Revolutions Need Leaders

How the 4th Industrial Revolution has changed the rules of the leadership and recruiting game.

Chapter 1 - Draft

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Chapter 1 – We're Not In Kansas Anymore

We have entered a new world and rules have changed

The world is entering its fourth Industrial Revolution, often called Industry 4.0. While Western economies ruled the first three Industrial Revolutions, the economies that will dominate a 4.0 World are unknown. The future is up for grabs. The question is, what will the differentiator be for winning organizations?

The first Industrial Revolution was powered by the steam engine and led to the mechanization of work. The second revolution, driven by the electric motor, led to the electrification of factories and machinery, which in turn enabled mass production on a grand scale. The third revolution, which occurred in the second half of the twentieth century, introduced computers to the workplace and led to the automation of both back-office administration and the factory floor.

The common theme of these revolutions was the reduction of the organization's dependence on its human capital. Industry 4.0 is about to change that.

Industry 4.0 is driven by an electronically connected world. In the emerging 4.0 World, people are connected not only to each other, but also to each other's knowledge. The impact of this connectivity can best be summed up by the following observation made by Dr. Nick Bontis from McMaster University: "In the 1930s, the cumulative codified (i.e., written down) knowledge base of the world doubled every 30 years.... In the 1970s, the cumulative codified knowledge

base of the world doubled every 7 years." Bontis predicted in 2000 that by 2010 the world's codified knowledge would double every 11 hours. [1]

We may not have reached that 11-hour figure, but what we do know is that we now live and work in a world in which knowledge is growing exponentially. Since knowledge equals opportunity, the opportunities available to organizations are also growing exponentially. And because everyone is connected to this knowledge, everyone is connected to the opportunities. Competitive advantage today lies in an organization's ability to exploit this rapidly growing knowledge base and spot opportunities before anyone else. Companies that can consistently do this faster than their competition will thrive.

An interesting by-product of this knowledge explosion is that the days of the all-knowing, all-seeing manager are over. Knowledge workers today are often more aware of new opportunities than those who are managing them. Managers have not gotten dumber, rather employees have gotten smarter – or at least better educated.

PROSPERITY IN THE 4.0 WORLD

In his book The Wealth and Poverty of Nations, David S. Landes presents an economic history of the world and through this lens reveals that the first driver of a society's prosperity is a set of laws that applies equally to everyone within the society; that is, the ruling elite cannot do as they please. Landes suggests that it is this condition that encourages entrepreneurism. When the rules of the game are clear, apply to all and are actually adhered to, people are more willing to invest their time, energy and money into building factories, infra-structure, farms, etc. because they know that the fruits of their labor will not be arbitrarily taken from them.

Landes then goes on to show that the second driver of economic prosperity is the production of knowledge workers. This driver is older than many people realize. In the late 1800s, big German corporations such as BASF, Bayer and Agfa rose and flourished as a result of the competitive advantage provided by Germany's engineering and chemical schools.

> "By World War I, Germany had left the rest of the world far behind in modern chemistry – so far behind, that even the confiscation of German industrial patents during the war did not immediately benefit competitors overseas. The biggest American firms, with the best American chemical engineers, did not know what to do with them or how to make them work."[2]

For the past 125 years, the importance of knowledge workers to a society's economic performance has been steadily rising. The developed economies have reached the point where their economic prosperity is now directly dependent on their ability to produce large volumes of highly capable knowledge workers – so dependent, in fact, that any nation whose schooling system falters is doomed to a rapid descent down the economic ladder.

So, if the first driver of economic prosperity is the "law of the land" and the second driver is a society's ability to produce highly skilled knowledge workers en masse, then the question becomes, what is the third driver? What will take societies that are already prosperous to their next level of economic performance?

