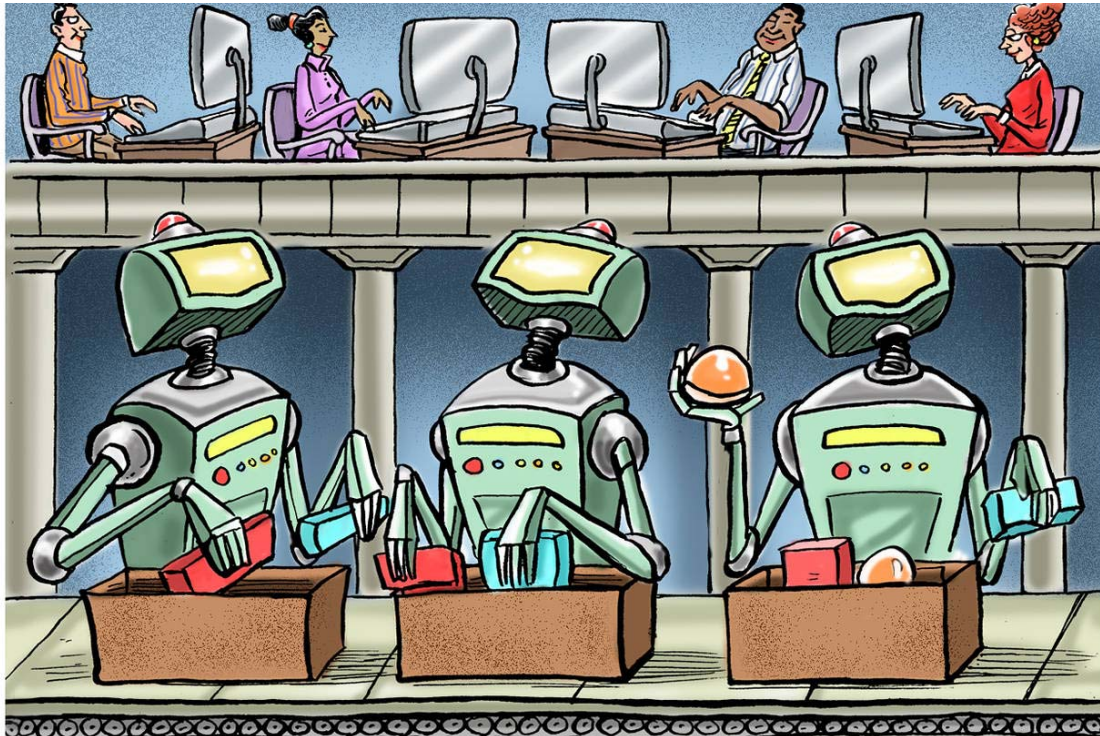


How Technology Liberates Human Capital

Digital innovation and robots are opening new possibilities for workers across the U.S. economy.



By

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New technologies tend to disrupt old businesses, but also to create more jobs than they destroy. That's little solace, though, to the workers who lack either the skills or flexibility to find better opportunities.

From the factory floor to the Wall Street trading desk, advanced technologies such as artificial intelligence and smart robots are already affecting millions of Americans in dozens of job categories. Across the country, especially in rural areas, workers and labor-force dropouts are suffering. Tragically, the death rate for middle-age whites—unlike other groups—has increased in recent years. Homelessness, disabilities, mental distress, pain and opioid addiction are all too common. Without help, many workers will sink further into isolation and despair.

This January, the McKinsey Global Institute [reported](#) that almost half of paid work can be automated with current technologies. That would increase productivity growth by an estimated 0.8% to 1.4%, compounded every year—a substantial economic boost. Unfortunately, it could also leave many more workers behind, without a chance for upward mobility.

But the very technologies eliminating jobs can be part of the solution for disrupted workers. To see what pessimists are missing, go back 40 years, when powerful financial technology first started being used on Wall Street. The combination of mainframe computers with new types of securities and trading processes increased access to capital, especially for small and medium companies. Pioneers in the cellular telephone industry, for example, previously had a hard time convincing lenders that they could revolutionize how people communicate. There were only a handful of capital providers—primarily banks and insurers—that most companies could turn to.

This changed beginning in the 1970s, when capital markets began a long process of displacing the established financial institutions as the leading sources of funding for corporate growth. Innovative fixed-income and equity-linked instruments helped create more than 60 million net new jobs in the U.S. over the last third of the 20th century. This proved an important formula: Prosperity comes when financial technologies multiply the sum of human capital, social capital and real assets.

Real assets have traditionally included tangible balance-sheet items such as land, factories and capital equipment. On a national scale, the term used to mean large physical installations like airports, highways, electrical grids and seaports. Today, however, the digital infrastructure that serves three billion internet users world-wide has become even more important and is driving three revolutions.

First, technology leverages human capital—the talent, training and experience of people. Digital collaboration among researchers, for example, is accelerating progress on precision medicine. Smartphones have become a useful connection with a doctor, mentor, financial adviser or bank.

This hasn't reduced the number of jobs. Two million manufacturing positions [will go unfilled](#) by 2025 according to Deloitte Consulting, which calls technology a “great job-creating machine” that increases income and thus demand. The problem is a mismatch between employee skills and changing workplace needs. The solution will involve major training efforts.

Enlightened manufacturers are minimizing layoffs by preparing assembly-line workers for higher-level duties while relegating routine tasks to robots and AI programs. Outside of manufacturing, opportunities are everywhere, from application coding to rapidly growing “new-collar jobs” like medical sonography. This is the workplace of the future, where humans are not displaced by machines, but interact with them.

Not everyone can be retrained, but our society should offer everyone at least an opportunity for a life of dignity and purpose. That's why the theme of this month's 20th annual Milken Institute Global Conference is “[Building Meaningful Lives.](#)” Panels will address topics such as AI and robotics, underemployment, workforce development and the opioid epidemic.

Second, technology is creating new business opportunities. Vastly reduced computing costs have resulted in a tsunami of data, which doubles in size every few years. That means many new jobs in data analysis. [General Electric estimated in 2012](#) that over 20 years the industrial internet could boost the world-wide gross domestic product per capita by nearly a fifth. Billions of interconnected devices will produce an effect even bigger than railroads and telegraphs did when they linked 19th-century communities.

Technology also creates jobs in physical distribution—a book from Amazon, a car from Uber, or tonight’s dinner from a local restaurant. Meanwhile, networks are being used to train people at all levels, ranging from high-school vocational classes to sophisticated graduate courses. Since last year, for example, the WorldQuant Foundation’s WorldQuant University [has enrolled](#) several hundred students in a tuition-free online master’s degree program in financial engineering. The first class will graduate in 2018.

Third, new forms of financial technology are rapidly increasing the multiplier on the human capital and business revolutions. Today’s entrepreneurs face lower barriers to entry because crowdfunding and other nonbank lenders allow them to secure backing quickly for a good idea from people they’ve never met. Soon there could be millions of such lenders, each employing advanced databases to make sound credit decisions. Further, since more products than ever are digital instead of physical, startups can work with customers and suppliers world-wide. This has a dramatic effect on the value of real assets and jobs.

As hardware becomes cheaper and software smarter, disruption will continue. But so long as workers retain hope that there’s a path to a meaningful life, America’s democratic institutions can endure. The key is to keep that path clearly lit for everyone. The future of the American dream depends on meeting this challenge successfully.

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