



# Insight Titanium Research

AI and Leadership

Discussing Implications of Artificial Intelligence on Organizational Behavior, with a Special Focus on Leadership.

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**Are we leading AI or is AI leading us?** This *Insight* provides a brief review of the concept of artificial intelligence and its implications on leadership and at the same time serves as preparatory text for the conference track *AI & Leadership* at the Applied *Machine Learning Days* (EPFL, Lausanne, Switzerland). Moreover, this review is part of a broader research project aiming at making a contribution to close the gap in research on leadership in a digital age, particularly focusing on artificial intelligence, in order to foster evidence-based decision making in the future.

This *Insight* will start by outlining the two main concepts of our current research project: (1) Leadership and (2) artificial intelligence. If you would stop reading at this point, no one could blame you because one should still remain skeptical about someone offering a precise definition of these two terms. Common to leadership and AI is that both definitions and demarcation criteria are still vividly debated in both research and practice. Additionally, both concepts share the salience of money at a minimum. Both concepts have created industries where lucrative business beckons. Yet these industries seldomly go beyond mere best-practice story-telling, hardly offer clear management directions or implementation strategies and largely fail to order the fuzzy market of AI and leadership half-truths that are proliferating constantly (corresponding to Dörr et al., 2013).

### **Towards a Nuanced Understanding of Artificial Intelligence**

Initially, *Artificial intelligence* is nothing more but a megatrend which more and more permeates our private and professional lives and that we must learn to deal with. If leaders are responsible for others, they must understand the history of AI research and development, functions and functionality, and potential impact artificial intelligence has on themselves, their followers, and their organization. Artificial intelligence is already part of our lives and will continue to increase its impact on management and the workplace. Yet currently, many initiatives have been focused on the question of how to make AI applicable for businesses and to raise user trust in AI, while lacking a deeper understanding of potential risks. The *try now, regret later* attitude still prevails and there is no time for a *research now, no regrets later* culture.

Relatively little empirical evidence is available on how AI will change human interactions, specifically regarding leadership processes or cultural aspects. In fact, relatively little will be ever known about AI if we agree that once we understand AI, it is no longer considered AI? According to D. Hofstadter:

*AI is anything that has not been done yet*

This is also called the *AI Effect* (McCorduck, 2004). AI is dynamic and interdisciplinary. Trying to find a clear definition of what it is, will always raise a lot of critique and discussions. Yet such discussion might be fruitful and promising. For instance according to the 100 Year Stanford Study, thousands of papers have been written including the keywords AI or phrase artificial intelligence (also compare *AI Index 2018 Annual Report*). So why do people still get hung up on definitions?

*Theories of intelligence and the goal of Artificial Intelligence (A.I.) have been the source of much confusion both within the field and among the general public.*  
(Monett and Lewis, 2018)

Confusion among the general public will most likely even increase, since governments have reached a new high in mentioning AI/ ML, which will spill over to the mainstream media and reignite the AI flame, for better or worse. If this confusion about what AI is were endured, there would be great potential to reach a point of meaningful productivity.

According to Russel and Norvig (2012), four main categories of defining AI have evolved: (1) Human thinking and (2) behavior, (3) rational thinking and (4) acting. Perspective (1) tries to model human thinking, which is mostly associated with the cognitive sciences, focusing on exploring the *blackbox* (inner processes). (2) is the idea of the famous Turing Test, in short, an approach trying to simulate human behavior. It focuses on visible, outer processes (behavioral approach). The Turing Test is won when an observer cannot differentiate a human from a machine. The rational approach is using a combination of mathematics and engineering. (3) It focuses on rational thinking, such as logic (e.g. If, Then) and formulates rules to reach the best decision. Rational acting (4) incorporates the idea of an agent, behaving rationally and mostly autonomously. All approaches have contributed in their ways to the advancing the field.

Ray Kurzweil offers an intuitive understanding of AI and defines it as *the art of creating machines that perform functions that, when performed by humans, require intelligence* (Russel & Norvig, 2012, p. 23). Beyond executing functions intelligently, Joanna Bryson adds an important feature: AI is a technology produced intentionally by humans to address a specific question.

*AI only occurs by and with design. AI is only produced intentionally, for a purpose, by one or more members of human society.*  
(Bryson, 2019)

Hence, AI is always a method. A tool built for a specific purpose. For further information on the definition of artificial intelligence, Bryson (2019) and Wang (2019) are recommended readings. Along these lines, management is a set of tools or methods built for a specific purpose. Leaders are not tools and have an inherent purpose or are given responsibility fulfill a purpose and reach a set goal.

### **Defining Leadership to understand Management**

*Leaders must take responsibility for others and thus affect the well-being of individuals, organizations, and nations.*  
(Edelson et al., 2018)

Artificial intelligence and management are tools designed for a purpose. Both are designed to make our lives better but that can only happen if we succeed in learning how to understand and use both of them wisely. Before management tools and schools are created, leadership has to be understood. Especially in the context of emerging technologies, such as artificial intelligence, organizational and personal values, purpose, culture, and impact are put to test and the situation must be thoroughly evaluated.

