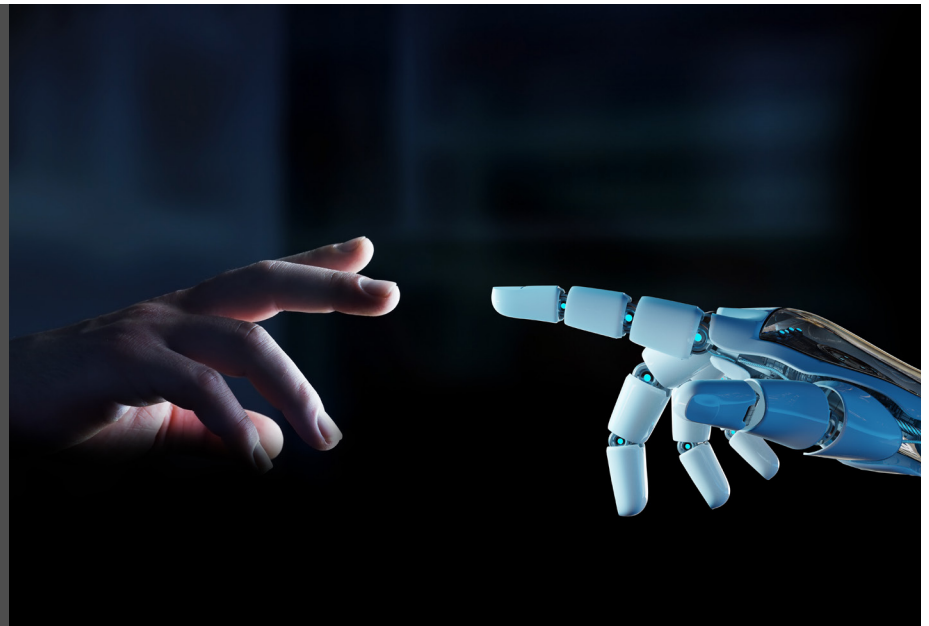


# Artificial Intelligence: A Leadership Quandary

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## Author's Acknowledgement

This issue is a collaborative effort originating from Ozzie Paez's blog post and his inquiring about the human factors and leadership issues surrounding Artificial Intelligence. Constantine over the past few years has become a cyber-security professional so we thought it a good idea to integrate his insights. Larry and I are the leadership and human performance guys. We thank Ozzie and Constantine for their contributions and insights.

## Introduction

Artificial Intelligence is a term being used often. It has been the subject of movies, both fiction and non-fiction, books and many articles. What is Artificial Intelligence? How does this fit in with our series of articles on leadership and most recently on the failures of leadership development? It is a real and timely topic and does impact the leadership of many organizations.

A rather techie description of Artificial Intelligence originates from a white paper the Cray computer company commissioned and reported in the Tractica White Paper 2nd qtr. 2018. It states the following:

“Artificial intelligence (AI) is an umbrella term for multiple technologies that are designed to provide computers with human-like abilities of hearing, seeing, reasoning, and learning. These techniques, which include machine learning (ML), deep learning (DL), computer vision (CV), and natural language processing (NLP), unmask hidden patterns in large data sets, and then, using complex algorithms, can correlate findings between seemingly unrelated variables.”

As AI gains traction, organizations are realizing that only larger-scale, enterprise-wide deployments are likely to provide full

access to the operational and economic benefits of these new technologies. But enabling AI is not a plug-and-play proposition. Significant time, resources, and capital must be deployed, and in most cases, internal company teams are not experienced enough with technology, let alone programming, and automation to even consider how they can effectively use AI, nor do they have the cutting-edge data science skills, software development expertise, or experience in selecting the right software platforms, hardware, and infrastructure to adequately embark upon a truly transformational AI implementation journey. Nevertheless, organizations can still take advantage of AI by tapping into internal operational knowledge and external expertise to bring AI solutions to market in a matter of months.

Sounds daunting and scary to many people, including the leaders at many companies. The concept being, when we talk about machines, our thinking goes to machines in the context of a mechanical machine designed to perform a specified job. When we expand the language in 2018 terms of machine such that a 'machine' can be a box of tiny electronics that can not only do what it was created for, but has capabilities and can do more than imagined. This is where scary comes in. Not scary in the context of fear as in 2001 A Space Odyssey, more from a capabilities context and how to leverage/maximize those capabilities.

