The Risks and Rewards of Automation

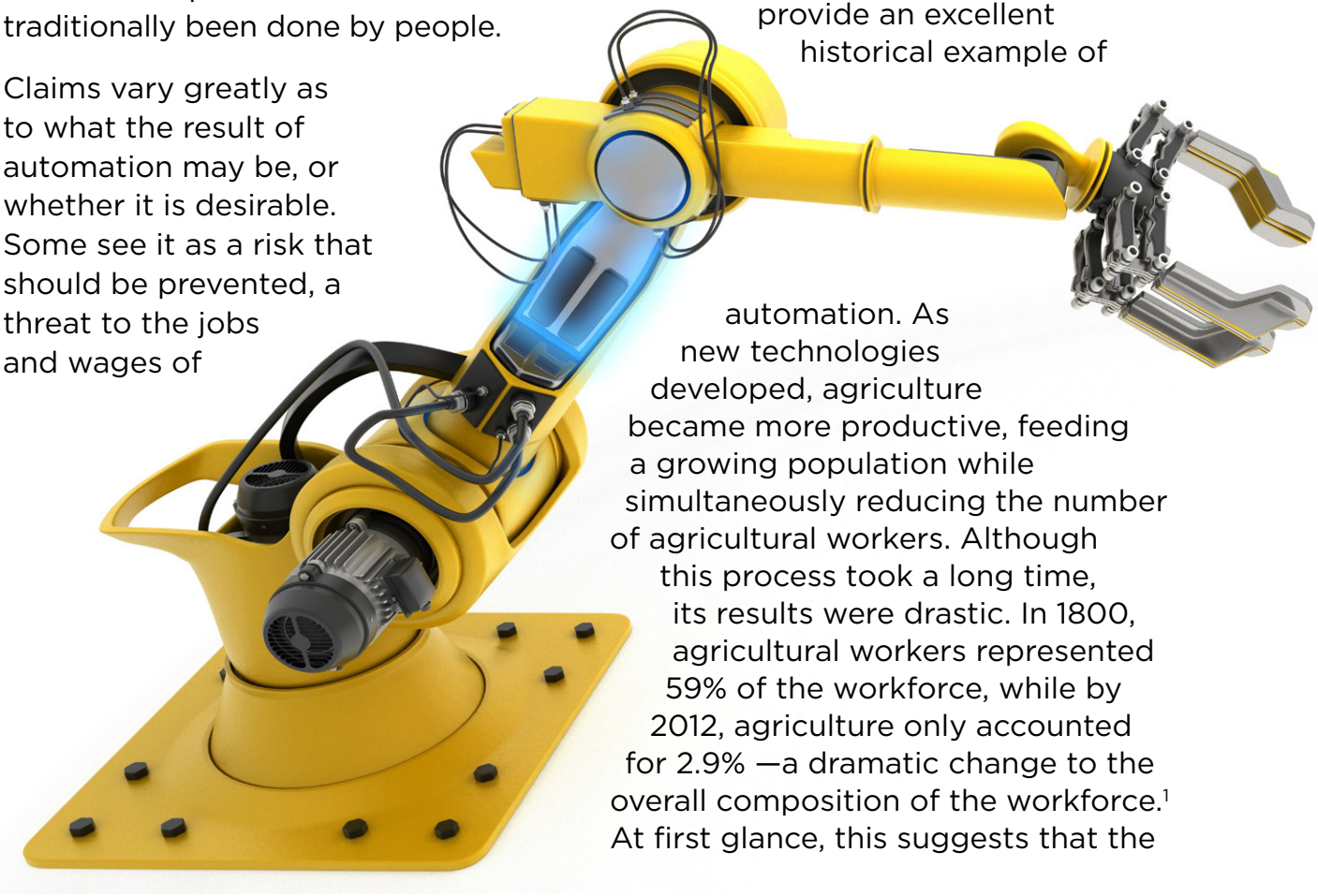
by Brennan Sorge

It has long been the case that technological change has played an important role in shaping economic development. This role has often been varied, impacting the economy in different ways and to differing degrees. Today, new technologies promise to take an important, and significantly expanded, role in our economy. The impact will be broad, ranging from self driving vehicles and automated checkouts to the innumerable potential applications of advancing computer technology. Although these technologies are very different from each other, they all share one characteristic: they generally result in automation, which I define simply as the use of machines to perform tasks that have traditionally been done by people.

