnessing automation for personal wealth creation and a wider mass who are consigned to low paid work.⁵ Other accounts see in this new wave of computerisation the potential for a productive redefinition of the relationship with work. Futurists Martin Ford in *Rise of the Robots* (2015) and Jerry Kaplan in *Humans Need Not Apply* (2015) propose to respond to the automation of work through the creation of a universal income.⁶ In a more radical version of this thesis, postcapitalism, as charted by Paul Mason, posits automation as the basis of a technologically-driven, non-market successor to capitalism.⁷ Writers such as Nick Srnicek and Alex Williams in *Inventing the Future: Postcapitalism and a World Without Work* see in automation a way of redefining the goals of the left. Making common cause with Silicon Valley libertarians (and left libertarians such as Philippe van Parijs) they call for a Universal Basic Income (UBI) as a response to, and driver for, the automation

of work.⁸ The 2020 US Democratic primary candidate Andrew Yang adopted UBI in his campaign platform, arguing that ‘automation and AI are going to have a huge impact on the American workforce’.⁹

As Caroline Bassett and Ben Roberts explore in this issue, in many ways current debates and concerns about computational automation and the end of work are a recurring feature of the postwar era. The cyclicity of these debates suggests that they are not simply driven by technological developments but by long standing cultural anxieties. Bassett and Roberts ask what we can learn from previous waves of automation anxiety and, in particular, the history of thinking about automation on the left.

Andrew Goffey argues that contemporary anxieties about automation can best be understood by moving away from the ‘selective framing’ of automation in terms of artificial intelligence or robots. Instead we need to think automation more in terms of the ubiquitous global infrastructures of computation. The concept of infrastructure here denotes not simply a technical system but also the power relations embedded within it, putting into question the relation between the technical and non-technical. Goffey argues that computational infrastructures can be understood as transforming both governmentality and subjectivity, leading to a micropolitical understanding of automation. Many of these arguments are also addressed by Patrick Crogan in his contribution. Crogan shows how Bernard Stiegler’s account of automation in *Automatic Society* challenges the influential ideas around algorithmic governmentality advanced by Antoinette Rouvroy and Thomas Berns.¹⁰ Rouvroy and Berns argue that algorithmic governmentality leads to a ‘new digital regime of truth’ (*Gouvernementalité algorithmique*, p65). For Stiegler, however, according to Crogan, the digital and computational mediation of existence is more a regimen than a regime: it destabilises and toxically undermines the old truths and values without itself providing a new form of truth. Dominic Smith examines contemporary automation anxiety as a challenge to philosophy of technology. Smith sees in many current accounts, including that of Srnicek and Williams mentioned above, a new version of the transcendental tendency to reify technology. Such speculative theories of automation and its transformative political potential tend to elide the complex praxis of particular automated technologies in their social and cultural context. On the other hand Smith also perceives an ‘automation complacency’ in the anti-transcendentalism of much current philosophy of technology: the so-called ‘empirical turn’ from a ‘global’ to ‘local’ understanding of technology may be unable to address coherently contemporary automation anxiety as a more general societal issue.

As well as long-standing questions concerning automation and work, there are also new contemporary anxieties around automation, particularly in relation to the automation of human attention. In this issue Beatrice Fazi argues that, in order to understand computational automation’s challenge to, and transformation of, the nature of attention we need to move beyond

8. Nick Srnicek and Alex Williams, *Inventing the Future: Postcapitalism and a World Without Work*, London, Verso, 2015; Philippe van Parijs and Yannick Vanderborght, *Basic Income: a radical proposal for a free society and a sane economy*, Cambridge, Massachusetts, Harvard University Press, 2017.

9. Quora, ‘Automation Will Dramatically Change the Workforce. Andrew Yang Has A Plan to Bridge the Gap’, *Forbes*, 2019 <<https://www.forbes.com/sites/quora/2019/09/27/automation-will-dramatically-change-the-workforce-andrew-yang-has-a-plan-to-bridge-the-gap/>> (accessed 20 November 2019).

10. Bernard Stiegler, *Automatic Society: Volume 1: The Future of Work*, Cambridge, UK ; Polity Press, 2016.

11. Hamid R. Ekbil and Bonnie A. Nardi, *Heteromation, and Other Stories of Computing and Capitalism*, Cambridge, MA, MIT Press, 2017.

projecting human modes of attention onto machines. Fazi urges us to think automated attention in its own terms, as something that exists alongside us but is also relatively autonomous. Only then can we ask 'how machines select and order information not with us, but for us'. Yves Citton also interrogates the automation of attention and particularly what he calls 'exo-attention', where attentional tasks are performed by technological devices. For Citton the automation of attention must be considered alongside what Hamid Ekbia and Bonnie Nardi call 'heteromation', the algorithmic transformation of waged labour into precarious click work.¹¹ Citton argues that we need to understand the threat posed by automation as a transformation of the *ecology* of attention. In his contribution to this issue, Gerald Moore seeks to rethink the automation of attention as – to use Bernard Stiegler's term – a period of technological maladjustment resulting in a 'generalised addiction'. For Moore our addiction to automated forms of attention needs to be considered in the context of a long history of 'addiction epidemics' from Plato's Athens to fake news.

Another type of anxiety arises out of the increasing use of algorithms and machine learning in law enforcement and military action. In this issue, Dean Wilson reflects on the rise of predictive policing systems such as PredPol and their impact on law enforcement. His article examines predictive policing in the context of the postwar history of the scientific management of policing in the US and the development of new systems of communication, command and control. Predictive policing appears novel, offering a science fiction imaginary of 'just-ahead-of-time law enforcement that anticipates and neutralizes crime and disorder', but in reality builds on a plethora of existing approaches, strategies and statistical data. At the same time it introduces new elements of concern through the introduction of opaque algorithmic decision-making and the potential privatisation and commodification of police decision-making. Cormac Deane examines fictional account of automation and surveillance through the lens of the control room, as seen in films and television series such as *Quantico* and *Spooks*. The screens and, particularly, the soundscapes of the control room provide a way to analyse the ways in which automated forms of power are imagined, and anxieties about their effects and effectiveness are mediated. Deane emphasises the role of nomic mapping in control systems as a way of transforming meaningful information into sound.

The work in this special issue developed out of an AHRC-funded network, which explored methods the humanities could use to map and understand both those anxieties and the opaque computational decision-making that enables many contemporary forms of automation. We have not aimed here to provide a comprehensive account of automation, its promise, or its discontents but rather to point to ways in which debates about automation may be usefully mapped, correlated and rethought.