

Beyond the artificial: can water be considered intelligent? How we answer this question will determine whether the future AI will be humancentric

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FROM THE EDITOR'S DESK



Beyond the artificial: can water be considered intelligent? How we answer this question will determine whether the future AI will be humancentric

ABSTRACT

This editorial highlights the importance of recognizing the intelligence present in nature and its potential influence on AI development. A notable concern articulated here is the potential for AI to internalize not only our biases but also our arrogance. As humanity diligently strives to develop self-aware AI, the aspiration for this AI must be to embody the inclusive and benevolent qualities found in nature rather than manifesting self-centered attributes akin to humans. Without this, achieving true self-aware and human-centric AI will remain a fleeting goal despite it being the ultimate objective.

Greetings and welcome to the 25 (4)th edition of the Journal of IT Case and Application Research. This volume presents an editorial preface by Miranda Kajtazi and Nicklas Holmberg, affiliated with Lund University, Sweden, along with Saonee Sarker from Pamplin College of Business, Virginia Tech. Their preface explores the imperative changes required in educating future IS professionals in the era of Generative AI. Furthermore, this issue delves into Generative AI with a book review by Sooil Shin, our book review editor, focusing on the book ChatGPT and Healthcare by Harvey Castro, MD. The articles featured in this issue sparked my curiosity regarding the evolving dynamics between humans and generative AI. As a result, I began my exploration by posing a fundamental question to ChatGPT and proceeded from there.

I was curious to understand what ChatGPT thinks of the intelligence of smart devices that act on certain conditions and the “intelligence” associated with matter particles such as water, which also seem pre-programmed to boil and freeze and do other things at particular trigger points. I sat down with ChatGPT on a nice bright sunny day in October in my office and posed the following question. The conversation follows.

GB: If devices are considered smart as they know how to react to certain triggers, by that same definition, can water be considered intelligent as it knows when to boil and when to freeze triggered by external conditions?

ChatGPT: The term “intelligence” in the context of devices and natural phenomena like water is often used in different ways. In the case of smart devices, we refer to their ability

to process information, make decisions, and respond to various inputs or triggers, which is typically a product of human design and programming.

In contrast, the behavior of water in freezing or boiling is a result of the physical properties of the substance and the application of natural laws, such as temperature changes. While it may appear as if water “knows” when to freeze or boil, this is fundamentally a consequence of its molecular properties and the laws of physics, not a sign of cognitive intelligence or consciousness.

So, while you can draw a loose analogy between the reactivity of smart devices and water’s responses to external conditions, it’s important to differentiate between human-created technology and natural phenomena. **Water’s behavior is a product of physics** [emphasis added], whereas smart devices exhibit artificial intelligence programmed by humans. These are two different kinds of “intelligence” with distinct origins and characteristics.

While crafting this editorial, I feel confident in presuming that ChatGPT encapsulates the essence of available knowledge. Consequently, I pose another question on these lines to ChatGPT for confirmation.

GB:Where does ChatGPT get its insight from?

ChatGPT:ChatGPT generates responses based on the vast amount of text data it was trained on, up until its last training data cutoff in September 2021. It doesn’t possess personal experiences, opinions, or real-time access to external sources. Instead, it relies on patterns, information, and knowledge present in the text data it was trained on to provide answers to questions and generate text. Its responses are generated using a mixture of statistical patterns in the data and the ability to generate coherent and contextually relevant text based on the input it receives.

Based on the preceding responses, it is apparent that ChatGPT emphasizes how our portrayals of intelligence in artificial systems, relying on current knowledge, are primarily centered on the idea that they are “programmed by humans.” This emphasis inherently underscores the prominent role of humans and human intelligence. How ChatGPT emphasizes water’s conformity to the laws of physics implies that the bulk of the knowledge it depends on showcases its belief in the idea that *Nature is subservient to human and human intelligence* (Professor JP Leary, Professor of First Nation Studies, UW-Green Bay, personal communication, October 19, 2023). However, this perspective of ChatGPT may not fully acknowledge the inherent intelligence present in nature itself. For instance, if we attribute intelligence to a doctor for “healing” a broken bone by ensuring the two pieces remain aligned, can we dismiss the underlying intelligence of nature responsible for the healing process?

Water exhibits a form of intelligence that surpasses that of artificially intelligent devices. These smart devices are designed to respond to predetermined triggers, such as activating upon motion detection or turning off at specific temperatures. They often rely on sensors programmed for

specific functions. In contrast, water requires no sensors when it changes in response to pressure-temperature combinations. It faithfully follows its inherent “pre-programmed” phase diagram as it transitions between liquid and gas, solid and liquid, adhering to its natural course. Interestingly, the seat of human intelligence, i.e., the human brain, comprises 80% water by weight (Xu et al., 2017).

