

**By Bill Spitz, Principal**

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A Wakeup Call on Retraining

Several of my recent White Papers broached the subject of the impact of automation on the labor market in the U.S. by posing (and not satisfactorily answering) the following two questions:

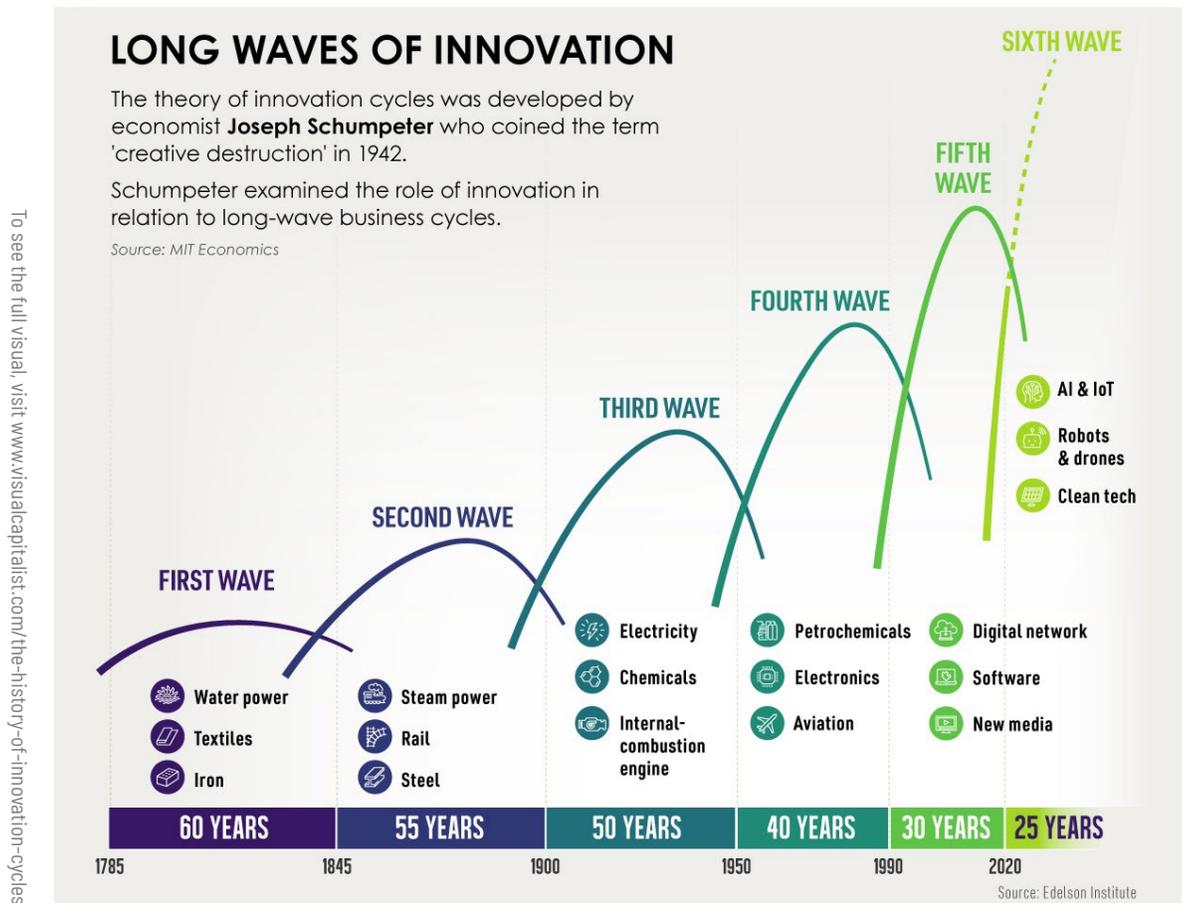
- Will robotics, artificial intelligence, and other forms of automation eliminate a large number of jobs?
- Will new job categories emerge that replace those that are lost?

The pandemic clearly accelerated automation in a number of areas making this issue all the more topical. While others are quite concerned, and there are certainly plenty of dire headlines, I am convinced that new technologies will create more than enough new jobs to offset those that are rendered obsolete. However, there is one huge caveat: our country must make a major commitment to retraining, as well as providing a safety net to those in transition.

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THE SIX WAVES OF INNOVATION

From the onset of the Industrial Revolution, there have been six major waves of innovation with associated technological breakthroughs:



We are in the early stages of the sixth wave, which some estimate could last as long as twenty-five years. Each of the first five waves resulted in strong economic growth and the creation of new industries and job categories that offset job losses after a brief period of transition.

