

# Review of: "Rationality and Scientific Thinking as Foundations for Leadership in the World of Work"

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With the release of ChatGPT and subsequent daily improvements in open source large language models, humanity is seemingly experiencing a collective existential crisis. Governments are scrambling to impose regulations (either to stifle innovation or to encourage it), businesses seeking to capitalise on our fears, our hopes, or just our vanity. All the while, each of us are forced to confront the basic question “what does it mean to be human in the age of AI”. There is no doubt that the paper “Rationality and Scientific Thinking as Foundations for Leadership in the World of Work” appears as a response to this global existential crisis.

The authors provide an account of some artificially intelligent systems, briefly describing a transition from ‘logical inference’ to ‘pattern associators’. After describing the manner in which some AI systems work, they ultimately suggest that a central defence of humanity’s unique value appears to be that we are unique in our capacity for metacognition. Claiming that artificially intelligent systems may have surpassed us physically and cognitively, the authors argue that humanity maintains an edge in its metacognitive abilities. Here I am sympathetic to the sentiment, however I find that the argument could be made more compelling by a consideration of psychological theories of the structure of metacognitive abilities. Although as the authors point out, there may not be a simple definition of metacognition, this has not stopped psychologists from trying to describe and explore it. Accounts of metacognitive and self-regulatory abilities go back to some of the earliest modern psychologists, (e.g. James, Piaget, Vygotsky; Fox, & Riconscente, 2008), and it remains a topic that continues to attract a great deal of attention (Akturk, & Sahin, 2011; Sternberg, 2001). At least within the immediate context, it would seem that a more developed account of metacognition would provide space for a more compelling argument as to its value.

Given that metacognition has been a focus of psychological research for some time, it may not be a surprise to find that similar processes have been observed in non-human animals (Hampton, 2019). This fact alone would seem to undermine the idea that metacognition is a uniquely human capability, but given that metacognition is already squarely within the aim of AI researchers (Kawato & Cortese, 2021), it would seem to me that any argument that rests on humanity’s exclusive right to metacognitive abilities would doom us to obsolescence the moment ChatGPT exhibited the requisite behaviours.

One of the logical underpinnings of the authors’ argument appears to be derived from the division of human behaviours into the physical, the cognitive, and the metacognitive. Other attempts to redefine human skills and abilities in the face of the present existential crisis have tried different approaches. For example, the National Foundation for Education Research has identified the skills most at risk within the human population and the skills most likely to be central to human

workplace behaviour in the future (Taylor et al. 2022). As a result of a meta-analysis examining which skills are most needed in the workplace, they identify skill domains such as analytical/ creative, interpersonal, and self-regulatory as worthy of additional educational focus. These points seem to be in general alignment with some of the authors' conclusions, and a consideration of this research within the context of education and professional training could be appropriate.

A final point. The paper as currently presented proposes a zero-sum game in which humanity's only hope for continued relevance is its exclusive access to metacognitive abilities. Although this framing is consistent with the prevailing sense of dread many feel in response to the impending AI revolution, there is both reason to be optimistic and reason to believe in a more cooperative future. Ecological studies provide evidence that cross species symbiosis and mutualism improve the fitness of these organisms over time, and human cooperation has been seen to beget further cooperation over evolutionary time-scales (Boyd, & Richerson, 2009). Although I do not disagree with the general premise that a renewed focus on metacognitive processes may be on the cards for the future, I would also not discount the role that cooperation may have to play.

Overall, I found the paper to be an interesting read (not least in part due to the existential nature of the discussion at hand). While I am not yet persuaded by the idea that humanity's only hope is in its exclusive access to metacognition, I would certainly agree with the idea that we need more of it.

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