Automation Is Killing, Creating and Transforming Jobs

*As skills demands rise, employees will work side by side with robots, experts predict*

By Steve Bates

An unstoppable wave of automation is transforming the workplace. While many low-skill jobs are being eliminated, positions demanding higher skills are being created. Most jobs in existence today will add and subtract specific functions as robots and other forms of technology take on routine tasks and free humans to focus more on creative and analytic efforts, according to experts.

It will be a messy transition. It will be particularly painful for workers who lose their jobs and for employers that fail to recognize where automation fits into their operations.

Labor market experts disagree about how many American jobs will be lost to automation. A 2013 report by Oxford University researchers concluded that about 47 percent of total U.S. employment is at risk because of automation. A 2015 report by McKinsey & Co. forecast that automation could eliminate as many as 45 percent of work activities currently performed in the U.S.

Forrester Research predicts that robots—all forms of automation, machine learning and intelligent machines—will replace 16 percent of American jobs but will create the equivalent of 9 percent of them by 2025. That would represent a net loss of 7 percent of jobs.

“This transition has, in fact, been going on for decades,” said a 2016 Forrester report, “The Future Of White-Collar Work: Sharing Your Cubicle With Robots.” For example, software “bots” are already scheduling humans’ meetings online, handling travel request forms and processing employment contracts. Intelligent devices are helping to manage warehouses and parking garages to boost efficiency. IBM’s supercomputer Watson, which defeated humans on the quiz show “Jeopardy,” is working with doctors to improve diagnoses of patients’ diseases.

Among the traditional jobs most endangered by automation are:

* Mail sorters and processors.
* Switchboard operators.
* Office machine operators.
* Travel agents.
* Meter readers.
* Flight attendants.
* Lumberjacks.
* Librarians.
* Newspaper reporters. (We *think* that this article was written by a human.)

Labor market experts point to automation and globalization as the primary reasons for jobs being eliminated or shifted overseas. They note that transformations such as these have happened frequently during history.

“For centuries, humans have feared machines,” said Harry J. Holzer, a professor of public policy at Georgetown University in Washington. “Their worst fears have never turned out to be true.” Experts say that while there are always winners and losers in these transitions, the big picture view is that technology will boost productivity and fuel the economy.

Occupations focusing on human interaction, such as doctor, nurse and massage therapist, will be among those most immune from being replaced by robots. Flesh-and-blood artists, designers, athletes and entertainers also will have a place in society. New jobs attributable to automation will include software developers and managers who can integrate automation technology into existing business models. People will work directly with robots to help them learn new functions or handle their tasks better, though the robots might not look like humans and the human-robot communication will occur mostly via keyboard.

The shifting of job tasks from humans to robots will require a massive change in job descriptions, not to mention talent acquisition strategies. “Few firms are prepared for their CTPs [cognitive tipping points], which will lead to a restructuring of work nearly as profound as the transition from the agricultural age to the industrial age,” said its 2016 report.

**The Training Challenge**

Training future employees—and retraining existing Americans—will remain an immense challenge in the face of the transformation. Experts say that workers will need skills related to a specific job function as well as broader competencies.

“Thriving in today’s fast-changing world requires breadth of skills rooted in academic competencies such as literacy, numeracy and science, but also including things such as teamwork, critical thinking, communication, persistence and creativity,” according to the 2016 report “Skills for a Changing World” from the Brookings Institution, a think tank.

“Back in the 1970s, you took part of yourself to work. Now you take the whole person to work,” said Anthony P. Carnevale, Ph.D., director of the Georgetown University Center on Education and the Workforce. “There’s a much broader range of human competencies necessary.”

For decades, employers have hired young people and trained them to do a particular job. Today, however, employers are expecting job applicants to be better prepared for jobs with highly technical requirements. “Students can’t learn everything once they get to the job,” said Mary V.L. Wright, senior director of national career education advocacy group Jobs for the Future.

Educational systems can’t turn on a dime, but “employers can help colleges figure out ‘What are the competencies we require for this position’ and ‘Here’s how we want you to teach them,’” said Angela Hanks, associate director of the Center for American Progress, a nonpartisan educational institute.

“We need to contextualize skills to the needs of today’s economy,” said Maria Flynn, senior vice president of Jobs for the Future. She said that to minimize disruption, employers “can embed learning in an individual’s job to prepare them for the next job.”

Retraining displaced workers is particularly difficult. Some of them lack the fundamental skills that are prerequisites to learning today’s sophisticated job functions. Training programs are fragmented, and many are not matched closely to the emerging needs of employers.

“How do you prepare people for jobs that are not really there yet?” asks Hanks.

While some local and regional job training partnerships involving employers have shown great promise—and apprenticeships are drawing increasing interest from employers—the best programs are not large and widespread enough to make a big dent in the ranks of the unemployed.

Experts say it’s difficult to predict exactly how the technology revolution will play out. But they offer some solace to employers: Don’t expect to see robots asking for raises or forming their own labor unions anytime soon.