Will the machines learn to think and make decisions? How does this power get harnessed to improve companies and enhance the leader’s ability to manage and make critical decisions? The complex variables in the Cray definition mean very complex programming by very highly skilled people. How does a leader manage people like these? It is most certainly not like managing the accounting department or a group of engineers designing a power plant.

A more pedestrian way of looking at AI in an operational environment may be as follows. Imagine a control room; we did a significant amount of human factors work in power plant control rooms a long while back. Now imagine a control room in the AI world. There would be one operator and a dog. The dog’s sole responsibility is to bite the operator if he or she touches the control panel and the operator’s role is to feed the dog. The system takes care of itself. While this is trite, in an AI world much of the human interaction is relegated to computers.

In a more serious vein, we live in a world where the human is accustomed to recognize patterns and draw from a long history of operating experience while the computer is quickly monitoring parameters and developing information and decisions to enhance the humans higher level decision cycle. Let’s say a valve is not operating correctly. Automation of controls can begin to regulate an issue until possibly it sets a pre-alarm alerting the computer that other parts of the system may be affected. The computer may have subroutines to deal with this or may have a similar experience that it can draw from having watched a human conduct a similar process, it can take limited action within a scope programed by the operators. At a point the operator should be alerted, review the overall situation, provide high level input and add to the decision look. The level of human interaction may increase to fill the voids where input is needed in the decision cycle.

The arguments are many, but as the Cray paper states:

“The use of AI is commonly tied to a desire to improve the efficiency of a process, product, or service; reduce the cost of performing a task or process; or to generate additional revenue or profit based on the improvement of the efficiency of a task or product.”

The reality is, AI is already involved in some way shape or form, in every business that has any sort of connectivity. This illustrates the misunderstanding of the topic. One of the earliest uses of AI was in Spam filtering, about 20 years ago, as email became popular. Over 20 years ago there was Machine Learning (ML) in the form of a neural network in the Apple Newton to recognize handwriting. Backbone routing and switching on the internet uses AI to prioritize traffic... It is a huge factor in our life today.

As AI grows it will have an impact on all of us. We need to understand what it is, what it can do and how it needs to be managed.

### Current Perspective

Let’s jump to the real world. The Cray paper states; “From an organizational and revenue-generating standpoint, AI is still in its infancy.” There are challenges such as who owns AI within an organization, Proof of Concept (POC) program development, levels of investment, and infrastructure considerations. To complicate this issue even more, in the 2018 October McKinsey Quarterly the focus is on Digital Strategy. The paper is titled: “Digital strategy: The four fights you have to win - Yesterday’s tentative approaches won’t deliver; you need absolute clarity about digital’s demands, galvanized leadership, unparalleled agility, and the resolve to bet boldly. If there’s one thing a digital strategy can’t be, it’s incremental. The mismatch between most incumbents’ business models and digital futures is too great—and the environment is changing too quickly—for anything but bold, inventive strategic plans to work.” In this paper they introduce four ‘fights; Fighting Ignorance, Fighting Fear, Fighting Guesswork, and Fighting Diffusion.’

The above highlights many challenges associated with AI. We would like to introduce our own challenges to business leaders. Consider the following, in addition to the above. These are not unusual, but what is unusual is the pace and scope. Business leaders face challenges in three critical areas: leadership, strategy, and talent acquisition and retention. Sounds familiar – we’ve addressed these issues in past articles. Effective Leadership is essential during disruptive periods and the last two decades witnessed repeated waves of disruptive technological innovations. In this context, executives increasingly see AI as driving the next



wave of widespread disruptions. Consider the June 21, 2017 Fortune 500 article; CEOs See A.I. as a Big Challenge Fortune's survey results, found of responding CEOs:

- 74% judged leading their organizations through a period of rapid technological change as their number one challenge,
- 71% believed they were leading a technological company, and
- 81% considered artificial intelligence and machine learning “very important” or “extremely important” to their company's future [ii].

The news reports and we watch as Sears and other companies close their doors. GE is in trouble. These big companies are dying because they don't have a “technology first” strategy. They want to plug in some widget that can give them AI. All these executives want is to read an article and “get the AI” easily as that. In reality, companies need to realize they are technology companies; they need to realize that they are only as valuable as their technology infrastructure and flexibility to adjust to change.

