



KNOWLEDGE WORKER AUTOMATION

Faster Than You Think

Abstract

The rate of Knowledge Worker automation through software and smart platforms is happening at a rate that will catch businesses off-guard. This paper will give the reader some insights on how to mitigate the risk and capitalize on the opportunity.

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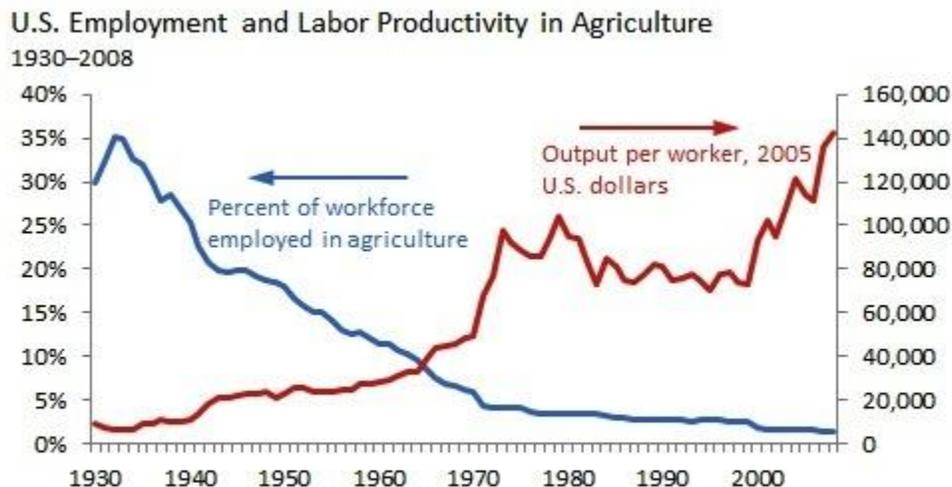
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Knowledge Worker Automation: Faster Than You Think

I often start my presentations with the line, "The pace of change, exceeds our pace of learning." The line is quippy, but what exactly does it mean in the context of Knowledge Worker Automation?

We tend to relate the changes we see today to the changes that we experienced in the past - a linear paradigm. This form of normalcy bias is probably hard wired into the way the human mind works. Generally, a linear approach to understanding change serves us well, especially when fear of change can be overcome with experience.

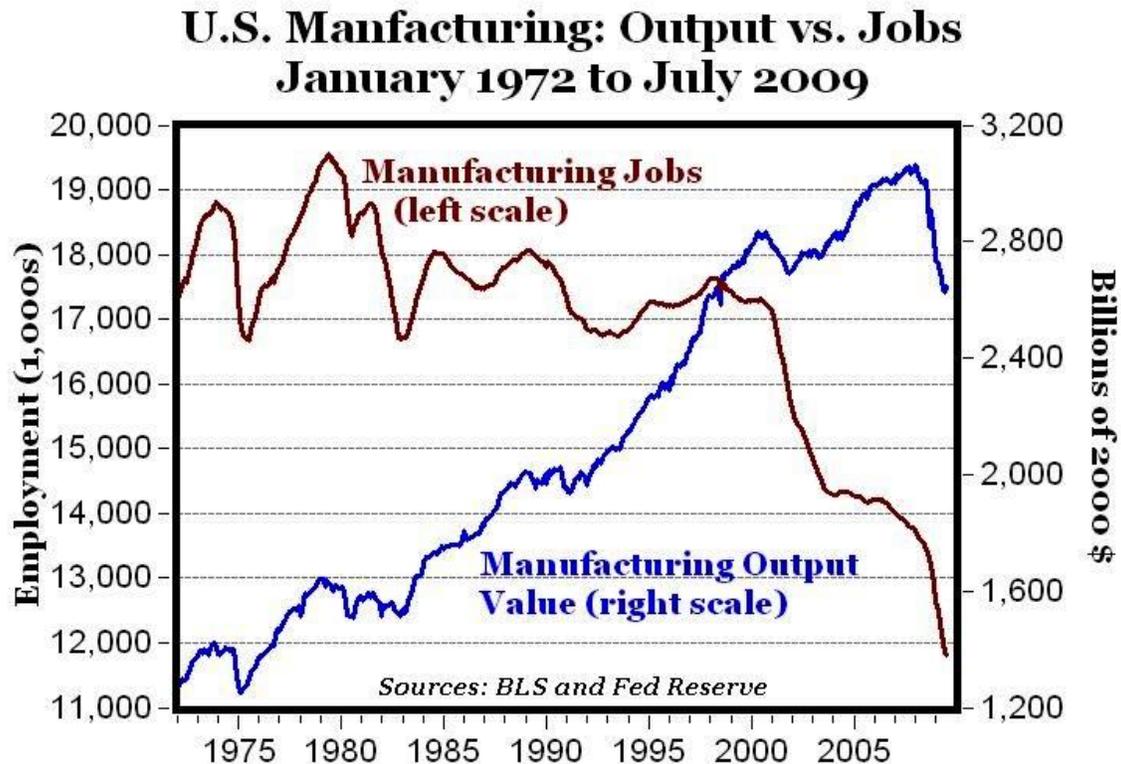
This brings us to the current changes we are experiencing in the automation of knowledge workers in both BPO and ITO operations. We tend to apply the experience we have from prior labor automation transformations the trend underway for knowledge workers. For example, we saw the automation of the farm worker with machines like tractors, combines, seeders, and harvesters drive a shift in the ratio of farmers to general population from 1:3 in the 1930's to nearly 1:100 seventy-five years later.