PROSPERITY'S THIRD DRIVER

Organizations are now filled to the brim with highly educated knowledge workers. That's a key difference between now and the first Industrial Revolution, when current management systems were

invented. Here's a nice bit of alignment: we are experiencing an ongoing explosive growth of knowledge and at the same time we have a growth in the capability of the organization's employees to understand and make use of this knowledge. The continued prosperity of already successful organizations now depends directly on the ability of their workers to continuously generate new value. This ability is prosperity's third driver and winning organizations have awoken to this fact.

What does 'waking up' mean? At its core, it means understanding that there needs to be a fundamental change in how people are managed and led. In the 4.0 World, leadership is now all about releasing and maximizing their people's creative energy. So, in essence, prosperity's third driver is 4.0 leadership

LEADERSHIP IN A 4.0 WORLD

Our approach to management, by and large, was created when organizations came, en masse, onto the scene – 250 years ago at the start of the first industrial revolution. Managers knew everything and those who worked for them knew nothing, or at least very little. As well the machine was king. The mechanistic approach became the model around which management practices were built. What did this mean? Well, it meant that work was broken up into a series of small pieces or tasks. The beauty of this approach was that an organization could make use of large numbers of poorly educated workers. Because the pieces of work were small and clearly defined it was easy for the workers to get their heads around the task. All the workers had to do was focus on successfully delivering their piece of the puzzle. And if all of the pieces were successful then the whole would be successful. This was certainly a self-evident truth in the 1.0 World.

Under this 'fundamental law' (i.e. the whole is equal to the sum of its parts) the manager's job became, first, breaking the work up into a

number of logical bite-sized pieces and second, making sure that each worker successfully delivered his or her piece. Under this approach, the manager's job was to maximize the performance of the individual for in doing so, at least as the underlying beliefs of 1.0 (i.e. steam-age) Leadership would have, this was the route to maximizing the performance of the organization.

This is where it now gets interesting, for what drives bottom-line success has just gone through a quantum shift. The knowledge explosion has taken us into a new universe and the laws are different here.

THE IMPORTANCE OF TRUST

How different? Well, the answer to this question takes us to the second interesting by-product of the knowledge explosion – the importance of trust. It used to be that if you saw a better way, then this insight, this knowledge, would probably have provided you with some sort of competitive advantage over a sustained period of time. Hence the expression "knowledge is power." If you had knowledge you didn't share it, you milked it for all it was worth. This knowledge was reflected directly in your performance, it gave you a competitive advantage over your colleagues as well as over the competition. So, sharing your knowledge was out of the question. Self-interest prevented you from doing so.

We are living in a time in which the shelf life of knowledge is approaching that of a banana.

Well, something has changed and that something is the shelf-life of knowledge. It is near impossible today to hold onto knowledge and to keep its benefit for yourself. The knowledge explosion means that whatever insights you have gained today, the rest of the world will know next month. So, the long-term value of knowledge has just taken a nosedive. Knowledge is still power, it's just that the longevity of that power has been dramatically reduced. Thus, today, true power

comes from being able to constantly acquire and build new knowledge.

One of the most effective ways of creating new knowledge is for two or more people to combine their existing knowledge to produce something entirely new. This is the basis of creative thinking. Mix existing pieces of knowledge over heated and excited discussion and there is no telling what will emerge.

So, the ability of people to build and create together, to openly share their knowledge, to leverage each other's insights, to create something new and wonderful on an ongoing basis is today's competitive advantage.

Building and creating together: nice phrase; but what exactly does it mean? It means people sharing ideas, thoughts and knowledge with other people. It means people listening intently to what their colleagues have to say. It means people being totally open with each other. In short, joint creation requires people to expose their thinking to each other. Without a high degree of trust this self-exposure is simply not likely to happen. So, today's competitive advantage can be directly related to the level of trust that exists within the organization. Trust grows the ability of the organization's people to build and create together and in so doing it grows their ability to constantly create new value for their organization.

