

# PICMET '22 Conference

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## **A *Strategic* Leadership Perspective on the 4<sup>th</sup> Industrial Revolution: Personal, Corporate and Societal Implications**



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### **PREAMBLE - A PICTURE OF THE FUTURE REVISITED:**

**- Open the podbay doors, please HAL!**

...

**- Do you read me?**

....

**- Open the podbay doors, please HAL!**

...

**- I'm sorry, Dave, I'm afraid I cannot do that**



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# 2001: A Space Odyssey

By Stanley Kubrick, 1968

## Strategic Observations:

1. HAL met the Turing Test of “Intelligent Machine” because without seeing HAL it is not possible to determine whether HAL is a person or a machine.
2. HAL demonstrated “autonomy” (the machine escaped from “heteronomy” – I. Kant).

## Strategic – Existential - Questions:

- (1) What are the implications if the 4<sup>th</sup> Industrial Revolution creates algorithms that autonomously develop new knowledge, not embodied in humans?
- (2) How can humans maintain control of algorithms that autonomously develop disembodied new knowledge?

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## I. IF THE 4<sup>th</sup> INDUSTRIAL REVOLUTION CREATES ALGORITHMS ABLE TO AUTONOMOUSLY DEVELOP DISEMBODIED NEW KNOWLEDGE:

→ **Existential question (1): How to effectively and fairly control disembodied knowledge generation?\***

### Multi-Level (Personal, Corporate, Societal) Challenges:

- **Personal:** Machine learning and emergent AI threaten the value of the knowledge and skills of many trades and professions...
- **Corporate:** Machine learning and emergent AI create a new type of “learning curve” that may be impossible to catch up with by companies that fall behind...
- - **Intra-Societal:** Concentrated control of human-disembodied knowledge generation non-linearly exacerbates economic and cultural inequality in the citizenry with non-anticipatable consequences...
- - **Inter-Societal:** Concentrated control of human-disembodied knowledge generation non-linearly exacerbates economic and cultural inequality between nations with non-anticipatable consequences...

→ **Will a new Karl Marx write *Das Koerperlos Wissenschaft Kapital*?**

→ **Even if dismissed as “pseudo science,” might it have potential revolutionary consequences?**

\*For instance, Silver, D. Hubert, T., Schrittwieser, J., et al. “A general reinforcement learning algorithm that masters chess, shogi, and Go through self-play,” *Science* 362, 2018: 1140-44.

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## II. THE PERSPECTIVE OF THIS PRESENTATION

**(1) Resolving the Challenges of the 4<sup>th</sup> Industrial Revolution Depends on Multi-Level *Strategic* Leadership:\***

**→ Strategic leadership is the capability to gain and maintain control of our destiny**

**(2) Multi-Level Strategic Leadership is Characterized by *Similarity Across Scale*:\*\*, \*\*\***

**→ Strategic leadership can be conceptualized in terms of similar processes at the personal, corporate and societal levels**

**(3) The 4<sup>th</sup> Industrial Revolution *Radically Changes the Context* but not the Fundamental Role of Strategic Leadership\*\*\*\***

**→ What are the implications for the mission and method of educating and selecting our future strategic leaders?**

\* Robert A. Burgelman *Strategy is Destiny: How Strategy-Making Shapes a Company's Future*, Free Press, 2002, chapters 1 and 10;

\*\* John Lewis Gaddis, *The Landscape of History*, Oxford University Press, 2002; Robert A. Burgelman et. al., *Becoming Hewlett Packard: Why Strategic Leadership Matters*, Oxford University Press, 2017, chapters 1, 2, and 10.

\*\*\* A reductionist conceptualizing similarity across scale somewhat analogously down to the level of people as "particles governed by the laws of physics" has called it "nested naturalism." Brian Greene, *Until the End of Time*, Knopf, 2020: 341.

\*\*\*\* For an extensive historical overview of how strategy has been used (and abused) by leaders, see Lawrence Freedman, *Strategy*, Oxford University, 2013.

