

# New England Journal of Public Policy

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Volume 34  
Issue 1 *The Future of Work*

Article 2

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7-10-2022

## Editor's Note

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### Recommended Citation

O'Malley, Padraig (2022) "Editor's Note," *New England Journal of Public Policy*. Vol. 34: Iss. 1, Article 2.  
Available at: <https://scholarworks.umb.edu/nejpp/vol34/iss1/2>

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## **Editor's Note**

**Padraig O'Malley**

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**T**he COVID-19 pandemic resulted in huge disruptions to the way we work and educate our children. Remote working and learning fundamentally changed the workplace and the school room, the relationships between coworkers, workers and their bosses, teachers and their pupils, and pupils themselves. The social and economic consequences are profound and will shape how we live and work for decades to come.

The disruptions were revolutionary. Virtually overnight, the world of work as we knew it underwent seismic changes; patterns of work and employment that characterized most of the twentieth century and the opening decades of the twenty-first became redundant. Skyscrapers of office space became lonely sentinels of silence; streets once thronged with workers going to and from lay empty. Post pandemic there has been no return to pre-pandemic norms. The question is whether these empty spaces will be filled again and the network of retail outlets that serviced them closed permanently.

The pandemic, according to the *Economist*, “destroyed millions of jobs, causing a drop in employment that was 14 times bigger than the one after the financial crisis a decade earlier.”<sup>1</sup> In many countries unemployment during the pandemic rose to levels last seen in the 1930s with low-skilled workers bearing the brunt of the downturn. It exacerbated inequalities. “Essential workers” had to travel to and from their workplaces and thus were exposed to the virus and died in greater numbers than the better-off workers who worked from home. In the United States, 40 million jobs were lost at the peak of the pandemic; some economists estimate that 42 percent will never return, mostly in fields where a machine has more efficiently replaced the laid-off worker.<sup>2</sup>

Post pandemic, tens of millions have not returned to work, causing a tight labor market, supply-chain bottlenecks, and a surge in inflation, the highest in forty years. In the United States the pandemic exacerbated work trends in the making for decades: automation, artificial intelligence, and robotization were already changing traditional models of work and education.

The essays in this special issue of the *New England Journal of Public Policy* on the topic the Future of Work were solicited by the American Federation of Teachers for a conference on the subject it is jointly hosting with the Massachusetts Institute of Technology on July 13, 2022.

Unfortunately, I tested positive for COVID-19 in Dublin, Ireland, and have been self-isolating there. I have not been able to write a full Editor's Note. One will be added when I recover. I have, however, prepared a preliminary review of trends that existed before the pandemic that provides a context for a better understanding of the articles in this volume.

The International Labour Organization's 2013 report *Global Employment Trends for Youth* is subtitled *A Generation at Risk*.<sup>3</sup> The report concludes that the youth employment crisis at that time was unprecedented in modern history: “Young people . . . continue to be almost three times more likely than adults to be unemployed, and the upward trend in global unemployment continues to hit them strongly.”

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In developing countries, the report points out, the youth employment challenge was not merely unemployment but also poor-quality employment at poverty levels. Predictions for the future showed these trends continuing and, in some instances, worsening. Current studies of youth in a number of highly developed countries show a growing fear of the future.

In developed capitalist countries, economies can no longer create jobs to absorb educated youth coming into the labor market. Industry is increasingly capital intensive in the industrial and service sectors—private and public technological advances are making labor redundant; the promise of the future is not that there will be more jobs but that robots with cognitive skills and learning abilities will within a generation make many highly skilled professions obsolete and eliminate the need for labor in many sectors of the economy.

An investigative report by the Associated Press in 2013 describes the toll “five years after the start of the Great Recession” as “terrifyingly clear.”

Millions of middle-class jobs have been lost in developed countries the world over. And the situation is even worse than it appears. Most of the jobs will never return and millions more have vanished as well. . . . They are being obliterated by technology. Year after year the software that runs computers and an array of other machines and devices becomes more sophisticated and powerful and capable of doing more efficiently tasks that humans have always done. For decades science fiction warned of a future where we would be the architects of our own obsolescence, replaced by machines; an Associated Press analysis finds that that future has arrived.”<sup>4</sup>

