Mastery in the AI Age

Why a Distributed and Interactions-Centric Lens is More Powerful Than a Siloed and Individual-Centric One for a Resilient Future

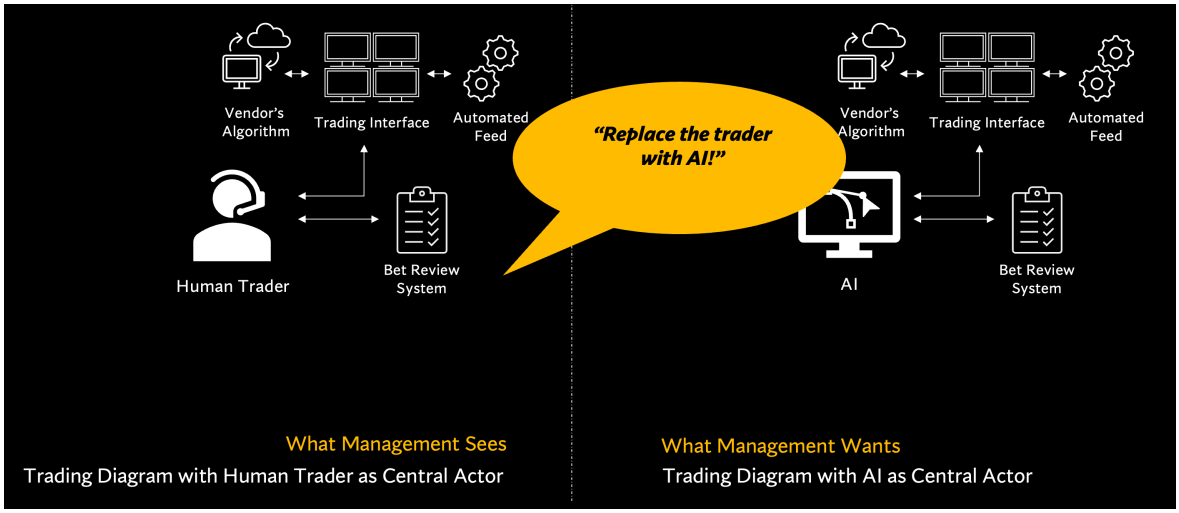
Thijs WILLEMS and POON King Wang
Lee Kuan Yew Centre for Innovative Cities @ Singapore University of Technology and Design

Snapshot

The pathway to mastery in the age of AI is to take an interactions-centric lens to the future of work, resilience, and innovation.

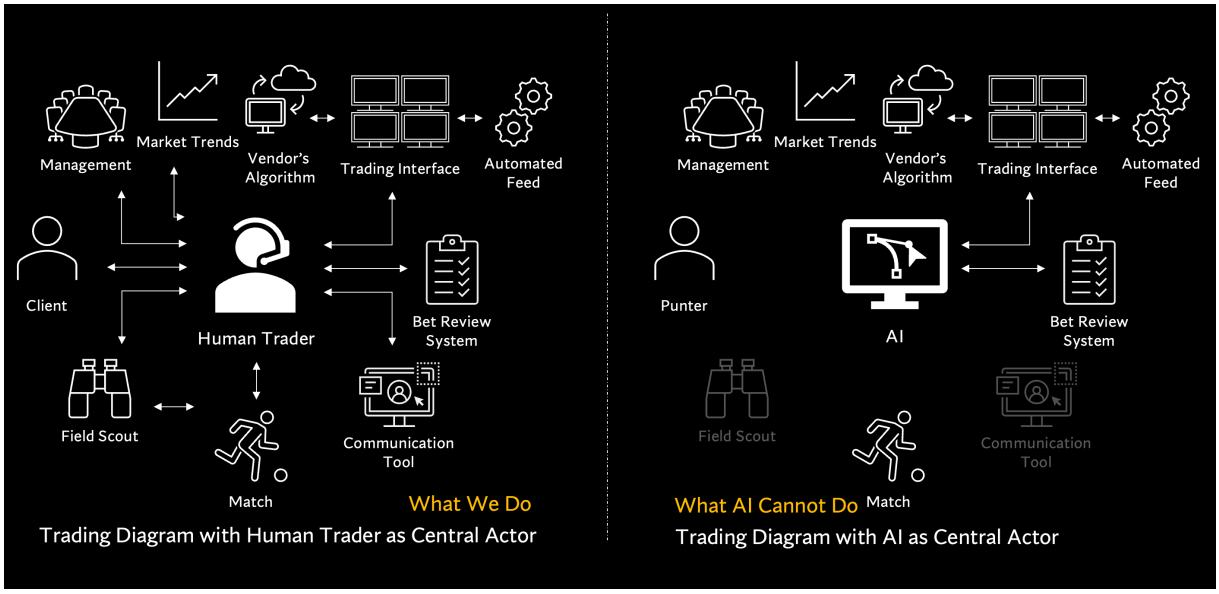
We illustrate this finding of ours with a research case study in sports trading.