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### (1) Control Your Destiny → Control Your Strategic Situation\*

		Dependence	
		Low	High
Influence	Low	Strategic Indifference (Utopia)	Strategic Subordination
	High	Strategic Dominance	<b>Strategic Interdependence</b>

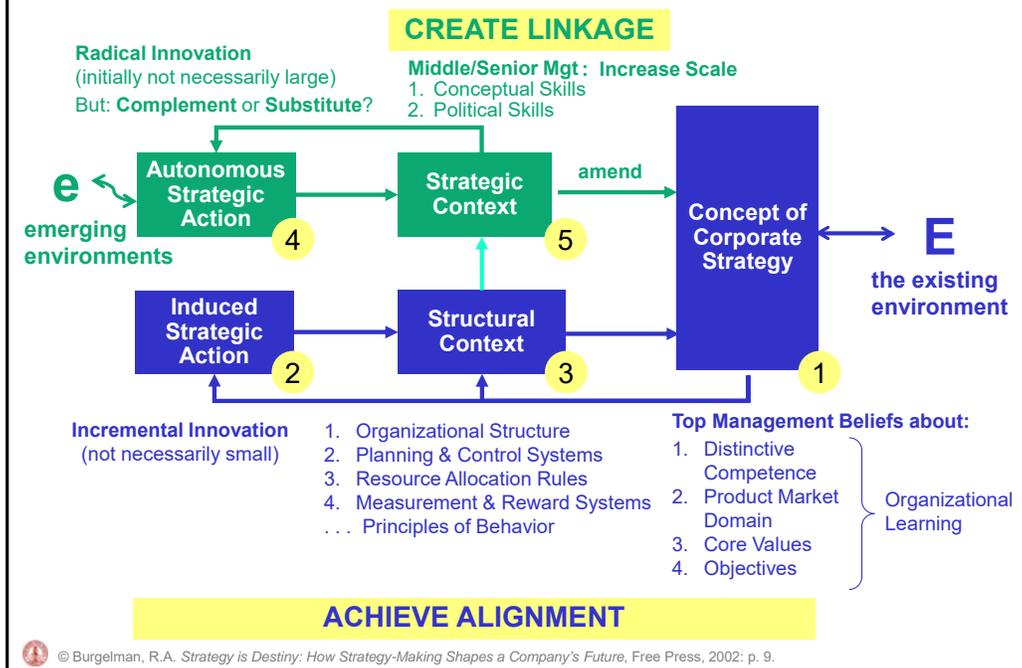


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\*Source: Burgelman, R.A., *Strategy is Destiny: How Strategy Making Shapes a Company's Future*, The Free Press, 2002.

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## (2) Similarity Across Scale: The Blue and Green Strategy-Making Processes



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## (3) The 4<sup>th</sup> Industrial Revolution Does NOT Change the Fundamental Role of Multi-Level *Strategic* Leadership

- **Personal:** Individual leaders will continue to have to solve dilemmas for which there is no deterministic solution (e.g., the “Trolley Problem” as manifest in “Triage” during Covid-19).
- **Corporate:** Company leaders will continue to have to make difficult people decisions (e.g., ultimately decide who will be hired or replaced) in the face of radical technological change.
- **Intra-Societal:** Political leaders will continue to have to find ways to manage increasing social tensions (e.g., how to integrate large numbers of people with different cultural backgrounds and demographic dynamics) exacerbated by crisis-driven migration.
- **Inter-Societal:** Political leaders will continue to have to find ways to maintain inter-societal solidarity (e.g., how to manage evolving intra-societal complexity together with evolving inter-societal complementarity) exacerbated by amplified inequality.

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### (3) However, the Internet, Big Data, Machine Learning, Emergent AI are Changing the Context for *Strategic Leadership*

In view of this, the historian and statesman Henry Kissinger articulates a CAVEAT: “For all the great and indispensable achievements the Internet has brought to our era, its emphasis is on the **actual** more than the contingent, on the **factual** rather than the conceptual, on values shaped by consensus rather than by introspection”\*

He also quotes the poet T.S. Eliot who prophetically asked (in 1934):\*\*

- Where is the wisdom that we have lost in knowledge?

- Where is the knowledge that we have lost in information?

Today, Eliot might also have asked: - Where is the information that we have lost in data?

#### **Implication (i): Wisdom>Knowledge>Information>Data**

→ Big data/information x **computation** = extremely expensive knowledge = **Power**.

→ We need to educate our future strategic leaders with these inequalities in mind and select those who manifest having grasped the importance of **wisdom** in using power.

\* Kissinger, H. *World Order*, New York, Penguin Press, 2014: 349 and 350.

\*\* Eliot, T.S. Choruses from “the Rock.” *The Complete Poems and Plays 1909-1950*, Harcourt Brace & Company, 1980: 96.

