

# ROLE OF ARTIFICIAL INTELLIGENCE IN LEADERSHIP

Archana Yadav  
Assistant Professor  
University of Delhi, Delhi, India

## Abstract

**Background:** Leadership is evolving with introduction and inclusion of new Technologies like Artificial Intelligence. Nature and role of leadership seem to be changing. Artificial intelligence is expected to play wider role and grow exponentially in coming years which requires Leaders in Business Organizations to be more prepared, adaptable, updated and aligned with the new technologies such as AI. This Article attempts to analyze how Role and nature of Leadership is going to change with the inclusion of Artificial Intelligence in future to what it is today.

**Purpose:** The purpose of this Article is to study and analyze the Role and Nature of Leadership with inclusion of Artificial Intelligence. To answer the key questions:  
How Nature and Role of Leadership is going to change with use of AI?  
What will be new set of competencies required by leaders in coming future?

**Research Methodology:** for appropriate framework of effectiveness was based on scientific literature review in-depth study was done on various studies from journals, Text books, E-books, Reviews.

**Findings:** Role of Artificial Intelligence in Business World is going to grow exponentially in coming years. AI will be Integral part of Leadership, specifically with Cognitive Processes, Decision making. Leadership will require competencies like Emotional Intelligence, Humility, Vision, Adaptability, Motivation. 'Hard elements' of AI and 'Soft Element' of Leadership will go hand in hand.

*(Key words: Artificial Intelligence, Leadership)*

## 1.0 INTRODUCTION

There is a paradigm shift in the world today due to fast changing technologies and economies. Uncertainty takes over stability, unpredictability is the new norm. In this transition phase where organizations have to Align their processes with new technologies like Artificial Intelligence. Leadership will be changing in execution of its Role. Roles involving Strategic decision making, Cognitive processing, Decisions related to data such as Analyzing performance of a team, to improve production and service based processes AI will have important role to do, Leaders job will be simplified with hard elements of decision making. However AI will have to be integrated with human aspect/soft elements of Leaders such as critical evaluation of any decision, for Motivation, competencies like stable and calm, humility, authenticity, character, values, compassion, vision, creativity, Emotional Intelligence, Spiritual Intelligence.

## 2.0 REVIEW OF LITERATURE

### 2.1 Historical Evolution of AI

Turing A.,M (1950)<sup>1</sup> "*Computing Machinery and Intelligence*"; Alan Mathison Turing (Mid-20th Century) –British Computer Pioneer.1935 – He described computing machine having limitless memory and

<sup>1</sup> Turing, A M. 1950. Computing Machine and Intelligence: Mind 59, pp. 433-460.

a scanner moving back and forth by memory by symbols. This concept is now known as Turing Machine.

Bruce G Buchanan (2005)<sup>2</sup> “A (very) brief History of Artificial Intelligence” Donald Michie (1945) – Turning colleagues at Bletchley Park. found Department of Machine Intelligence and perception at the University of Edinburgh. He also recalled Turing’s frequent discussions as to how computers can learn from experience and contribute in problem solving through use of guiding, principles – known as heuristic problem solving. 1948 – Turing introduced many prime concepts of AI such as “Intelligent Machinery” his idea was to train a network of artificial neurons to perform specific tasks/goals at Bletchlypark he illustrated idea of playing chess on machine intelligence even though he experimented with designing chess program but in absence of computers it remained to theory. 1950 – The Turing introduced a test for computer intelligence which today is known as Turing test. Turing test involves three participants a computer, a human interrogator, human foil. Fifty years later do Turing’s prediction in 1945 of computers playing chess came true when in 1997 International Business Machines Corporation built chess computer called Deep blue and beating Garry Kasparov, reigning world champion in a six game match.