In the 4.0 World, management's job is much more than simply maximizing the performance of the individual. In addition to this responsibility, today's management's job also includes maximizing the performance of the team. And unless you believe that the whole is merely the sum of its parts, these two responsibilities are two very different tasks. Maximizing the performance of the team means building the trust that will allow people to leverage each other's creativity and knowledge.

Fortunately, building trust is not all that complex. It should be noted that lack of complexity does not necessarily mean that something is easy. There are three things that the 4.0 leader needs to do, and do well, in order to build a trust rich environment.

The first is to help their people to believe in themselves. Today's winning organizations are ones in which employees are taking themselves and their organizations to new places. They are trying new things. They are making mistakes, learning from these mistakes and moving on. If my self-esteem is low, then I am less likely to take myself out of my comfort zone. I am much more likely to stay with the status quo. And, I am certainly less likely to expose my thinking to others.

The second thing that the 4.0 leader does is to build an organization in which people care about each other. OK, how can 'caring' produce an environment that gives me a winning bottom line? The answer was most eloquently articulated by James A. Autry, the former CEO of the Crown Publishing Group, when he said, "I need to know that you care before I care to know what you know." Caring is the basis of trust. If I know that you care about me and my success, then I can trust you. If I can trust you, I can speak openly and frankly with you. If I can speak openly and frankly with you, we can solve problems together. If we can solve problems together, then we can leverage each other's creativity and knowledge to build competitive advantage.

The third trust-building thing that a 4.0 leader does is to instill common cause. In winning organizations, employees have a deep and common understanding of the organization's desired future. But not only do they understand the organization's goals and objectives, they believe in them. When members of the team see that they are all trying to get to the same end point, an end point that is meaningful to them, then your success and my success become one. When this happens something miraculous happens. People start caring about the success of the whole as much or more than they care about their

own individual success. And when this happens, trust grows which in turn enables the whole to become much more than the sum of its parts

THE 4.0 WORLD'S SELF-EVIDENT TRUTH

Success in a 4.0 World means making 1+ 1 > 2

Building an environment that facilitates the ongoing creation of new value means managing not only the individuals who make up a team but also the interaction space between these individuals. Between any two individuals there is a hidden creative force. When the interaction space between individuals is effectively managed, as outlined above, this force emerges, and the creative impact of the team is multiplied. In a 4.0 World, an organization's ongoing prosperity now directly depends on its leaders' ability to draw out this creative energy. It is this ability that is responsible for the self-evident truth of the 4.0 World and that truth is that the whole can be much more than the sum of its parts.

THE STARTING PLACE

If an organization is to thrive and prosper in an Industry 4.0 World, then it is critical that it develop its managers as 4.0 leaders. Building an organizational culture that facilitates the ongoing creation of new value is not rocket science. But it requires a fundamental change in perspective on the part of the organization's managers, a change that will challenge current management practices. But here is the rub, this development task is difficult if nay impossible without at least one 4.0 leader at the helm. The change in perspective from managing people to managing the ether between people will have managers shaking their heads. A leader at the helm, who, at a personal level, has made the transition to the 4.0 world and has already helped companies achieved the considerable bottom-line benefits of successfully operating and competing in a 4.0 World will help these head shaking managers stay the course.

EXECUTIVE RECRUITING WILL NEVER BE THE SAME

Currently, 4.0 leaders are a scarce commodity. So, recruiting them is no easy task. But it gets worse. Existing 4.0 leaders are not looking for work. They are very happy were they are, thank you. 4.0 leaders are driven by cause. Yes, they want to be well paid for what they do but their primary motivation is making a difference. 4.0 leaders build common cause in others and in order to do that they themselves need to be driven by cause. So, 4.0 leaders are already engaged in leading an organization that is meaningful to them. But it gets even worse. 4.0 leaders are all but invisible. Distinguished business journals don't write articles about them. They tend not to appear in the local press. And why not? Because, the 4.0 leader pushes his or her team and not him or herself into the limelight. They recognize that accomplishment is no longer about the manager as hero but rather it is now about the team as hero.