POTENTIAL JOB LOSSES ASSOCIATED WITH THE SIXTH WAVE

Allow me to place the following statistics in perspective. The overall U.S. Labor Force consists of 161.4 million people who are either working or actively searching for a job. Additionally, there are approximately 1.7 million “discouraged workers” currently not looking for a job, but say they would like to secure one.

Estimates of potential job losses in the U.S. due to automation cluster in the range of 35 to 45 million or 20% to 30% of the labor force although Oxford University ominously predicted that as many as 47% of jobs could be *at risk* of computerization. On a global basis, McKinsey predicted that 75 to 315 million jobs could disappear, which represents 3-14% of the global workforce. To focus on just one sector, approximately 2.7 million robots are employed in manufacturing globally; and that figure is expected to grow to 20 million in the next ten years. Each robot replaces roughly 1.6 humans leading to forecasts of at least 20 million job losses in that sector alone.

WHAT KINDS OF JOBS ARE AT RISK?

Before turning to specific categories, it is useful to consider the generic characteristics of the most vulnerable jobs: those that are repetitive and are rules-based, which most often require relatively low levels of education. Specifically, experts predict that 55% of jobs not requiring a college degree may be automated compared to 10% of jobs requiring higher-level education. The most frequently cited jobs at risk are sales clerks and cashiers, data entry clerks, food service cooks and hostesses, receptionists and secretaries, administrative assistants, warehouse workers, telemarketers, machinery operators, and truck drivers.

Interestingly, even some white collar jobs are deemed vulnerable; examples include bookkeepers and auditors, paralegals, insurance underwriters and claims adjustors, loan officers, financial analysts, radiologists, and pathologists. While these jobs involve high levels of education and skill, most are rules-based making them candidates for at least partial digitization.

If these predictions prove correct, certain segments of the population will be particularly hard-hit. Younger workers, in particular, make up only 10% of the workforce but represent about 30% of food service employees. Similarly, African Americans and other minorities are disproportionately represented in trucking and food service and under-represented in promising fields, such as software development. There may also be geographic differences; only 25% of adults possess a college degree in some rural states making them particularly vulnerable. For example, one study suggested that 65% of jobs in Alabama and Arkansas could be lost. With respect to gender, the picture is mixed. Women employed in clerical positions, sales, call centers, retail, and food service are very much at risk. However, women are disproportionately represented in healthcare and education, which are thought to be among the more promising categories. Moreover, the number of women in college now exceeds that of men, which should provide a material edge in the “*new economy*.”

JOBS OF THE FUTURE

A number of organizations, including the World Economic Forum and the Boston Consulting Group, conclude that automation will actually result in a net increase in jobs. Forecasts vary considerably, but something on the order of a net increase of 10 million jobs in the U.S. seems to be a reasonable guess. Additionally, positions will not be eliminated in many cases, but job descriptions will be altered. One oft cited example is bank tellers, whose jobs were expected to be eliminated as a result of ATMs and other technology. In fact, their numbers have increased, but the job has shifted toward customer service and sales rather than the mechanics of money exchange.

At a high level, new jobs will fall into two broad categories: 1) those requiring coding and other digital skills [Only one third of workers currently have digital skills]; 2) a variety of jobs involving human interaction and creativity. Burning Glass Technologies actually divides the most promising categories into five groups:



The Readiness Economy

Biotech, Cybersecurity, Infrastructure, etc.



The Logistics Economy

Big Data, Supply Chain Management, etc.



The Remote Economy

E-Commerce, Cloud Computing, Networks



The Green Economy

Renewable Energy



The Automated Economy

AI, Robotics

This is somewhat “*pie in the sky*,” but here are a few of the many jobs that futurists predict will soon become common:

- Body Part Maker-using 3-D printing
- Tidewater Architect-incorporating global warming in building projects
- Self-Driving Car Mechanic-combining mechanical and software expertise

- Artificial Intelligence Assisted Healthcare Technician-diagnoses, prescriptions, etc.
- Digital Financial Wellness Coach
- Digital Tailor
- Autonomous Transportation Specialist-control/ management of autonomous vehicles in urban areas
- Personal Medical Interpreter-personalized drug and genetic counseling
- Wind Turbine Service Technicians
- Solar Photovoltaic Installers

If you are interested in a little intellectual stimulation, try to come up with some additions to this list. Stretch your imagination!

REQUIRED SKILLS

There is a general consensus on the attributes required to succeed in a more automated world, and the formula includes a blend of technical knowledge and more traditional “soft” skills. The McKinsey Global Institute focuses on three basic sets of skills or characteristics:



Higher Cognitive Skills

Literacy/Writing, Critical Thinking, Quantitative Analysis, Statistical Skills



Technical Skills

Data Analysis, Programming, Engineering



Social & Emotional Skills

Communication, Empathy, Adaptability, Ability to Learn Continuously, Leadership, Judgment, Teamwork

Of course, a substantial number of these skills are dependent on our basic educational system, rather than on the kind of retraining efforts that will be described in the next section.