In 2015, Reuters reported that, according to the Boston Consulting Group, robots were performing “roughly 10 percent of manufacturing tasks that can be done by machines.” That number was projected “to rise to about 25 percent of such ‘automatable’ tasks by 2025.”<sup>5</sup> In a seminal paper, “The Future of Employment: How Susceptible Are Jobs to Computerisation?,” published in 2013, Carl Benedikt Frey and Michael Osborne draw on new statistical techniques to calculate the likely impact of technological change on 702 occupations, ranking them from 1 (will survive automation) to 702 (fully automated).<sup>6</sup> “Human-to-human interaction and judgment,” they report, “is in demand, routine tasks are not.” In the next two decades, they predict, 47 percent of employment will be “in the high-risk category,” that is, it will be “potentially automatable.” Mainly “less well-paid workers” are “most at risk.” These include service occupations, where most job creation has been in previous decades in the United States. “Computerisation,” they point out, “will mainly substitute for low-skill and low-wage jobs. . . . High-skill and high-wage occupations are the least susceptible to computer capital.”<sup>7</sup> The authors conclude: “Our findings thus imply that as technology races ahead, low-skill workers will reallocate to tasks that are non-susceptible to computerisation—i.e., tasks requiring creative and social intelligence. For workers to win the race, however, they will have to acquire creative and social skills.” In short, the poor will get short shrift, the middle will be vulnerable, and the well-off will do better than ever.

Worker productivity is already increasingly disconnected from wages; the rewards of increased profitability will go to the owners of capital. These trends will become more pronounced as capital (automation) displaces labor. A 2015 OECD study reported that more than half the jobs created in its thirty-four member countries since the mid-1990s have been in “nonstandard work,” which accounts for about a third of total employment.<sup>8</sup> Nonstandard work has widened wage inequality. Workers receive less training and have temporary job contracts. Part-time jobs replace permanent full-time jobs and young people are increasingly finding themselves trapped in the former, easily dismissed, hard to transition to a standard job. Life slowly becomes a matter of adjusting to dead ends, often at enormous social costs.

These developments, underreported and rarely taken into account in government employment policies, which are invariably slave to the paradigm that increasing education, developing a workforce with skills matched with the skills the market is calling for is the key to sustainable employment and reducing unemployment backlogs, but failing to take account of the fact that many of the skills in short demand today may be better replicated by machines within short periods—or by the time young people enter the market place with such newly acquired skills, in essence obviating the need for their labor. Martin Wolf spells out this conclusion in blunt terms in an article published in 2015 that highlights the impact of robotics on society: “We must understand that education is not the magic wand. One reason is that we do not know what skills will be demanded three decades hence. . . . So many low to middle income skilled jobs are at risk that it may already be too late for anybody over 18 and many children.”<sup>9</sup> These developments have profound implications for current employment patterns; make many employment programs for unemployed youth with high school or college education obsolete. These youth, school dropouts from low-income backgrounds, face lifetimes of underemployment, the occasional part-time job, whose meager opportunities lie mostly in informal economies or nonparticipation in any kind of labor economy. Globalization simply reinforces these trends; inequality with countries will continue to increase; inequality among countries will increase. While the impacts of automation have already been felt in the United States and Europe, new advancements in technology also threaten employment in developing countries. For example, stitching together garments was a job for millions of people around the world, and with the deployment of a robotic sewing machine, hundreds of thousands of jobs disappeared. The International Labour Organization estimates that robots will replace 64 percent of textile, clothing, and footwear workers in Indonesia, 86 percent in Vietnam, and 88 percent in Cambodia.<sup>10</sup>

The robotization of production is happening solely in the developed world. China, the world’s largest source of cheap labor, is moving rapidly in that direction. The new World Robotics 2020 Industrial Robots report shows a record of 2.7 million industrial robots operating in factories around the world—an increase of 12 percent over 2018. “Sales of new robots remain on a high level with 373,000 units shipped globally in 2019.” “The stock of industrial robots operating in factories around the world today marks the highest in history,” according to the president of the International Federation of Robotics. This figure marks an increase of 85 percent within the period 2014–2019.<sup>11</sup>

China is shifting to robots, with significant consequences not just for China’s economy but for the world’s. Martin Ford writes: “In 2014, Chinese factories accounted for about a quarter of the global ranks of industrial robots—a 54 percent increase over 2013. According to the International Federation of Robotics, it will have more installed manufacturing robots than any other country by 2017.” A leading manufacturer of home appliances, Midea, he continues, “in the heavily industrialized province of Guangdong, plans to replace 6,000 workers in its residential air-conditioning division, about a fifth of the work force, with automation by the end of the year. Foxconn, which makes consumer electronics for Apple and other companies, plans to automate about 70 percent of factory work within three years, and already has a fully robotic factory in Chengdu.” Pointing out that “automation has already had a substantial impact on Chinese factory employment,” he notes that “between 1995 and 2002 about 16 million factory jobs disappeared, roughly 15 percent of total Chinese manufacturing employment” because robotic production is more efficient and more profitable. This trend will accelerate.<sup>12</sup>

This trend might not be a problem, Ford continues, “if the Chinese economy were generating plenty of higher-skill jobs for more educated workers. The solution, then, would simply be to offer more training and education to displaced blue-collar workers.” He adds:

The reality, however, is that China has struggled to create enough white-collar jobs for its soaring population of college graduates. In mid-2013, the Chinese government revealed that only about half of the country’s current crop of college graduates had been able to find jobs, while more than 20 percent of the previous year’s graduates remained unemployed.