The 4.0 executive will not come to an organization because of the salary and benefits package. They will come because they are drawn to what the organization stands for and what it is trying to achieve. To attract the best in a 4.0 world one must first engage the heart.

So how do you find someone who isn't looking for a new position, someone who is invisible and get them to raise a hand and say, "Here I am". Finding and bringing onboard a 4.0 executive requires a radically different approach to recruiting.

But here is the good news, if you're looking for 4.0 leaders, many of your competitors probably aren't (see side box – '***It Takes 50 Years***'). If the past 250 years of organizational history has taught us anything, it is that organizations will hang on to what brought them success in the past. But past success has often proved to be an albatross around

the neck of future success (see side box – '***Rank & Yank and the Demise of GE***').

As Alvin Toffler so aptly said, "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn". Well, success in the Industry 4.0 World starts with unlearning and relearning how to recruit the elusive 4.0 executive.

1 Dr. Nick Bontis, Closing keynote presentation, KM World (McMaster University, Hamilton, Ontario, 2000)
2 David S. Landes, The Wealth and Power of Nations: Why Are Some So Rich and Some So Poor? (New York: W.W. Norton, 1999)

Rank & Yank and the Demise of GE

Illustration: Bob Coady

GE was a 20th century manufacturing powerhouse. It was one of the original 12 members of the Dow Jones Industrial Average, joining that index at its inception in 1896, just four years after GE's formation as a company. For much of the 20th century, GE was defined by its ability to invent, innovate and improve. GE made the first electric stoves, washing machines and refrigerators. In 1927, GE developed the first television. The company developed moldable plastics and built America's first jet engine. GE was also a leader in the development of nuclear power plants.[1]

In 1999, *Fortune* magazine labelled Jack Welch, GE's CEO from 1981 to 2001, as the manager of the century. In August 2000 GE was America's most valuable company, worth nearly $600 billion.[2]

Fast forward less than 20 years and everything had changed. In June 2018 GE was removed from the Dow. By the close of 2018 the company's stock price had fallen by nearly 90%. GE's value, at that time, was about one-tenth of its 2000 peak.[2] The fall in share value after the 2000 peak "wiped out more than half a trillion dollars in shareholder value."[3]

So, what happened?

The change started in 1981, when Welch took over leadership of the company and made a fundamental shift in GE's business strategy. He believed that organic growth – that is, growth through product or service innovation – had run its course, so he developed a growth strategy based on acquisitions. GE had, and still has, considerable management acumen. GE's managers knew how to wring the fat out of an inefficient operation. So, under Welch, GE's growth strategy became one of looking for industrial companies that produced good products but did so inefficiently.

Welch made GE a lot of money by finding, buying and transforming these industry-leading but inefficient companies. In fact, he made GE so much money with this strategy that competitors started to imitate this growth through acquisition approach.[4] This meant that, as the 21st century rolled in, inefficient industry-leading companies became much more expensive to buy. This change made GE's acquisition approach a whole lot less profitable.

Also under Welch's watch, GE Capital, the company's banking arm, was created. A version of GE Capital had been around well before Welch's time. It started life as GE's financing division, making loans to customers to help them with the purchase of GE products. But under Welch, GE Capital was transformed into a bank, becoming at its height America's seventh largest bank.[2] At its peak GE Capital accounted for almost two-thirds of GE's profits.[5] The profitability of GE Capital was such that it allowed the company to easily absorb any missteps it made with its acquisition strategy.[2]

But GE Capital was entangled in the mortgage bubble and when that burst in 2008, GE Capital became a lead weight around the company's financial neck. GE was forced, for its own salvation, to sell off large pieces of GE Capital, reverting what remained to the original customer financing function.