If I may editorialize for a moment, I find it interesting that a liberal arts education seems to be declining in popularity despite the fact that its strength is in developing the first and third categories listed above. But, that is a discussion for another day and for more knowledgeable debaters.

THE RETRAINING CHALLENGE

The consensus is that 50%-55% of American workers will require retraining or what is known as “upskilling,” in order to meet the requirements of future job categories. The World Economic Forum estimates that 35% of workers will require up to six months of additional training, 9% a full year, and 10% an even more extended period. While the U.S. does respond to the immediate income needs of the unemployed, it is poorly positioned to take on this critical longer term challenge. First, there is the question of funding. According to the Bureau of Economic Analysis, corporations spent \$83 billion on training in 2019 as compared to a mere \$14 billion by the federal government. As a percent of GDP, the latter figure is one-half of the 1985 level and a fraction of the expenditures by Canada, Germany, France, and some other industrialized nations. The following represent some of the other shortcomings of our efforts to date:

- A wide variety of providers offer a confusing array of uncoordinated programs, and there is no central source of information on them
- Many individuals do not have access to programs due to financial constraints, geography, or lack of access to computers and broadband
- Poor coordination between training providers and employers results in training that is not relevant to actual job requirements
- Similarly, this lack of coordination may prevent workers from being placed in appropriate jobs even after completing additional training
- A relatively thin safety net is not sufficient to support workers during their period of training and transition

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SOLUTIONS

The starting point for any discussion of retraining is its potential cost and source of funds. The World Economic Forum estimates that the cost per employee is approximately \$24,000, which, when multiplied by the number of potentially displaced workers, could approach a trillion dollars. In reality, that level of expenditure may be overstated because the amount of training required will vary, and the actual number of displaced jobs is unknown. Another mitigant is the fact that the U.S. has almost one thousand community colleges that could serve as the backbone of retraining efforts.

It seems unlikely that either business or government will fund these programs alone. Therefore, the most likely solution to the retraining problem lies in collaboration, which is the centerpiece of an excellent paper published by CED, The Public Policy Center of The Conference Board. A U.S. Workforce Training Plan for the Postpandemic Economy incorporates a great deal of detail, so I cite only some of its key recommendations, which are divided into three categories: business, collaboration, and public policy. Some of their recommendations are certainly subject to debate, but it is critical to begin an active dialogue on retraining and the CED report is a good place to start. One very refreshing aspect of this report is that it does not focus on simply throwing more money at the problem.

Businesses should:

- **Prepare** strategic assessments of emerging technologies and map the skills and roles needed to apply them
- **Redesign** human capital functions to focus on providing these critical skills
- **Embrace** competency-based hiring and promotion models
- **Sponsor** apprenticeship programs
- **Build** relationships with local workforce boards, nonprofits, and business consortia
- **Ensure** that hiring pools contain long-term unemployed individuals, as well as candidates from underrepresented groups

Collaboration

- Business must **take the lead in retraining**, but it should partner with training providers and educators to create truly relevant curricula
- Business, trainers, and educators should **develop universally-accepted credentials** that are focused on actual skills and competencies rather than on degrees. This would encourage workforce mobility
- All involved parties should work to **create streamlined information** sources to help retraining candidates identify, and gain access to, training opportunities

Public Policy-Government should:

- **Provide** unemployment benefit tax relief to those incurring training or skills development expenses
- **Consider** training subsidies rather than enhanced unemployment income benefits
- **Support** the availability of broadband to unemployed workers
- **Modify** Pell Grant eligibility to include short-term training in addition to its traditional focus on degree-granting programs
- **Consolidate** various federal programs into a single funding stream
- **Create** Lifetime Learning Accounts similar to Health Savings Accounts
- **Establish** a national goal that every student have access to employer-connected training or experiences
- **Encourage** schools to give academic credit for workplace skills and experiences
- **Encourage** and support apprenticeship programs of various kinds

THE ELEPHANT IN THE ROOM

The need for a massive retraining effort was obvious prior to the onset of the pandemic and has only increased with the acceleration of automation. Yet, this topic is still not at the center of the national discourse, which is incredibly troubling. Much has been written about the fact that a material portion of the American population is angry and disaffected. Imagine a situation in which 20% to 30% of jobs disappear and there is no effective means of ensuring that those workers become re-employed; such a scenario is truly frightening! The size, complexity, and cost suggest that a well-organized retraining effort will only happen if it becomes a national imperative, which necessitates involvement on the part of business, education, and government at all levels. We have tackled difficult situations before and there is every reason to believe we can solve this one if we accept the immediacy of the problem. Now is the time!

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