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Just How Serious Is the Automation Problem?

By Thomas H. Davenport

I am prompted to write (yet again) on the subject of automation for three reasons. One, I visited the Franklin D. Roosevelt Presidential Library and Museum in Hyde Park, New York this past weekend. I learned that early in President Roosevelt's first term, and just before it, there were "food riots" in the U.S. in various places because of the Great Depression. There was also similar unrest outside the U.S. It made me wonder what would happen if unemployment reached the 25% or so levels that they reached at that time because of automation.

The other factor prompting my writing is a new Harvard Business Review article called "[Beyond Automation](#)" by me and Julia Kirby. It describes five "strategies for keeping your job in an age of very smart machines." It is, I believe, one of the few optimistic things one can read these days about the automation problem in that it proposes several ways to keep your job as computers take over almost everything. Some of the approaches involve engaging closely with smart machines; others involve staying as far away from them as possible. But I hope the article raises the question of just how many jobs there will be in the economy of the near future.



It won't bite. German Chancellor Angela Merkel, left, reacts after touching the collaborative dual-arm robot from Swiss automation group ABB in Hanover, Germany, April 13, 2015.

Tobias Schwarz/Agence France-Presse/Getty Images

Finally, I am writing from the MIT CIO Symposium, where there is a great panel on the impact of automation. Erik Brynjolfsson, the MIT Sloan School professor, chaired the panel, and he has

done great work in this area. Other panelists included academics and entrepreneurs who address the automation space. One, Missy Cummings, the head of an artificial intelligence lab at Duke University and a former military fighter pilot, just argued that commercial aviation is not a career she can recommend because of automation. All this is part of a tremendous wave of publicity on this topic—artificial intelligence is the cover story in this week’s *The Economist*, and I heard a story about automated journalism on NPR this morning as I drove to MIT.

I agree with virtually all these sources that automation is a serious problem for virtually every class of worker, including the most exalted knowledge work professionals like doctors and lawyers. As Mr. Brynolfsson often points out, it may already be an important cause of the “decoupling” of labor productivity—which is still increasing healthily—and median household income, which has stagnated.

But it’s not all bad news. First, there will be jobs in the post-automation period, including the five types of jobs that we describe in the HBR article. Nobody knows exactly how many of these jobs will be available, or when exactly they will kick in. There have been some companies that have adopted widespread automation approaches—for insurance underwriting, for example. One company found that it could eliminate about a third of underwriting jobs, and redeploy the other two-thirds of underwriters into agent communications (what we call “stepping aside”) or higher-level portfolio management (we call that “stepping up.”). While we are familiar with the automation of factories, there were also always jobs involved in configuring and monitoring robots and other automated machinery—even as far back as the Industrial Revolution. We call these jobs “stepping in,” and they will still be necessary in the most automated environments.

Second, it will take a while. There are many areas of work in which we already have substantial automation capabilities, but few if any jobs have gone away as a result. In radiology, for example, there has been the capability for automated recognition of likely cancers for mammography and colonoscopy for well over a decade. But I doubt that a single radiologist has lost a job as a result. There are cultural, legal, and financial barriers to widespread automation in a variety of industries. I expect these obstacles won’t ultimately prevent automation-based job loss, but they will certainly slow it down.

Third, there will be jobs that we don’t want computers to take over. Geoff Colvin makes this argument [in his forthcoming book *Humans Are Underrated*](#). He argues, for example, that even if computers could make more accurate legal judgments than human judges, we wouldn’t want them to have dominion over such life-and-death matters. I don’t know how many areas like this there are, but it makes sense that we won’t have an automated Supreme Court anytime soon.

Fourth, a lot of the automation is doing work that wasn’t done by humans in the past—it’s new work. In digital marketing, for example, most of the automation is for tasks for which we never really considered using humans—placing digital ads, sending personalized emails, etc. No one lost their job directly because of this type of automation, but as this type of task grows, it may limit growth in human jobs.

All this suggests that the effects of automation on jobs will be slow and steady, not dramatic. Task after task will be carved away, which will mean that jobs will disappear slowly—perhaps

just through non-replacement of retiring workers. New tasks will be increasingly automated. Since the replacement of workers by automation will be somewhat invisible, it will be difficult to know exactly who or what is responsible for this problem.

So we may not see a new version of Luddites who go around smashing computers because they've stolen our jobs. But if people are hungry and can't feed themselves and their families, we're going to see unrest. We should start planning now, both as individuals and organizations, for how we're going to address the automation issue. There will still be some jobs, but there probably won't be enough to make the society work without some dramatic policy interventions.

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