When organizations' decision makers review roles that are data- and statistics-heavy, their obvious conclusion is that these tasks can be done by AI e.g. traders can be replaced (see diagram below).



Our fieldwork – particularly our organization/ethnographic observations – showed otherwise. When we observed and mapped the traders' interactions to both humans and machines, we uncovered a revealing insight. Successful traders interact with people on the ground (e.g. field scouts) who provide intelligence on how a match might unfold e.g. the coach/manager behavior by the bench, or the team cohesion on the pitch. They also understand any cultural influences that make certain counterintuitive bets more likely (e.g. die-hard Man Utd fans who will keep placing certain bets).

We summarize these interactions on the left side of the updated diagram below.



The traders take these intelligences into their decision making, and blends them with data and statistics to finalize their trades. If we replace these traders with AI, we miss out on all the human-human interactions (and corresponding field and cultural intelligences). Until these can be replicated fully, the quality of the trading decisions will suffer (see missing arrows on right side of the diagram above). As one trader told us once “The ball is round”, indicating that no matter how much data on historical matches there are, the outcome of the current match can always surprise. Having access to different intelligences gives a richer and thus grounded basis to make better decisions.

When we showed our fieldwork conclusions to the decision makers, they finally understood why the traders cannot be replaced. One even suggested that all job descriptions should be drawn as interactions.

Insights for Professions from Confronting Contradictions and Conundrums

The blending of different intelligences is essential across many professions. For example, engineers integrate technical knowledge with creative problem-solving to design innovative solutions, and doctors combine clinical expertise with emotional intelligence to provide effective patient care.

The genesis of these insights came from confronting two contradictions/conundrums.

The first popped up last decade. We noticed a contradiction in the advice to workers – keep upgrading to keep pace with accelerating change. But if change happens in months, how can workers realistically keep up?

Moreover, our own fieldwork with industry found that AI can disrupt all skills and jobs. This ran counter to conventional wisdom that skills like creativity would be safe from

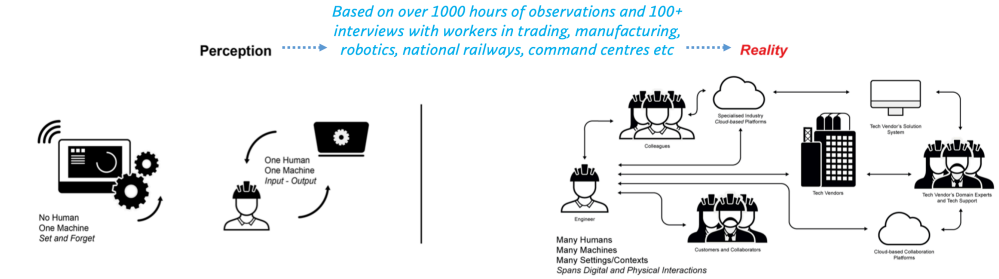
automation. But today, with Gen AI, it has proven prescient, and ahead of its time. This raised a second challenge: if all skills are disrupted, what do we develop mastery in?

Quest for New Lenses – Distribution and Interactions

We decided to research and resolve these contradictions and conundrums.