Sources: U.S. Census Bureau, "Historical Statistics of the United States, Colonial Times to 1970" and annual editions of the Statistical Abstract; author's calculations.

With industrial automation, we saw the impacts much faster than in farming, but the changes still took place over a couple of decades. U.S. manufacturing jobs peak in 1980 and drop over 35% by 2010 while U.S. output doubled.

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Both of these labor automation trends can be described as **Analog Transformations** – analog in the sense that the human worker was replaced by the physical machine: a tractor, harvester, packaging machine, a spray-painting robot. In both of these labor automation trends, change manifested over decades, thereby establishing our collective paradigm for future automation trends. In other words, experience has taught us to believe that it takes time (e.g., years) for these automation trends to change the ecosystem.

Knowledge Worker Automation

What are the knowledge worker job categories? Engineers, doctors, architects, scientists, accountants, lawyers, etc. Broadly speaking people who think for a living. Until recently, these jobs were immune to automation - they are not. Rapid advances in computer technologies in both hardware and software have led to rapid advances in knowledge worker automation. However one major difference between

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knowledge worker automation technologies and the technologies that led the agriculture and manufacturing labor automation trends is that – as discussed above – the prior trends were analog. The knowledge worker automation trend is a **Digital Transformation**.

Sector	Automation Trend
Agriculture	Analog
Manufacturing	Analog
Knowledge Workers	Digital

What is different about digital? Speed, Scale, Economics, Quality, and Impacts to the Ecosystem. Basically, everything is different. As such, applying our prior experiences of labor automation from the agriculture and manufacturing sectors is a false comparison. Think of the difference as follows:

- Analog: Physical Machines
- Digital: Software

Applying this perspective, let's look at speed & scale first. In a digital realm, once a solution to replace a category of knowledge work is developed, it can scale near instantly across the ecosystem. Why? Because it is software-based and not tied to the physical deployment of machines as replacements for workers. There is no limit to scaling or replicating software in the same sense that there is in building physical machines that are subject to the constraints of a physical supply chain.

How about economics and quality? Think Zero. Zero incremental cost and zero defects. Not literally zero, but close to it compared to analog counterparts.

So how will the impacts to the ecosystem be different?

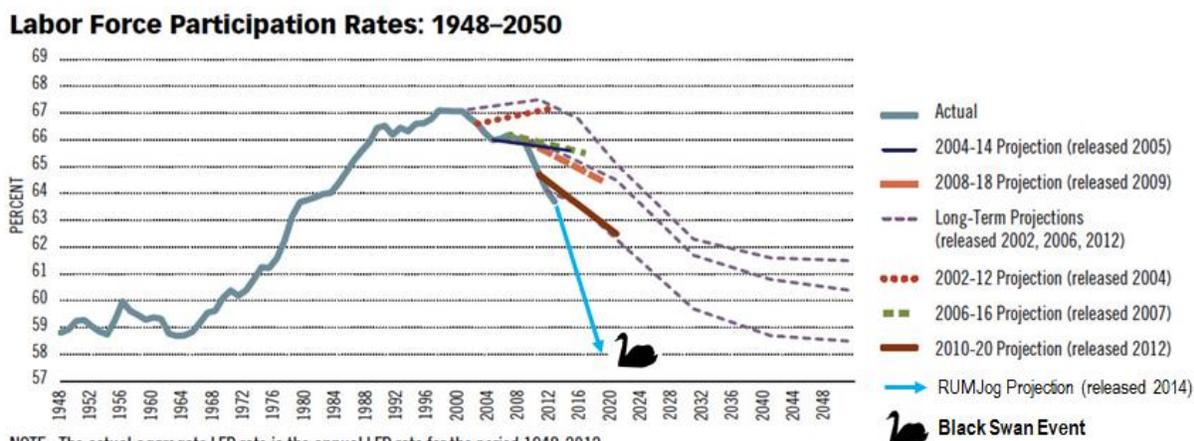
The agricultural transformation of labor led to the migration of workers from rural agriculture to urban industry and fed the Industrial Revolution. The pace of change was, relatively speaking, "manageable" for workers and society as a whole. In fact most economists would argue the change was, ultimately, a net benefit to the society as a whole leading to a better standard of living for all.

