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**Workforce of the future**

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A New York Post December 2016 cover story titled “The End of Jobs”<sup>1</sup> likely grabbed the attention of the workforce as technological advances get closer and closer to approximating human skills. The New York Times has stated that automation is a much more significant threat to employment than globalization and outsourcing overseas<sup>2</sup>. So is this it? Have we reached the technological singularity and rendered ourselves obsolete?

Well, not quite yet. Yes, it’s true that we are living in a time of exponential growth and increasingly rapid technological innovation. And there are profound implications for structuring the workforce of the future. But the reality is far more nuanced—and promising—than the headlines would suggest.

Consider the parallels between today’s technological landscape and the Industrial Revolution that began in the late 18th century. While many manual tasks of this earlier era were replaced with efficient machine alternatives, this did not simply eliminate jobs and leave workers idle. It also inspired creative innovation and spurred the growth of new industries. The displaced farmers and craftspeople supplied the workforce for factory assembly lines and countless textile factories. They became our coal miners, the builders of our growing cities and our railroads, and much later our call center agents. As recently as 1900, 41% of US workers were employed in agriculture. Now that figure is closer to 2% and food is in ever greater supply<sup>3</sup>. While our predecessors two centuries ago surely experienced angst and worry about their role in the dramatically changing world around them, the transformation they witnessed ultimately gave rise to new kinds of work that they could probably never have foreseen.

The same is true today. Yes, companies around the world, in a variety of industries, are using robots to do work that would have traditionally been done by humans. Take Amazon, which installed 30,000 Kiva Robots instead of warehouse workers, saving \$22 million per warehouse<sup>4</sup>. Companies in Japan are already installing robots to assist with bank transactions, mobile phone sales, and hotel administration<sup>5</sup>.

As you might expect, in general it is jobs that involve manual or repetitive tasks—including administrative, manufacturing, and construction work—which are at greatest risk for being replaced by automation. Where jobs demand predictability, routine, and the completion of tedious tasks, machines may be better suited than humans. Machines are tireless and do not collect an hourly salary.

1. Covert, James, Linda Massarella and Bruce Golding. “The End of Jobs: Amazon introduces next major job killer to face Americans.” *New York Post* 05 Dec 2016.

2. Miller, Claire Cain. “The Long-Term Jobs Killer Is Not China. It’s Automation.” *The New York Times* 21 Dec 2016.

3. Dimitri, Carolyn, Anne Efland, and Neilson Conklin. “The 20th Century

Transformation of U.S. Agriculture and Farm Policy.” United States Department of Agriculture Economic Information Bulletin Number 3 (June 2005).

4. Bhattacharya, Ananya. “Amazon is just beginning to use robots in its warehouses and they’re already making a huge difference.” *qz.com*. Quartz, 17 June 2016

5. “Japanese bank deploying robots to deal with clients,” *Taipei Times* 06 Feb 2015.

Returning commercial production to the United States has been a popular topic in recent political discourse. However, as author Martin Ford points out in *Rise of the Robots: Technology and the Threat of a Jobless Future*, many of these factory roles have been of automated and their return will result in no additional employment<sup>6</sup>. With cost effective and efficient electronic alternatives available, former factory workers are likely in no better position to keep their jobs if companies are based locally.

On the other hand, other job types complement the “rise of the machines” and their ranks are growing. Creative jobs and those that require sophisticated cognition are not going anywhere soon, and roles in UX, app design, and engineering that didn't exist 20 years ago are becoming increasingly important to drive the latest technological solutions. Business and finance, management, computing and math-related roles that can harness the power of computing but require human oversight, are seeing growth as well. While specific jobs may not return, new work will need to be done. As a 2013 Oxford study concluded, “as technology races ahead, low-skill workers will reallocate to tasks that are non-susceptible to computerization”—and will need to develop new creative and social skills to be up to the job<sup>7</sup>.

These dramatic changes present an opportunity to rethink how we conceive of work itself. If resources are freed from basic tasks, where can we redeploy their skills and knowledge? How do we harness technology thoughtfully, rather than bemoaning the loss of jobs due to automation? When viewed through this lens, automation does not close doors, but rather opens up a world of possibilities for tomorrow's workforce.

6. Ford, Martin. *Rise of the Robots: Technology and the Threat of a Jobless Future*. Basic Books, 2015.

To remain competitive, business leaders must better prepare for this ever-changing technological landscape. In 1965, Intel cofounder Gordon Moore observed that the number of transistors per square inch on integrated circuits had doubled every year since their invention. “Moore's Law” set a standard for the speed of technological development that remained steady from 1975 to 2012 and has only tapered off slightly since. Considering this exponential pace, it's almost remarkable that corporate structures have changed so relatively little overall.

For large corporations to integrate available technologies and leverage the changing workforce in order to meet the shifting challenges of the new environment, they need to innovate at the edge, identifying areas of the organization that require greater agility and disrupting them with new ways of working. It's also important to adopt a more collaborative mindset and consider realigning existing organizational structures—which are often outdated—into self-managed, networked teams.

We don't know exactly how business processes will need to be reengineered to accommodate intelligent automation, but we can assume that for now the mechanization will be largely limited to transactional steps. Meanwhile, the expertise-based work that remains to humans will likely require a lot of teamwork to accomplish. Companies that invest now in agile team structures will position employees to thrive in a world of dynamic engagement.

OK. You get it. Robots may not literally be stealing our jobs, but things are changing—a lot. If you position your organization to take advantage of the opportunities presented by the workforce of the future, when the robots come, you'll be ready.

7. Frey, Carl Benedikt and Michael A. Osborne. “The Future of Employment: How Susceptible Are Jobs to Computerisation?” Oxford Martin Programme on the Impacts of Future Technology, 17 September 2013 (p. 45).



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