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EDITORIAL - CELEBRATING 40 YEARS OF AI & SOCIETY

Entangled Futures

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Artificial Intelligence (AI) has been deeply shaped by a tradition of thought that separates mind from world. Rooted in Cartesian dualism, this perspective frames intelligence as abstract computation, largely independent of context (Dreyfus 1992). Within this paradigm, cognition is understood as the manipulation of representations, and intelligence is evaluated in terms of problem-solving performance detached from—or loosely connected to—lived experiences and our daily environments.

This view has guided AI development across time and domains. In computer vision, for example, early work on object recognition emphasized neural networks for perception, later complemented by structured representations, such as 2D and 3D models (Malevé et al. 2025). More recently, generative AI—particularly large language models (LLMs) and transformer architectures—has come to dominate both research and industry, reinforcing a focus on abstract representation and statistical reasoning as a form of high-level, high-performance cognition.

At the same time, the rise of generative AI exposes more clearly the limitations of this paradigm. Large models that excel at vision or language tasks often lack grounding in the environments they operate in and exhibit brittle or constrained reasoning. These limitations have intensified concerns about reliability and trustworthiness, most notably in the form of "hallucinations," where models generate fluent but factually incorrect or unverifiable outputs (Farquhar 2024). More broadly, such issues increasingly raise questions about whether current models can support robust understanding, decision-making, and action in real-world contexts.

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In response, there is renewed interest in approaches that emphasize interaction with the world. Influential AI scholars, such as Jitendra Malik, Yann LeCun, and Fei-Fei Li, point to the limitations of generative AI, advocating for world models and spatial intelligence that foreground learning through perception, action, and prediction in dynamic environments (Dupoux et al 2026; Zhang et al. 2026). While such perspectives have long existed in robotics, cognitive science, and philosophy, they are regaining prominence as the limits of purely generative systems become increasingly evident.

This technical shift toward embedding in and interaction with the world points to a deeper question: should intelligence be understood as situated, embodied, and relational—emerging through ongoing interaction with physical, social, and ecological environments? And if so, how might this broader understanding extend beyond human cognition to include Indigenous knowledge, as well as ancestral, plant and animal forms of intelligence, and what can AI learn from these diverse ways of knowing?.

1 Non-Western conceptualizations of intelligence

In many non-Western epistemologies and traditions, intelligence is inseparable from its environment, and understood across social, ecological, and often metaphysical dimensions (Eze 2010). Rather than being confined to an individual mind, it extends across human and non-human actors—including animals, plants, and ancestral presences—and dissolves boundaries between the mental and the physical. Intelligence, in this sense, is distributed, relational, reciprocal, and continuously enacted within a living world.

This inseparability cannot be easily reconciled with Cartesian dualism and has consequently complicated the adoption and recognition of non-Western epistemologies and philosophies within AI. At the same time, it opens up a broader field of what intelligence can be: not only computation and reasoning, but also interaction, adaptation,

regeneration, memory, signaling, and interdependence across species and generations.

Current limitations and concerns surrounding generative AI, along with academic and public questions about what it means to be human, sentient, or conscious, are creating space for these broader conceptions (Porębski et al. 2025). Such conceptions are particularly relevant in addressing complex contemporary challenges like climate change and resource scarcity, where sustainability, adaptation, and long-term ecological stewardship depend on recognizing intelligence as embedded within—and responsive to—living systems.

It would be premature, however, to interpret current technical shifts toward situated, embodied, and relational models of intelligence as a direct incorporation of non-Western epistemologies into AI. While there are increasing calls—particularly from the Global South—to engage with frameworks such as Ubuntu or Indigenous knowledge systems (Birhane 2021; Dignum 2022), these efforts remain limited and do not signal a structural paradigm shift. The dominant discourse in AI continues to reflect Cartesian dualism, and the move toward relational and embodied approaches is still in its early stages.

First, the present shift appears to be driven primarily by internal technical pressures rather than deeper philosophical or epistemological integration. The move beyond generative AI is largely a response to engineering limitations, including hallucinations, reasoning failures, and data constraints. Framing this shift as recognition and embracement of non-Western knowledge risks obscuring its technical origins.