We resolved them after multiple research projects (see References). These included over 1000 hours of organizational observations across diverse sectors spanning manufacturing, high tech innovation, sports trading, and national railway infrastructure. The crux to resolving the contradictions and conundrums laid in three insights:

1. Many future of work studies focus on how AI affects an individual's job, but most of us do not work alone in silos. In the modern workplace, we work with many people and many machines. Just try to recall the last working day you did not have a meeting, send an email, or access a tech system.



Automate / Augment (even Co-pilot) perspectives are …
individual-centric
skills-focused
("they just crunch stats – AI can do better!")

Mastery in the modern workplace instead is …
interactions-centric
integrating human, material, machine intelligence
("no wonder they can't be replaced!")

2. Modern work thus looks more like the network on the right side of the diagram above, instead of the more silo-ed individual view on the left. Expertise is thus less about one person's skill set anymore, and more about how it is **distributed** across the network of different people, tools, and systems. The distributed expertise network endows its own subtle underlying resilience.

3. Because expertise is distributed, mastery comes from the **interactions** and transfer of expertise between humans and machines doing different tasks. These include the interactions across generations too e.g. younger workers might bring fresh perspectives and tech-savviness, while experienced colleagues offer deep domain knowledge, intuition, and how to blend the new tech with the existing.

Resilience and innovation thus draw strength from how the **distributed interactions** are designed to connect the strengths of these multiple machines and humans.

What it Means for Future of Work in AI – Taking Action and Future of Innovation

One of the first questions many ask about AI is: "Will my job be replaced?" It is a fair concern, but our insights above show why it is also a limited way to think about what is happening. The reality is more complex—and more hopeful. Rather than replacing humans, it is about how humans design different interactions across other humans and with multiple machines to create a better outcome than either could achieve alone.

To design such interactions, we can take three concrete first steps:

1. Ground them in human experience, expertise, and intuition
2. Know when to weave AI into these interactions (and when not to)
3. Use the time freed up by AI to focus on what humans care about and need/want to become good at (such as creativity, judgment, collaboration, adaptability, and/or big-picture thinking)

By drawing on shared strengths across humans and AI in this way, we can also adapt more flexibly to challenges, whether these are market shifts or unexpected events.

The big takeaway? It is not about humans versus AI; it is about humans and AI working together. That changes how we should think about mastery. It is no longer just about being the best at one thing—it is about collaborating, navigating complexity, and bringing out the best in everyone and everything involved.

Because bringing out the best often demands pushing the boundaries of the possible, we must innovate. In fact, our research reveals that the key to future flourishing lies in cultivating new effective workplace interactions. We must foster entrepreneurial and innovative environments where humans and AI co-design the best possible future. The pathway to resilience at work then lies in innovating and designing the future.

This future of innovation is how we choose to build a better future of work together.

References (arranged in chronological order)

Willems, T. et al. (forthcoming). Assessing employment and labour issues implicated by using AI. In: Emad Yaghmaei, et al., eds., Global Perspectives on AI Impact Assessment. Oxford University Press.

Willems, T., Poon, K. W., Lee, S. J., Liu, W. S. Y., Foo, H. T., Tanabal, S., Tay, P., Yang, S., & Ang, C. (2024). Future of manufacturing: Crafting skills security and mastering uncertainty. National Trades Union Congress, NTUC LearningHub, and Singapore University of Technology and Design.

Poon, K. W., Willems, T., & Liu, W. S. Y. (2023). The Future of Expertise: From Stepwise Domain Upskilling to Multifaceted Mastery. In *International Handbook on Education Development in Asia-Pacific* (pp. 1-19). Singapore: Springer Nature Singapore.

Willems, T., & Hafermalz, E. (2021). Distributed seeing: Algorithms and the reconfiguration of the workplace, a case of'automated'trading. *Information and Organization*, *31*(4), 100376.

Willems, T. (2018). Seeing and sensing the railways: A phenomenological view on practice-based learning. *Management learning*, *49*(1), 23-39.

Poon, K. W., Lee, H., Lim, W. K., Mohan, R. E., Chae, Y. M., Balasubramanian, G., ... & Yeong, R. W. W. (2017). *Living digital 2040: future of work, education and healthcare*. World Scientific.