That said, the industrial transformation of labor led to the rust belt. The pace of change of industrialization was much faster than for the agriculture transformation, and many disaffected workers were able to pivot into the service sector economy. However, the standard of living for industrial workers who lost their job to automation has been flat or in decline relative to the standard of living of the knowledge workers.

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The speed and scale with which the knowledge worker transformation of labor will happen means that most workers will not be able to come anywhere near their prior standard of living following future labor market shifts. Some, a minority, will have the education and ability to shift into new job markets, but too many people will be impacted. How many people? McKinsey Consulting estimates that between 110 million and 140 million workers globally could be impacted by this trend - think half of all workers in this category, give or take. This change will not take 75 years or 30 years. This change will happen in less than 10 years.

At RUMJog, we suggest that the knowledge worker labor automation trend is too fast for society to make adjustments. Adjustments to our education systems, job training, social services, etc. So what will happen? We don't know, but the chart below shows our projection:



NOTE: The actual aggregate LFP rate is the annual LFP rate for the period 1948-2012.

SOURCES: Actual LFP rate data from the Bureau of Labor Statistics/Haver Analytics; BLS projections data are from Table 3 in Toossi, 2002; Toossi, 2004; Toossi, 2005; Toossi, 2006; Toossi, 2007; Toossi, 2009; Toossi, 2012a; and from Toossi, 2012b.

The graphic shows a succession of economic forecasts of U.S. Workforce Participation rates released from 2005-2012. All of these historical forecasts were, in our opinion, burdened by normalcy bias – a bias that assumes tomorrow's trends will look and act like prior trends. The RUMJog projection released in early January 2014, shows a more realistic picture of future.

What is the “so-what” of the RUMJog projection?

We believe that by 2020, the U.S. will see a decline in the workforce participation rate to 58% or lower. This will be below the levels going back as far as World War 2. That is a

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nominal job loss of 5M jobs plus no jobs for the roughly 1.5M entering workforce age each year. Said another way, 14M people not working above and beyond today's unemployment.

Something has to give, which is why we suggest a Black Swan event of some sort will manifest before we see the full impacts suggested as potentially possible by RUMJog and McKinsey. A Black Swan event could be social, political, or economic upheaval or one sort or another. It could be top-down or bottom-up. If we knew for sure, it wouldn't be a Black Swan.

Preparing For This Trend

There are no cookie-cutter programs to de-risk your firm or capitalize on this trend. However, what we recommend as the first step is for firms to perform a preliminary risk/opportunity assessment for both your service supply chain and your business processes that support your firm's revenue stream.

Generally speaking, opportunities abound for the buyers of services in the market to transform their supply chain to take advantage of the trends of a "labor-less" delivery model. Think of costs trending to zero, cycle times trending to zero, and defects trending to zero. This Zero Concept will be the subject of another paper but you can reference an abstract at: <http://www.rumjog.com/the-zero-concept/>

On the sell side, there is more risk than opportunity, at least in the short-term. The primary risk is in rapid price down in the marketplace as competitors innovate their use of software and platforms to replace humans in the supply chain. Think 30%-50% price downs in many cases. This puts existing services franchises at significant risk with respect to their revenue base and their ability to compete for new business.

Eventually new opportunities will emerge from this transformation. Once firms have the ability to restructure their business to take advantage of the Zero Concept, we will see new uses for service telemetry feeding big data and analytics. These holistic business transformations will have far greater impacts than the price down of services. The impacts will vary widely between industries and our belief is that firms who position themselves early in the trend will benefit greatly.

To learn what you and your firm can do to be positioned to capitalize on the opportunities and mitigate the risks of automation of the knowledge worker, please contact us at info@rumjog.com to setup a conversation to discuss this topic.