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#### **Implication (ii): Practice ahead of Theory (as usual)**

There is a happy indication that some of the strategic leaders of the most powerful companies able to spend the vast amounts on R&D and computational resources necessary to create the extremely expensive disembodied knowledge do manifest **wisdom** in relation to the responsible uses of their power:

→ Sundar Pichai, CEO of Alphabet and Google:

“**Why we must regulate artificial intelligence**,” *Financial Times*, Monday 20 January 2020.

This shifts the challenge to also educating our strategic leaders in government, and selecting those who have demonstrated wisdom in using their own power responsibly.

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### **Implication (iii): Pragmatic Approach to AI/ML**

→ “As long as algorithms are not nearly perfect – and, in many domains, objective ignorance dictates that they will never be – human judgement will not be replaced. That is why it must be improved.” (Kahneman, D., Sibony, O., Sunstein, C.R., *Noise: A Flaw in Human Judgement*, 2021:146)

Their conclusion implies the need for further research about how AI and ML may help humans improve their judgment, but without it being reduced to ratification of AI/ML-determined strategic decisions.\*

### **Strategic Leadership will Continue to Matter!\*\***

\*See also: Kissinger, H.A., Schmidt, E., Huttenlocher, *The Age of AI and Our Human Future*, Little Brown, 2021.

\*\* For a compelling analysis, see: Kissinger, H.A., *Leadership: Six Studies in World Strategy*, Penguin, 2022.

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### **III. IF THE 4<sup>th</sup> INDUSTRIAL REVOLUTION CREATES ALGORITHMS ABLE TO AUTONOMOUSLY DEVELOP DISEMBODIED NEW KNOWLEDGE:**

#### **→ Existential question (2): How can humans maintain control?**

The reductionist physicist Brian Greene, referenced earlier, observes:\*

“Survival rests upon amassing information that accurately describes the world ... increased control of our surroundings ... objective truth ... scientific understanding. But ... always falls short of providing an exhaustive account of the human experience. **And he posits:**

“**Artistic truth touches a distinct layer; it tells a higher-level story, one that in the words of Joseph Conrad “appeals to that part of our being which is not dependent on wisdom” and speaks instead to “our capacity for delight and wonder, to the sense of mystery surrounding our lives ....to the latent feelings of fellowship with all creation ... which binds together all humanity – the dead to the living and the living to the unborn.”**

**Implication (iv): to control our destiny, maintain an appropriate balance between STEM and Humanities in the professional education of our future strategic leaders. Perhaps call it STEHM?**

→ We cannot rule out that HAL (like us, a “bag of particles subject to the laws of physics”), even without the capacity or at least the experience of fellowship, but given enough time, could also learn to create new “artistic truth.” But this would most likely (or hopefully) only happen, if it does, beyond the 4<sup>th</sup> Industrial Revolution.

\* Greene, *ibid*: 235-236 *passim*.



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#### IV. IMPORTANCE OF A STRATEGIC LEADERSHIP ETHIC

Maintaining control of our destiny, however, is not enough because strategy serves to make us successful, but success is not the same as happiness. To remain happy as a person, a corporation or a society, strategic leaders need to also have a solid foundation of core values.

→ Perhaps we can propose a *Golden Rule* for Strategic Leadership:  
**Implication (v): Human common sense based on reciprocity should always inform and check business common sense**

→ This is especially important today and tomorrow when strategic leaders must deal with the social costs of radical technological change of the 4<sup>th</sup> Industrial Revolution.



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#### CODA: “2001: A SPACE ODYSSEY” - ONE MORE TIME

**The lead music score for the film is “Thus Spoke Zarathustra” by Richard Strauss, based on the book by Friedrich Nietzsche.**

It is a great piece of music inspired by a very strange book. The book’s prophetic story helps connect the beginning and end of the movie (if you go along with it).

#### TO CONCLUDE:

→ Strategic leadership is about control of destiny, which depends on “intelligence in action” and seeks to bring order to chaos.

→ But I found in Nietzsche’s strange book a quote that I could relate to the blue/green strategy-making framework and that reminded me of the dangers of obsession with order:

**“ I say unto you: one must still have chaos in oneself to be able to give birth to a dancing star.”**

→ This leads me to suggest that sustaining the green strategy process may be key to staying ahead of HAL.



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Thanks!