B. Jack Copeland & Diane Proud foot (1999)<sup>3</sup> “ ‘The Legacy of Alan Turing ‘Christopher Strachey (1951) quote first AI program, later by Strachey’s director of at university of oxford ran program on Ferranti Mark computer at University of Manchester England. Arthur Samuel.<sup>4</sup> (1952) this program could play game of checkers at good speed by First Information on machine learning was published in 1952 by Anthony Oettinger at the University of Cambridge known as ‘ Shopper’. Arthur Samuel developed a game checkers took over Strachey’s checker program and extended it over the time. In 1955, the enabled the program to learn from experience. Samuel came up with mechanisms for role learning and generalization, his program won game against a checker champion in 1962. Shopper was instructed to purchase out of eight shops simulated. Shopper while purchase would memorize items in each shopping next time when shopper was instructed to shop it would go straight to the right shop. Samuel’s programs continued in evolutionary computing. Evolutionary computing involves automatic methods of generating and evaluating, till highly proficient solution comes. John Holland(1959) – Holland proposed a multiprocessor computer that would assign artificial neuron also contributed to evolutionary computing by uniting test for prototype of IBM 701 computer. He designed a neural network experimenting with a virtual rat that could be trained to reach his maze. Daniel Mills (1985) built the 65,6536 processor Thinking Machines corporation – super computer.

Bruce G. Buchanan (2005) <sup>5</sup> “ A Very Brief History of Artificial Intelligence mentions’ Allen Newell and J. Clifford Shaw (1955- 56) of the RAND corporation and Herbert Simon of Carnegie Melon university contributed landmark by theorem program. The program was known as the’ Logic Theorist’. They also wrote program called the General Problem Solver or GPS the first version ran in 1957. GPS would solve multiple number of problems/puzzles using trial and error approach Newell, Simon and Shaw developed Information Processing Language (IPL) a computer language which tailored for AI programming. John McCarthy (1960) coined the term AI Combined IPL elements and produced LISP (List processor a programming language)

Joseph Weizenbaum (1966)–wrote AI Program called ‘Eliza’ Kenneth Golby a Psychiatrist of Stanford university wrote ‘Parry ‘developed language programs where psychiatrists were asked if they were in communication with Parry or human were not able to identity. Eliza also was canned on sentences and programming tricks.

## 2.2. Role of AI in Leadership

Chamorro, Premuzic, Wade & Jordon<sup>6</sup> (Harvard Business Review, 2018) “*AS AI Makes More Decisions, the Nature of Leadership will change* “ states Ai will take care of “Hard” Elements of Leadership related to cognitive Processing information, Leaders will focus more on “Soft” Elements such as Attitudes, Traits ,Behaviors where areas like decision making, knowledge expertise may lose their essence

<sup>2</sup> Copeland, B.J. and Proudfoot. 1996. The Legacy of Alan Turing: Mind 108, pp. 187-195.

<sup>3</sup> Copeland, B.J. 2000. Minds and Machines; retrieved from doi.org,10/5/19/A:1011285919106

<sup>4</sup> Bjornsson , Burch, Jonathan Schaeffer, Sutphen . 1952. webdocs.cs.ualberta.ca/~chinook/project :University of Alberta

<sup>5</sup> Buchanan, Bruce G. 2005. A Very Brief History of Artificial Intelligence retrieved from .questia.com/magazine/1G1-145633110/a-very-brief-history-of-artificial-intelligence

<sup>6</sup> Chomorro, Wade and Jordon. Jan22, 2018. “As AI makes more decisions the Nature of Leadership will change :Harvard Business review retrieved from hbr.org/2018/01/as-ai-makes-more-decisions-the-nature-of-leadership-will-change

but aspects like humility, vision, adaptability, character, emotional intelligence will be more focused area of leadership in the age of AI.

Jason Wingard<sup>7</sup> (Forbes, 2019) “*The AI Revolution is Here –Are Business Leaders ready?*” Points out on three specific areas where AI will impact greatly: (i) Core Business (ii) recruitment & hiring (iii) Decision Making even though AI focuses on data & Technology but these models will be possible by Leaders who will integrate these models with their human Competencies

Central Christian College (2018) States AI will help in improving in Decision making part of Leadership, Leaders will focus on human aspects rather than cognitive processes. They will focus more on what Robots/machines are not capable of doing like humility, flexibility, character, vision. Evolution of AI will require leaders to be prepared for change to shift in focus of area.

Jacky Chou<sup>8</sup> (Entrepreneur.com, 2018) “*Artificial Intelligence can help Leaders take better decisions*” AI will be useful in making decisions which involve prediction by using Data, it may also overcome human weaknesses in decision making such as ‘Decision fatigue’ but problem areas lies where decisions are to be critically evaluated which require Emotional Intelligence and role of Leader.

Nick Scott (2018) “*AI: The End of Leadership as we know it*” states those firms who did not adopt Artificial Intelligence in next ten years will be beaten by other firms who have implemented it.