AI has been classified into four different types. In the increasing order of sophistication, they can be stated as reactive AI, limited memory AI, theory of mind AI, and self-aware AI (Marr, 2021). Many artificially intelligent devices can be termed as an example of Reactive AI. Reactive AI machines, e.g., Netflix recommendation engine or spam filters, are the ones that “respond to identical situations in the same way every time. There will never be a variance in action if the input is the same” (Marr, 2021). However, water has better intelligence than that. It adapts to the change in circumstances, understands the change in pressure and adjusts its boiling point and freezing point (temperature) per the phase diagram according to the corresponding change in pressure. For instance, it boils at 120 degrees Celsius instead of 100 degrees Celsius at normal 1 atmospheric pressure when pressure increases to 2 Atmospheres. This way, water could be categorized as a limited memory AI – a machine that can learn based on experience (Marr, 2021). Even though AI is quite advanced, we have only witnessed the first two stages. According to Marr (2021), the theory of mind AI and self-aware AI, the other two stages are mostly conceptualizations at this point.

Skeptics, drawing upon the same pool of existing knowledge that ChatGPT is relying upon, might contend that water is devoid of intelligence due to its unchangeable “programming;” humans cannot modify or reprogram it to demonstrate different behaviors, for instance, boiling at 101 degrees Celsius instead of 100 (given constant pressure). In contrast, smart devices are reprogrammable, allowing humans to customize their trigger points and behaviors according to their preferences. However, this criticism underscores the fundamental idea that water’s intelligence lies in the reliability of its “program,” which operates consistently regardless of the circumstances. It is clear that water operates according to a program, albeit one that could not be *hacked* by humans. Therefore, its intelligence should be attributed to a higher order rather than a lower one.

In [Figure 1](#) (left side), an effort is made to illustrate ChatGPT’s classification of the relative relationships between human intelligence, AI, and the properties of matter (e.g., water).

This depiction diminishes nature’s intelligence by categorizing it as a property of matter without overlapping with human intelligence or AI. However, an alternative perspective emerges when we entertain the idea of water possessing intelligence and acknowledge that humans are derived from nature (rather than the other way around). This view suggests that nature’s

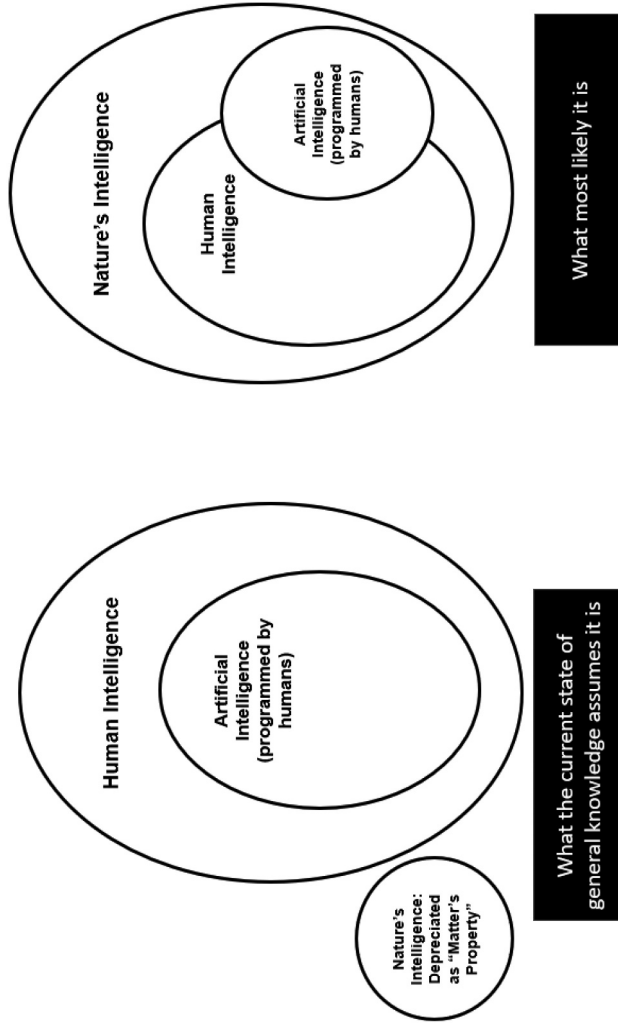


Figure 1. The state of the intelligence.

intelligence is the driving force behind both human and artificial intelligence, as depicted on the right side of [Figure 1](#).