As a result of these untoward events, GE was forced to rethink its strategy. And so, it went "…back to focusing on what it did before Welch took over – manufacturing."[1]

At the time of Welch's departure from GE in 2001, the world was in the initial stages of its fourth Industrial Revolution (referred to as Industry 4.0). Industry 4.0 is driven by an electronically connected world, a world in which knowledge is growing exponentially. Competitive advantage in the 4.0 World lies in an organization's ability to exploit this growing knowledge base and spot opportunities before anyone else does. In the 4.0 World, nothing is exempt from the need for constant innovation, not even the old manufacturing industries. Constant innovation is driven by people working together and building on each other's knowledge and insights. However, for this working and creating together to happen, trust must define the organization's culture.

And here is the rub. One of the things Welch is known for is the introduction to GE of the 'rank and yank' appraisal system. Under this system, managers were forced to stack rank the members of their teams. The top 20% were cited as most productive and received the biggest bonuses, the middle 70% were rated as adequate, and the bottom 10% were automatically fired regardless of the overall performance of the team. This neat little appraisal process created a system in which your loss was as good as a win for me. Rank and yank appraisals create a culture in which people compete with members of their own team. These systems "…lead to information hording, finger pointing, backstabbing, and downright deceit."[6]

The introduction of rank and yank would have laid the foundation for the creation of a low-trust environment that would have been the antithesis of the high-trust culture required to succeed in the Industry 4.0 World.

After Welch retired, GE abandoned the rank and yank system. You would think that if ranking and yanking leads to a low-trust culture, then ending such a system would reverse the process and trust would return. But this is rarely the case. Culture is like self-replicating DNA. Once it is in place, whatever initially created it is no longer needed for its ongoing propagation. This means that the low-trust culture generated by rank and yank can continue to perpetuate itself long after rank and yank is forgotten history. Changing a company's culture requires intentional interventions; for example, replacing a rank and yank system with a system like Apple's, where people are rewarded not for how smart they are (and Apple goes out of its way to hire really smart people) but rather for how smart they make the team.

Now, Jeffrey Immelt, Welch's successor as CEO, has stated that under his leadership GE made great strides in revamping its culture.[7] But others say different. "…People who worked there say that there was just as much competitiveness inside the walls of GE, and that, to be successful, you could never let anyone see you sweat… So, problems-that could be solved by working together-festered and grew."[8] Not a great omen for success in the 4.0 World where working together is the name of the game.

Welch made GE a lot of money. A lot of dividends were paid to a lot of shareholders under his watch. But when he retired, his growth through acquisition strategy had run its course and, in a few years, his beloved GE Capital would go bust. And finally, but certainly not least, the rank and yank system had most likely anchored GE in a low-trust culture that would make returning to its manufacturing roots, in a 4.0 World, a very difficult task.

So, what is the take-away here? What can other organizations learn, about the 4.0 World, from GE's decline? First, success in the 3.0 World does not equate to success in the 4.0 World. Constant innovation is the defining characteristic of the 4.0 World. And trust, between staff, is the yardstick that will measure an organization's ability to make its way in this world. Any organization that damages this trust is an organization that is damaging its own future.

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2 Thomas Gryta & Ted Mann, "GE Powered the American Century – Then It Burned Out," *WSJ* (Dec. 14, 2018).
3 "Charting GE's Historic Rise and Tortured Downfall," *Bloomberg* (Jan. 31, 2019).
4 James E. Schrager, "Three Strategy Lessons from GE's Decline," *Chicago Booth Review* (Aug. 14, 2019).
5 Jeff Spross, "The Fall of GE," *The Week* (Mar. 19, 2018).
6 Stephen R. Satterwhite, "Here's to the Death of Microsoft's Rank-and-Yank," *Forbes* (Nov. 13, 2013).
7 Jeffrey R. Immelt, "How I Remade GE," *HBR* (Sept-Oct, 2017).
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It Takes 50 Years

In 1987, Robert Solow, renowned economist and Nobel Prize winner, stated, "You can see the computer age everywhere but in the productivity statistics."[1] Solow was referring to the apparent lack of return on the corporate world's investment in computing. In the U.S., computing capacity had increased a hundredfold in the 1970s and '80s and yet productivity growth had actually gone down, slowing from over 3% in the 1960s to approximately 1% in the '80s.[2]

To gain insight into what was happening in the age of computing, AKA the third Industrial Revolution, it is helpful to look at the second revolution, the electrification of industry.