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About the Author



Thomas Young, Founder & Managing Partner

Thomas is the Founder & Managing Partner of RUMJog Enterprises, a technology, media, and public sector management consulting company launched in 2013 to help businesses adapt and thrive in the face of accelerating change in today's market. Prior to forming RUMJog, Thomas was a Partner and Managing Director at TPI & ISG for over 12 years, holding a variety of leadership roles in the Americas.

Thomas has more than 20 years of consulting experience in the IT Services industry with a focus on Financial Services and holds a Master's Degree in Systems Engineering from Rutgers University.

RUMJog Enterprises was created as a parent company of a portfolio of next generation firms designed to re-invent the way business is done to better serve the big players in the services industry looking for true business transformation.

Thomas specializes in area of emerging technologies with particular focus on process and labor automation and the impacts on business ecosystems.

Additionally, Thomas currently advises several other organizations like Becton Dickinson, IPsoft, IBM, British Telecom, Wipro, HCL, KPMG, and others.

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Acknowledgements and Credits

I must give credit to various sources for some of the information and idea generation that I used for this paper. I read and study from many sources and combined with my knowledge of the Outsourcing Market, I have combined these concepts into this paper.

McKinsey Study

McKinsey published a comprehensive study called “*Disruptive technologies: Advances that will transform life, business, and the global economy*”. The report is quite long (over 150 pages) and an excellent read for those interested in understanding the scope and scale of disruptive technologies in the coming decade.

http://www.mckinsey.com/insights/business_technology/disruptive_technologies

Consumption Economics

This book written by J.B. Wood, President and CEO of the Technology Services Industry Association (TSIA). Very insightful book on the economics of IT and how pricing models will shift as emerging technologies impact the delivery models in the industry.

<http://www.amazon.com/Consumption-Economics-The-Rules-Tech/dp/0984213031>

McAfee and Brynjolfsson Books

Andrew McAfee and Erik Brynjolfsson wrote two book work reading, “*Race Against the Machine*” and “*The Second Machine Age*”. Both of these are excellent books that give an overview of technology advances and the impacts to the economy. Put these on your must read list.

Race Against the Machine - <http://www.amazon.com/Race-Against-The-Machine-Accelerating-ebook/dp/B005WTR4ZI>

The Second Machine Age - http://www.amazon.com/The-Second-Machine-Age-Technologies-ebook/dp/B00D97HPQI/ref=pd_sim_kstore_2?ie=UTF8&refRID=05SVS82X72HVRMN6D4C3

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For Further Reading

Daniel Suarez Books

Daniel wrote 4 books and I have read the first three (Daemon, Freedom, and Kill Decision) and would recommend the three I read. While the books are fiction, they are based on versions of today's technology. The value of the read is to help you think through the business, political, and social implications of the technology trends.

Daemon - http://www.amazon.com/Daemon-Daniel-Suarez-ebook/dp/B003QP4NPE/ref=pd_sim_b_3?ie=UTF8&refRID=1NEKKXKXKD588YM0XNT0

Freedom - http://www.amazon.com/Freedom-TM-Daniel-Suarez-ebook/dp/B002VUFKDY/ref=pd_sim_kstore_1?ie=UTF8&refRID=0MY14S0155QP3YC3JE5Q

Kill Decision - http://www.amazon.com/Kill-Decision-Daniel-Suarez-ebook/dp/B0073XV2W2/ref=pd_sim_kstore_2?ie=UTF8&refRID=0KED0XY2P080S4YPC76H

William Hertling Books

Hertling has written 3 sci-fi books and I have read two (*Avogadro Corp.: The Singularity is Closer Than It Appears*, and *A.I. Apocalypse*) and I highly recommend these reads. They will challenge your thinking with respect to understanding how digital technologies will progress on a logarithmic scale.

Avogadro Corp. - http://www.amazon.com/Avogadro-Corp-Singularity-Closer-Appears-ebook/dp/B006ACIMQQ/ref=la_B006J8EIY6_1_1?s=books&ie=UTF8&qid=1394475167&sr=1-1

A.I. Apocalypse - http://www.amazon.com/Apocalypse-Singularity-Series-William-Hertling-ebook/dp/B007FZVI2M/ref=pd_sim_b_1?ie=UTF8&refRID=11CV1893RDZ5F7YJ9K2R

Lights in the Tunnel by Martin Ford. This is a dystopian look at the eventual outcome of labor automation on the economy. The first half of the book is great. The second half of the book is not as good.

Robots Will Steal Your Job, But That's OK: How to Survive the Economic Collapse and Be Happy by Federico Pistono. Good read on the subject of Automation.