Claims vary greatly as to what the result of automation may be, or whether it is desirable. Some see it as a risk that should be prevented, a threat to the jobs and wages of workers, and the economic wellbeing of society. Others see it as a means of economic progress, allowing workers to move to newer, better jobs, and allowing the whole economy to grow more productive as a whole.

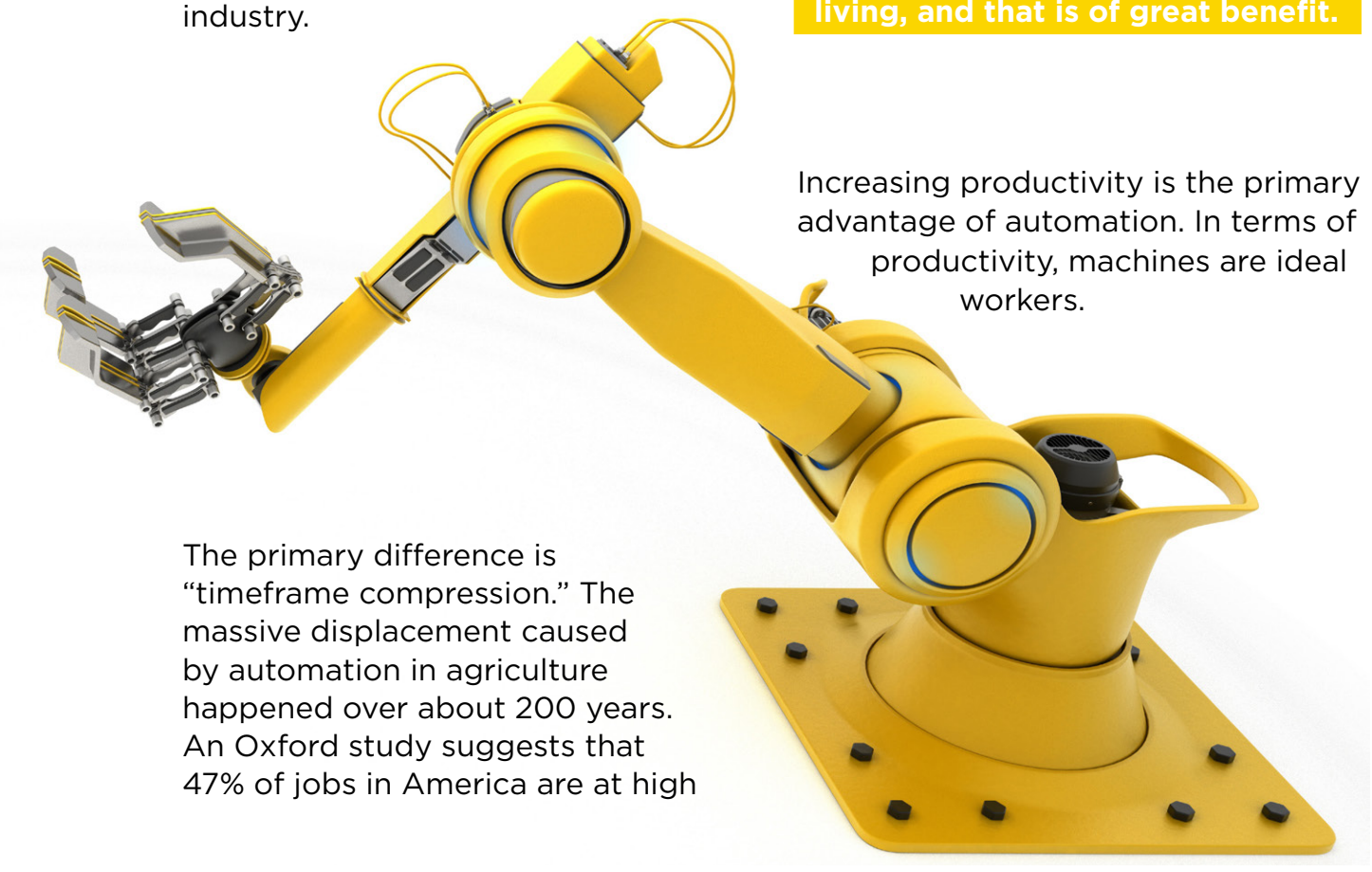
In 1800, agricultural workers represented 59% of the workforce, while by 2012, agriculture only accounted for 2.9%—a dramatic change to the overall composition of the workforce.