Electric motors were available to industry starting in the early 1880s. "Yet by 1900, less than 5% of mechanical drive power in American factories was coming from electric motors. The age of steam lingered."[3] It wasn't until the 1920s, four decades after its introduction, that the electric motor started to have a significant impact on factory productivity.[4]

In the age of steam, factories organized their machinery in a straight line because each machine had to draw its power from a belt connected to a very long steam-powered drive shaft. There were early adopters who added electric motors to their factories, but these adopters tended to string out the electric machines in straight lines similar to the stream-driven lines they were replacing.

Electrification offered industry considerable benefits. First, instead of one large steam engine with a long and heavy shaft running the length of the building, each machine could have its own, much smaller electric motor. Factories could be laid out quite differently. "Now managers were free to design workspaces that optimized each task and were able to experiment and improve production processes."[5]

Why did it take industry close to 40 years to realize the benefits offered by electrification? The prime reason was that factory floor managers did not stop to rethink the implications of a new technology. They did not consider how the factory's processes, organization and structures needed to change to capture the benefits of electrification.

Which brings us back to Robert Solow's observations on the low ROI in the computer age. Economists Eric Brynjolfsson and Lorin Hitt published a study showing that the key to capturing the benefits offered by computers was the same as that for electrification.[6] Their conclusion was that new processes, new worker skills, and new organizational and industry structures where the major drivers of benefit realization. They went on to show that the complementary investments in the organizational changes required to realize the benefits of automation were as much as an order of magnitude larger than the investments in the computer technology itself. It turns out that acquiring the new technology is the easy bit. Changing the business to capture the benefits of the technology is the hard part.

For the first 50 years of the computer age, automation tended to be little more than the creation of electronic file cabinets – lots of data and spreadsheets but no significant process or structural changes. But by the start of the 21st century, with the rethinking of workflow and the automation of such things as business–customer interactions, the benefits and rewards of computer technology where finally being realized in a significant way.

What all of this means is that simply dropping a new technology into an existing business is unlikely to provide a significant return. Actually benefiting from a new technology requires understanding the implications of the new technology and then reshaping the business based on those implications.

The other key – and somewhat frustrating – learning is that it takes organizations somewhere between 40 and 50 years to realize that the world has changed and that business as usual will no longer work.

Industry 4.0 has been building up 'steam' for some time. But it seems to have truly gotten underway at the start of the current century as the internet bloomed. This time around, the new technology is the highly educated knowledge workers who are connected to exponentially expanding fields of knowledge. The opportunity to be realized from this 'new technology' is ongoing value creation. This continuous creation of value will require leaders who know how to build environments that foster the creativity of the workers who occupy them. In the 4.0 World managers will need to manage the ether, the space between individuals. For it is this space, otherwise known as the organization's culture, that will determine people's ability to work together and build on each other's thinking in the pursuit of value creation.

If past industrial revolutions are any indication, it seems that the guiding principle for many organizations will be '*I will not see beyond what I have known*'. As a result, it will be sometime between 2040 and 2050 before organizations, en masse, get their heads around this challenge. And for the few that get it now, they have a very large playing field all to themselves.

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6 Erik Brynjolfsson and Lorin M. Hitt, "Beyond Computation: Information Technology, Organizational Transformation and Business Performance," *Journal of Economic Perspectives*, (Vol. 14, no. 4, Fall 2000).