According to one analysis, fully 43 percent of Chinese workers already consider themselves to be overeducated for their current positions. As software automation and artificial intelligence increasingly affect knowledge-based occupations, especially at the entry level, it may well become even more difficult for the Chinese economy to absorb workers who seek to climb the skills ladder.<sup>13</sup>

But reducing the problem of chronic unemployment to one of matching education to skills has a self-perpetuating redundancy to it.

In *Rise of the Robots*, Ford documents how technology threatens professions requiring advanced education, among them law, radiology, and software design. Reviewing the book for the *New York Times*, Barbara Ehrenreich writes: “Tasks that would seem to require a distinctively human capacity for nuance are increasingly assigned to algorithms, like the ones currently being introduced to grade essays on college exams. . . . Computers can now write clear, publishable articles. Wired magazine quotes an expert’s prediction that within about a decade 90 percent of news articles will be computer-generated.”<sup>14</sup> The rates of economic growth required to generate a sufficient demand for jobs to meet incoming cohorts of youth labor are unachievable. Here is the conundrum: High rates of growth are the product of high rates of investment, promotion of capital-intensive activities, and technological innovation. Thus, to achieve the rates of growth that are necessary, that is, higher levels of worker per capita productivity, capital and technology replace labor. Marginalization is the result of human redundancy.

## Notes

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<sup>1</sup> “A Bright Future for the World of Work,” *Economist*, April 8, 2021.

<sup>2</sup> Alana Semuels, “Millions of Americans Have Lost Jobs in the Pandemic—And Robots and AI Are Replacing Them Faster Than Ever,” *Time*, August 6, 2020, <https://time.com/5876604/machines-jobs-coronavirus/>.

<sup>3</sup> *Global Employment Trends for Youth 2013: A Generation at Risk* (Geneva: ILO, 2013), available at <https://www.ilo.org/global/research/global-reports/youth/2013/lang--en/index.htm>.

<sup>4</sup> Bernard Condon and Paul Wiseman, “Many Jobs Will Be Replaced by Technological Innovation,” in *What Are the Jobs of the Future*, ed. Roman Espejo (Farmington Hills, MI: Greenhaven Press, 2015), 11–12.

<sup>5</sup> Lewis Krauskopf, “Cheaper Robots Could Replace More Factory Workers: Study,” Reuters, February 9, 2015, <https://www.reuters.com/article/us-manufacturers-robots/cheaper-robots-could-replace-more-factory-workers-study-idUSKBN0LE00720150210>.

<sup>6</sup> Carl Benedikt Frey and Michael A. Osborne, “The Future of Employment: How Susceptible Are Jobs to Computerisation?,” Oxford University, September 17, 2013, [http://www.oxfordmartin.ox.ac.uk/downloads/academic/The\\_Future\\_of\\_Employment.pdf](http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf).

<sup>7</sup> John Lanchester, “The Robots Are Coming,” *London Review of Books* 37, no. 5 (March 5, 2015), <http://www.lrb.co.uk/v37/n05/john-lanchester/the-robots-are-coming>, quoting Frey and Osborne, “Future of Employment.”

<sup>8</sup> Allan Päll, “Youth Worst Affected by Labour Market Gaps,” *euobserver*, May 29, 2015, <https://euobserver.com/opinion/128896>.

<sup>9</sup> Martin Wolf, “Same as It Ever Was: Why the Techno-optimists Are Wrong,” *Foreign Affairs*, July/August 2015, <https://www.foreignaffairs.com/articles/same-it-ever-was>.

<sup>10</sup> “A Robotic Sewing Machine Could Throw Garment Workers in Low-Cost Countries out of a Job,” *Economist*, May 28, 2015, <http://www.economist.com/news/technology-quarterly/21651925-robotic-sewing-machine-couldthrow-garment-workers-low-cost-countries-out?fsrc=scn/tw/te/pe/ed/madetomeasure>; “SewBot Is Revolutionizing the Clothing Manufacturing Industry,” *Device Plus*, January 13, 2022, <https://www.deviceplus.com/trending/sewbot-in-the-clothing-manufacturing-industry/>

<sup>11</sup> “IFR Presents World Robotics Report 2020,” International Federation of Robotics, September 24, 2022, <https://ifr.org/ifr-press-releases/news/record-2.7-million-robots-work-in-factories-around-the-globe>.

<sup>12</sup> Martin Ford “China’s Troubling Robot Revolution,” *New York Times*, June 10, 2015, <https://www.nytimes.com/2015/06/11/opinion/chinas-troubling-robot-revolution.html>.

<sup>13</sup> Ibid .

<sup>14</sup> Barbara Ehrenreich, “‘Rise of the Robots’ and ‘Shadow Work,’” *New York Times*, May 11, 2015, <https://www.nytimes.com/2015/05/17/books/review/rise-of-the-robots-and-shadow-work.html>.