There has to be a redesign of mapping in coming years how workforce will align with human resource Processes with AI like Recruitment, Training, Development and Retention. Finnish It software & service Company has implemented an AI app named ‘Alicia’ as a full member of team in management with rights to cast votes.

### 3.0. LIMITATIONS/CRITICISM OF ARTIFICIAL INTELLIGENCE

Hubert L. Preyfus (1965)<sup>9</sup> *Alchemy and Artificial Intelligence* states analyzing Intelligent behavior in digital computer excludes three important elements (a) Fringe Consciousness (b) accident Discrimination (c) Ambiguity Tolerance. Evokes concepts of behavior such as Moral choice, Love, Creativity which are beyond powers of machine.

Gary Marcus<sup>10</sup> (2017) ‘*Deep learning*’: A Critical appraisal points out Deep learning lacks Abstraction and has limited capacity to transfer Deep learning has no natural way to deal with hierarchical structure. he further draws attention to Deep learning’s limitation to drawing Inferences. it is also being mentioned that it is not sufficiently transparent cannot distinguish Causation from Correlation. it is unsupervised learning.

M.C Elish (2018)<sup>11</sup> Anthropologists of robots perceives that concept is much hyped and raises concerns about accountability further states Deep learning models currently are not understood and under theorized and that currently Artificial Intelligence Models are poorly constructed produced by methodologically unsound practices.

### 4.0 COMPETENCIES REQUIRED IN LEADERSHIP IN THE AGE OF ARTIFICIAL INTELLIGENCE

#### 4.1 Emotional Intelligence:

With the advent of changing role and nature of Leadership, EQ will be one area still Desired and required in the execution the role of Leadership. Though cognitive aspect will be taken care by AI, Motivation, Employee Engagement, could be delivered by Human side of leadership. Leaders with high EQ will still continue to be desired.

<sup>7</sup> Wingard, Jason. 2019. “AI Revolution is Here Are Business Leaders Ready?” Retrieved from [forbes.com/sites/jasonwingard/2019/01/15/the-ai-revolution-is-here-are-business-leaders-ready/#1fd891b82308](https://forbes.com/sites/jasonwingard/2019/01/15/the-ai-revolution-is-here-are-business-leaders-ready/#1fd891b82308) Jan 15, 2019, 12:06pm

<sup>8</sup> Chou, Jacky. Aug 15, 2018. Artificial Intelligence can help Leaders take Better Decisions Faster. [mmomastermind.com/artificial-intelligence-can-help-leaders-make-better-decisions-faster/](https://mmomastermind.com/artificial-intelligence-can-help-leaders-make-better-decisions-faster/);

<sup>9</sup> Dreyfus, Hubert L. 1965. *Alchemy and Artificial Intelligence*. Santa Monica, CA: RAND Corporation, Retrieved from <https://www.rand.org/pubs/papers/P3244>

<sup>10</sup> Marcus, Gary. 2 Jan, 2018. *Deep Learning: A Critical Appraisal* Retrieved from [arxiv.org](https://arxiv.org/abs/1701.03928)

<sup>11</sup> M. C. Elish and Danah Boyd. 2018. Situating methods in the magic of Big Data and AI, *Communication Monographs*, 85:1, 57-80, DOI: 10.1080/03637751.2017.1375130

## 4.2 Spiritual Intelligence:

As soft element of Leadership will be domain of Leadership - Humility, Compassion, Values, Character, Inner peace, Adaptability, Creativity, Change Management, Ethics, Authenticity which are components of Spiritual Intelligence. Such Competencies will play major role while executing Leadership role while aligning with AI.

**4.3 Other competencies** like Moral values, Humility, Compassion, Authenticity, Adaptability, Flexibility.

## 5.0 CONCLUSION

With the environment of continuous change and unpredictability where Traditional norms are being replaced by changing forces of market. As Artificial Intelligence is becoming part of Human Resource Processes, it is going to bring significant changes which is going to change roles and nature of Leadership in coming times majorly it is.

Going to impact the 'hard' to do with Cognitive Processes and Decision making, at the same time 'soft' part is continuing to be with future Leadership competencies like Emotional Intelligence, Adaptability, Compassion, Moral Values which must be integrated with the Artificial Intelligence.

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