All innovation is disruptive innovation to companies that are not ‘technology first.’ Sadly, if one doesn't want to understand the technology they are doomed to misuse and under-utilize it. We are all a part of a big data project right now and only those who can use technology will prosper. We see Amazon not only become one of the largest retailers but also become one of the largest cloud service providers. Innovation is happening, as huge powerful companies stand-by and watch helplessly. Google controls most of the traffic on the internet and can pinpoint flu outbreaks and trend election results. Facebook manipulates billions of people all over the world. This has nothing to do with leadership as much as it has to do with a change in how we think about leadership. Leadership is knowledge and understanding of application of technology and how the best of all things can be leveraged together.

These findings point to broad leadership challenges facing executive teams working to cope and exploit AI for competitive advantage and growth on top of the challenges they face dealing with ensuring their company is operating effectively.

### The Leadership Quandary

While leadership is crucial, companies working with disruptive, innovative technologies will need new roadmaps and purpose to guide their decision-making. It's a key lesson learned from the Dot-Com boom and bust, when companies lacking effective strategies wasted critical time and investment dollars on uncoordinated, unproductive initiatives. The latest research from MIT and Columbia show that the best performing companies in the world are guided by competitive strategies that promote disciplined development, experimentation, testing and adoption of innovative technologies [iii].

Addressing the strategy challenge will require on-going attention and engagement from corporate leadership teams. Dr. Cynthia Montgomery, a Harvard Business School professor in the Entrepreneur, Owner, President (EOP) program points out that the only sustainable strategy is one that anticipates and responds to change. In this context, strategy is a non-stop responsibility that

CEOs and their executive teams can't outsource or expect to solve in old-fashion brainstorming sessions [iv]. The dynamic aspect of strategic planning is further reinforced by McKinsey's comment about incrementalism and how traditional strategic planning is by its nature incremental. Strategy change must be bold which requires bold leadership.

Compounding the challenges of leadership and strategy is the need to acquire, develop and retain technical talent. The scarcity of trained, experienced engineers, programmers, mathematicians and scientists is creating “have and have nots” situations that can stifle competition and innovation. It's affecting startups and communities developing centers of innovations because they frequently can't find the technical, academic and intellectual talent to support their initiatives. For example, small and startup technology companies that once attracted top candidates are facing growing competition from large companies that offer AI experts up to \$500K per year in salary and benefits [v].

Businesses also need executives and managers well versed in AI and smart technologies to lead their initiatives. Before that, those in the technology arena, feel executives need a better baseline understanding of technology itself as a prerequisite. These are critical roles given the high costs of developing AI applications and related smart systems, equipment and services. Delays, inadequate planning and poor execution can drain capital and trigger catastrophic talent flight. Capable management and leadership are indispensable to preventing costly missteps that can doom startups and weaken established companies. Unfortunately, executives and managers with relevant AI and smart technology experience are also in short supply. Most executives are not well versed in AI and do not have the skills to lead such a drastic transformation – despite the survey in Fortune referenced above where over 70% felt they were leading a technology company through rapid technology changes.

The traditional barriers to emerging innovative technologies like artificial intelligence, Internet-of-Things and advanced automation for the most part, are gone. Today's barriers are primarily human: leadership, strategy, business models, talent and effective management.

Considering our last issue about Leadership programs becoming stale, coupled with the new dynamic of the human component keeping pace with technology, presents a broad range of challenges. In the early 2000s we developed a competency model for a high technology telecommunications company. There were eight primary competencies:

- Leadership
- Communication
- Business Process
- Problem Solving
- Interpersonal/Interactive
- Administrative
- Business Knowledge
- Professional Self-Development

For each competency, we defined the following:

- Skills/Knowledge
- Attributes and
- Experience

This included listing within each of the Skills and Knowledge, the Attributes and Experiences, specific delineation of what was necessary to meet a level of competency. The group developed a detailed description for each Skill and Knowledge item. We provide an example of this model below.

