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The future of work: 47% of jobs could be overtaken by computers in next 10-20 years

Renowned expert, Michael Osborne, Associate Professor in Machine Learning at Oxford University, recently visited Australia warning that the rapidly increasing use of computers and robots in the workplace will dramatically change the face of employment in the future. In fact, in a 2013 paper, Osborne and his Oxford University colleague, Carl Benedikt Frey, predicted that up to 47% of jobs in the United States could disappear within two decades due to automation and computerisation.

At the Future of Work Conference at Queensland University of Technology, Osborne told attendees that occupations in demand in the future will include not only skilled jobs in new high-tech industries, but also careers requiring high levels of creativity, such as song writers, fashion designers and choreographers; those requiring human dexterity, including surgeons and dentists; and those requiring the 'human touch', such as event planners, the clergy and funeral attendants. As Osborne told ABC Radio, "the more creative you are, the more safe you are from automation".

The people least likely to be affected by automation, therefore, are those with the highest levels of education and skill; that is, those holding at least a bachelor's degree or with the skills to demand higher salaries. Analysing the American and British economies, Osborne and Frey predict that these jobs will mainly exist in the fields of education, law and the arts; business, management and finance; computing, engineering and science; and healthcare. In contrast, the 47% of American workers and 35% of British workers at the highest risk of being replaced by robots work in office and administrative support, sales, service, production and transportation.

The replacement of jobs with technology is not a new concept. In previous generations, it was the Industrial Revolution that led to a dramatic move away from agricultural labour to manual labour, but since the 1960s it has been the "Computer Revolution" that has impacted heavily on low-skill and routine jobs — such as telephone operators, typists and factory hands — replacing them with computers, robots, self-service technology, bar-code scanners, cash machines and other internet and e-commerce initiatives. Frey and Osborne's 2013 report predicts that telemarketers, insurance underwriters, accountants, data entry operators, clerks, umpires, waiters, drivers and jewellers are just some of the 170 jobs with a 90% or more probability of being computerisable in the future.

Osborne does point out, however, that many of these people will transfer to careers with a low risk of automation, where social intelligence, creativity and dexterity are required. Others will gain jobs in the new industries that will be created, leading to increased demand for highly-skilled technicians and university-educated professionals in areas such as renewable energies and nanotechnology. Encouragingly, Frey and Osborne believe that the three "bottlenecks to automation" — creativity, social intelligence and dexterity — will ensure that, despite rapidly-advancing automation, humans cannot be completely replaced.

Research summary for principals

Conclusion

Frey and Osborne conclude that those with high educational attainment and high wages are unlikely to find themselves out of a job due to computerisation. On the flipside, low-skill workers will need to acquire creative and social skills in order to “win the race” against rapid advances in technology which could see nearly half of American jobs swallowed up by robots and computers in the next two decades. The challenge, therefore, for educational institutions is to provide our young people with the skills and knowledge to compete in an increasingly high-tech, high-skill digital age where creativity, social intelligence and dexterity will act to future-proof their careers.

Note: The full list of 702 occupations, categorised by Frey and Osborne from least likely to most likely to be computerisable, is contained in the appendix to their 2013 report, available for download from:

http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

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