Second, although spatial intelligence and world models emphasize interaction, they remain grounded in mechanistic, physics-based causality. By contrast, many non-Western perspectives include metaphysical dimensions—such as ancestors, spirits, or unseen forces—as integral to the environment. While both emphasize relationality, they differ fundamentally in what counts as "the world," and thus what counts as intelligence.

Third, non-Western conceptions of intelligence are rooted in lived, socio-ecological contexts and extend across species and generations. In contrast, AI world models remain computational constructs, even when designed to interact with physical environments. Their "experience" is mediated through data and simulation rather than direct, embodied participation in ecological systems.

Fourth, the dominant aims and drivers of AI—power, profit, primacy—remain largely unchanged. Many non-Western worldviews instead emphasize coexistence, balance, and adaptation within systems that resist full control. In this sense, current AI systems tend to act upon the world, whereas these traditions emphasize being within it, alongside human, animal, plant, and ancestral forms of life.

2 Window of opportunity

Despite these limitations, the current moment presents a genuine opportunity—not only to engage with non-Western knowledge systems, but also to reconsider intelligence itself as a plural, more-than-human phenomenon. On one hand, internal pressures within AI are driving a shift toward situated, embodied, and relational models; on the other, there is growing interest and capacity in the Global South to shape and engage with AI (Curto et al 2025). Together, these dynamics open a space to identify, relate, and potentially reconcile diverse forms of intelligence.

Framed in this way, AI can be seen not merely as a technological project, but as an interface through which different intelligences—human, animal, plant, and ancestral—can be brought into relation. Rather than abstracting intelligence from the world, AI could help reveal the patterns, interdependencies, and forms of knowledge that sustain life across scales and species, supporting more balanced forms of coexistence between people and planet (Ghebreab 2023).

Such engagement would require rethinking core assumptions in AI: shifting from individual optimization to collective and ecological well-being; from universal models to context- and place-sensitive systems; from data as ground truth to plural forms of knowledge; from static alignment to evolving ethical processes; and from user interaction to civic and community participation. It would also involve reconceiving the natural and physical environment—not as a passive resource or constraint, but as an active participant and co-agent in intelligent systems.

Crucially, this is not only a conceptual challenge but a structural and practical one. AI research and development remain concentrated in institutions and regions of the Global North. Without changes in power, participation, and governance, the incorporation of alternative perspectives risks remaining superficial. There is also a risk of epistemic extractivism: as interest grows in ecological and relational knowledge, such knowledge may be appropriated from non-Western communities without recognition or reciprocity, reproducing patterns of colonial extraction.

Ultimately, these shifts point toward a different ontology of intelligence—one in which AI is not an isolated system operating on the world, but part of a broader socio-ecological fabric. The challenge is to move beyond conceptual alignment toward concrete implementation. What would it mean to design AI systems that support coexistence across human and non-human communities? How might systems integrate not only quantitative data but also narrative, experiential, intergenerational, and ecological knowledge? What would community- and ecosystem-in-the-loop governance look like in practice? And how might planetary boundaries become foundational design principles rather than afterthoughts?.

Addressing these questions is inherently challenging. Progress is constrained by fragmented academic disciplines, persistent divides between science and society, asymmetries between the Global North and South, and the practical complexities of inclusive and participatory governance. These conditions can make situated, embodied, and relational approaches to intelligence in AI appear distant from their counterparts in non-Western epistemologies (Gwagwa 2022). Yet, despite these differences, both share a common goal: understanding, engaging with, and sustaining social, ecological, and physical environments.

What is needed, therefore, is renewed scholarly momentum—within AI and across adjacent fields—to critically engage with these parallel perspectives and to explore pathways toward what we refer to as *Entangled Futures*. This includes work that reorients and reconceives AI not merely as a technical system, but as an interface capable of relating diverse forms of intelligence, inviting approaches in which AI can learn from and support the interdependencies between human experience and the wider living world, including animal and plant life, ecological systems, and forms of ancestral and intergenerational knowledge.

This editorial is an invitation to researchers across disciplines—including AI, cognitive science, ecology, anthropology, philosophy, arts, and beyond—to engage with this emerging space. Advancing Entangled Futures requires collaborative efforts that move beyond disciplinary boundaries to reimagine and reconfigure AI as systems that are sensitive to plural forms of knowledge, attentive to socio-ecological contexts, and responsive to the needs of both people and planet.

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