<b>Business Process</b>		
<b>Skills &amp; Knowledge</b>	<b>Attributes</b>	<b>Experience</b>
<ul style="list-style-type: none"> <li>• Organizational roles and responsibilities</li> <li>• Internal/external interfaces</li> <li>• Department strategic plans</li> <li>• Company Strategic plans</li> <li>• Company policy and procedures</li> <li>• Customer requirements/needs/identification</li> <li>• Vendor roles and responsibilities</li> <li>• Life Cycle methodology</li> <li>• Analytical skills</li> <li>• Quality Achievement</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible</li> <li>• Consistently</li> <li>• Persistence</li> <li>• Articulate</li> <li>• Patient</li> <li>• Cohesive</li> <li>• Result Oriented</li> <li>• Accurate</li> <li>• Quality Oriented</li> </ul>	<ul style="list-style-type: none"> <li>• Strategic Plans</li> <li>• System Development</li> <li>• Business process Reengineering</li> <li>• Successful Track Record</li> <li>• Intra-Company diverse Experience</li> </ul>

**Business Process: Skills & Knowledge (selected examples)**

**Internal/external interfaces**

Knowledge of the right “people to call.” This relates knowledge of our customers and vendors and their needs/roles/responsibilities.

**Department strategic plans**

Knowledge and support of strategic plans and taking an active part in not just making the plans, but making the plans work.

**Life Cycle Methodology**

Knowledge and skill in using our Methodology Templates for system development. Including, knowledge and understanding of the reasoning behind the use of a systematic, repeatable method for documenting our system development activities.

Why is this relative to this article, and from a leadership/human performance perspective, what has really changed over the past 15 years? First, we believe the competencies are, for the most part, applicable. In the context of Artificial Intelligence and Leadership, each Competency requires reassessment across all three areas of Skills and Knowledge, Attributes and Experience. This reassessment is not a trivial endeavor. It requires a commitment on the part of existing leadership, the exercise of defining the S/K, Attributes and Experience in the context of AI requires probing questions, honest insights, even Imagineering of where AI can take an organization.

The dynamic has changed, and is more complex because of the scarcity of technical talent, and experienced executives and managers. Academic, technical and executive training programs are gearing up to meet demands, but it will be years before talent pools expand to meet growing needs. Then there is the issue of Attributes. Can an organization successfully integrate a new AI technology while characterizing the attributes and desired culture resulting from an AI integration? People have insecurities. AI is a threat, the threat manifests itself in many different ways depending on how an organization’s leadership positions the organization for a major technological transition. In the meantime, many companies and centers of excellence will be struggling to attract and retain the best and brightest to their ranks.

## Conclusion

So often we place focus on the technology and all the wonderful things tech can provide to humanity. We anticipate savings in time that will allow us to spend more time doing what we want to do. People are still looking for that time. Now Artificial Intelligence arrives and the promise continues with even greater expectations. The issue really is people. People at all levels of the AI revolution. Challenges abound in the leadership world. Many of the traditional functions of Strategic Planning and Staffing, Workforce Planning, hiring and retaining people with the necessary skills and training, remain and become even more critical with the level of skill required by AI development. Many in the workforce will be frightened of AI. Will it replace people? What will it do to my job? Will I need to learn new skills that involve a level of technology I don't have? Leaders must be

prepared and be ready to address these challenges, and the rules of engagement are quite different. Stale leadership development and leadership skills are and will be challenged and stressed. Thinking needs to change. Reframe a company's purpose and redefine their mission in the context of a technological context. AI is becoming a reality. Both the workforce and the leaders must be prepared to deal with, manage and control AI so it can become an essential tool in the ongoing development of industry and life. We must find effective ways to train and retrain the employees who will work in a new technological world and just as importantly we must redevelop our leadership development programs so the leaders are prepared to deal with a newly retrained workforce; and to manage and control this new technology called AI.



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[iii] Ozzie Paez, Competitive strategy, digital strategy and transformation, May 3, 2018, Ozzie Paez Research, <https://www.ozziepaezresearch.com/single-post/2018/05/03/Competitive-strategy-digital-strategy-and-transformation>

[iv] Cynthia Montgomery, The Strategist: be the leader your business needs, p. 132, 2012, Harper Business

[v] Cade Metz, Tech giants are paying huge salaries for scarce AI talent, October 22, 2017, New York Times, <https://www.nytimes.com/2017/10/22/technology/artificial-intelligence-experts-salaries.html>

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