Leadership is an art, allowing humans (leaders) to execute actions that influence the behavior of other people (theoretically also robots but that's a different story). Influence is probably the lowest common denominator of most leadership theories, which is defined as the act of influencing one another to achieve a goal. How this influence takes place concretely, in a more authoritarian or participative style for example, has been researched for quite a while now in psychology, with a great corpus of empirical data available.

Specifically, *supervisor behavior* was examined from different perspectives in psychology, whereby traits, situational factors (contingency theories), management style and interaction-oriented approaches can be distinguished. The question at the center of psychological research is which leadership approach leads to success (or failure). Hence it is not only the complexity of leadership behavior leads to complications but also the definition and operationalization of success, as well as the integration of intervening variables.

Another problem area is the volatility of situations and the rapid change in the socio-cultural and technological environment which means that rigid and deterministic ways of thinking no longer have a place in modern leadership paradigms. Finally, the rapid change in the course of globalization also leads to a change and diversification of staff, so that cultural values and norms have to be increasingly taken into account (compare Rosenstiel, 2004; Steinmann & Schreyögg, 2005).

When talking about success and outcomes, tangible measures, one must start reinvestigating the difference between management and leadership, a discussion which has re-ignited in management reviews in the digitalization context. Whole courses and study programs have emerged on AI management, focusing i.e. on the normative how-tos of AI in business. The key challenge presented is the unprecedented pace of how AI is infiltrating society whereas evidence-based and rigid academic research in the social sciences on the other side cannot keep up with this speed of change. Empirical social scientists are faced with a challenging race to catch up. But where to start?

### History is a Key to Understanding

A common theme for understanding the nature and implications of both AI and leadership is taking a deeper look into the history of both. How they have started, developed, what hypes they have triggered, what improvements they have brought to humankind. It is a helpful tool to distinguish hype from (let's call it) reality. Within the next publications and conferences, historical developments will be explained and discussed.

### Bridging the Gaps: AI and Leadership

A lot of knowledge and papers about AI Management are spread through market-driven initiatives, ideas, normative approaches or biased consulting how-to books and blogs, but empirical evidence from the social sciences, on how artificial intelligence impact organization behavior is scarce. Our mission is to fight the lack of research and discourse, in order to mitigate potential risks and base management decisions on a solid fundament. We pro-

pose discussions with various actors from academia and practice. This will be implemented as an expert discussion at the *Applied Machine Learning Days* at EPFL in Lausanne (January, 2020). This conference will address different exploratory insights from academia and practice. Current research projects will be presented from NFP75 research project at the *University of St. Gallen (FAA-HSG)* or *Applied University in Lucerne*. Companies, such as *Siemens* and *UBS*, will address their current challenges and future projects. Questions addressed will include but are not limited to:

- How will human behavior and interaction at the workplace change in the AI era?
- How can AI make leaders more empathetic and/or more efficient?
- How could AI have a negative impact on leader behavior and attitudes, for instance by reducing leaders' attention span?
- Are we underestimating the critical thinking skills needed to supervise an AI and how would these have to look like?
- Will AI help us to be more humane at the workplace or could AI make organization culture and team coherence potentially worse by leading to a higher work intensification?
- How will AI/ML, including automation, influence empathy, trust, and human relationships at the workplace? Can we reinvent leadership or in the worst case, lose the human touch?

The goal of the AI and Leadership conference and upcoming related projects is to discuss, how various forms of AI/ML incl. robotics, whether they are performance control mechanisms in HR or robots in healthcare, change our everyday social communication and behavior patterns.

For now the goal is not to find answers but to raise good questions. What research questions, hypotheses, projects shall be explored and investigated? What challenges and opportunities must leaders be aware of and/or what (safeguard-)measures need to be initiated? The results of the conference gathering will be published in the annual Human Resources Consulting Review by Prof. Dr. Jens Nachtwei (ISSN 2196-0232).

### Scope of the AI and Leadership project

Can we bring these two bottomless barrels together? Or rather, why should we? This new research project at scip AG, in collaboration with various actors from academia and practice, is conducted to raise key questions and answers about the meaning of leadership in the context of artificial intelligence.

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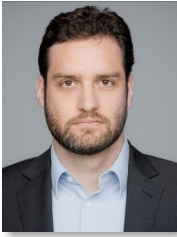
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\*Note: This *Insight* serves as preparatory text for the Applied Machine Learning Days at EPFL Lausanne, Switzerland (January, 2020). Marisa Tschopp, Co-author of this insight is co-leading the track AI & Leadership. The Applied Machine Learning Days at EPFL consists of five days of 31 hands-on sessions and 29 tracks on machine learning and artificial intelligence with top speakers from around the world.

\*\*Note: Editors of the track proposal for AI and Leadership: Prof. Dr. Antoinette Weibel (University of St. Gallen), Daniel Schmidlin (SGMI Management Institute St. Gallen). Co-Organizer of the track Marisa Tschopp and Dr. des. Simon Schafheite (University of St. Gallen).

## About the Authors



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