However, even though the technologies under discussion are new, automation itself is not. Technological advances in the agriculture industry provide an excellent historical example of automation. As new technologies developed, agriculture became more productive, feeding a growing population while simultaneously reducing the number of agricultural workers. Although this process took a long time, its results were drastic. In 1800, agricultural workers represented 59% of the workforce, while by 2012, agriculture only accounted for 2.9% —a dramatic change to the overall composition of the workforce.[1] At first glance, this suggests that the



concerns raised about automation are correct, and that automation will inevitably result in greatly increased unemployment. On further analysis, this view is shown to be mistaken. While it is true that advances in agriculture displaced much of the workforce, mass unemployment was not the result. Instead, workers previously employed in agriculture moved into new jobs in other areas of the economy. Ultimately, this displacement was a positive development, as it freed up workers to be employed in new, emerging industries and contributed to growth in industries all across the economy.

However, today's automation will likely be different in some important ways from the changes that took place in the agricultural industry.



The primary difference is "timeframe compression." The massive displacement caused by automation in agriculture happened over about 200 years. An Oxford study suggests that 47% of jobs in America are at high risk of being automated, and, unlike the 200 years it took for a similar level of change in agriculture, Oxford offers a timeframe for this change of a few decades.[2] This finding is similar to that of a 2016 World Bank report which offers a wider view of technological changes and some of their effects on our societies. Like the Oxford Report, the World Bank report considers vast portions of the workforce to be at risk for replacement.[3] However, the World Bank also points to the large increases in productivity that accompany these technological advancements.

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Increasing productivity is the primary advantage of automation. In terms of productivity, machines are ideal workers.

They don't need pay or benefits, and they are able to work without rest. Despite the large levels of displacement predicted in the workforce, automation will allow us to produce many more goods, and at a much lower price. Given lower production costs, along with rapidly expanding supply, consumers will see prices drop. Automation has the power to significantly decrease the cost of living, and that is of great benefit.

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There are important questions we should ask when evaluating modern automation. Will it look like previous technological advances (as in agriculture), or will it look quite different? The answer is likely found somewhere in the middle. Modern automation will undoubtedly happen at a much faster pace, but with similarly large increases in productivity. The other questions include: how do we respond, what policies can government offer, and what actions can individuals take in order to adapt to the changes automation will bring. Or more simply, what should be done to manage this radical change? If some of the current estimates on the effects of automation are correct, than this is one of the most important economic concerns in a long time. It's also a question that has yet to be fully answered.

Brennan Sorge is currently an Economics and Business student at Thompson Rivers University. His interests centre on the effects of law and policy on the economy, and he hopes to act on these interests in further study of both economics and law.

ENDNOTES

1 1 Max Roser (2016), *Agricultural Employment*, Our World in Data. <https://ourworldindata.org/agricultural-employment/>, as of June 12, 2017.

2 Carl Benedikt Frey and Michael A. Osborne (2013), *The Future of Employment: How Susceptible Are Our Jobs to Computerization?* Oxford University. <http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf>, as of June 12, 2017.

3 World Bank (2016), *Digital Dividends: World Development Report 2016*. World Bank Group.<http://documents.worldbank.org/curated/en/896971468194972881/pdf/102725-PUB-Replacement-PUBLIC.pdf>, as of June 12, 2017.