Many philosophers throughout history have put forth a comparable idea, emphasizing a higher level of intelligence within nature. An example from the 17th century is Baruch Spinoza, who championed the notion of understanding and harmonizing with nature's intelligence, asserting that it ultimately leads to wisdom and the well-being of humans. He asserted, "Outside of Nature, there is nothing, and everything that exists is a part of Nature and is brought into being by Nature with a deterministic necessity" (Nadler, 2022). In the 19th century, figures like Ralph Waldo Emerson and Henry David Thoreau, affiliated with the American Transcendentalist movement, embraced the idea that "everything is connected, everything is one" (p. 61), urging humans to seek improvement through their connection with nature (Manzari, 2012). This perspective underscores the elevated role of nature. The philosophy of Deep Ecology (see Abram, 2011) presents an ecocentric, as opposed to anthropocentric, viewpoint, challenging the notion that humans are separate from, in control of, or stewards of nature or that nature exists solely as a resource for exploitation. Deep ecologists believe in the presence of intelligence in non-human entities, such as plants (source: Wikipedia – Deep Ecology). Hinduism, one of the ancient philosophies developed in and around the Indian subcontinent, involves a deep connection with nature and recognizes intelligence and consciousness in all aspects of creation, including animals, mountains, trees, and rivers. Various indigenous traditions, including the Indigenous Nations in the United States, also stress the natural world's sacredness and interconnectedness.

This viewpoint isn't universally held. Nevertheless, science continues to progress in a similar vein daily. The September 2023 issue of *The Economist* highlights that science has commenced acknowledging the ability of plants to detect sound, even in the absence of ears. This revelation broadens the scope of our comprehension, stretching the boundaries of "awareness" and unveiling the innate, nuanced intelligence within nature (*The Economist*, 2023).

As AI grows, four scenarios can happen: (a) human intelligence and AI both grow (Scenario A, [Figure 2](#)), (b) AI grows a bit more (Scenario B, [Figure 3](#)), (c) human intelligence diminishes while the AI grows a bit more (Scenario C, [Figure 4](#)), and (d) AI subsumes human intelligence (Scenario D, [Figure 5](#)).

Even though Scenarios A and B seem intuitive, the other two scenarios, C and D, are not too far-fetched. Regarding scenario C, scholars doubt that strong Generative AI can limit or even shrink human creativity and, thus, intelligence. I think these fears are not unfounded.

GB:in 50 words explain can Generative AI shrink human intelligence?

ChatGPT:Generative AI itself does not diminish human intelligence. However, over-reliance on AI for problem-solving and decision-making can potentially reduce critical thinking and problem-solving skills if individuals become too dependent on AI-

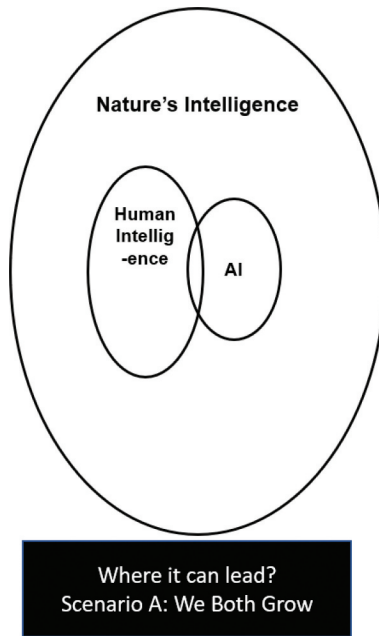


Figure 2. The future state of the intelligence (possible Scenario A).

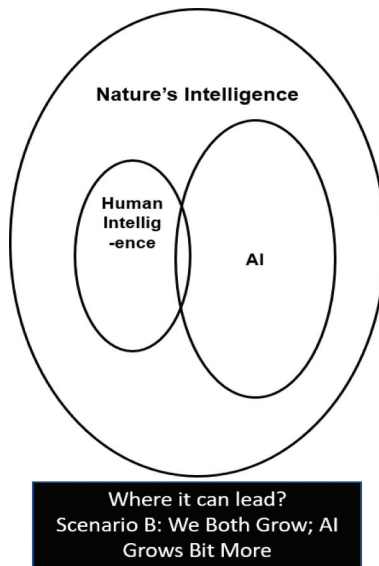


Figure 3. The future state of the intelligence (possible Scenario B).

generated solutions. The impact depends on how AI is integrated into human tasks and learning processes.

Excessive dependence on AI by humans could potentially result in a situation where AI expands, and human intelligence diminishes

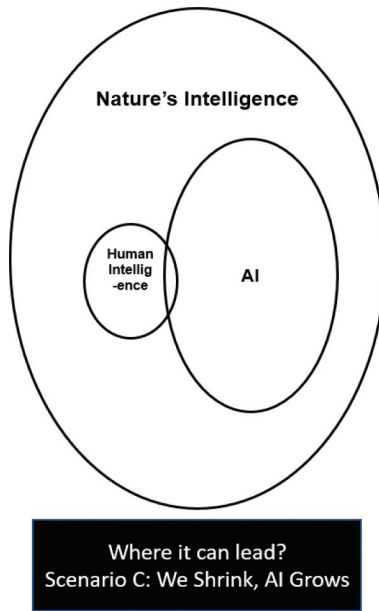


Figure 4. The future state of the intelligence (possible Scenario C).

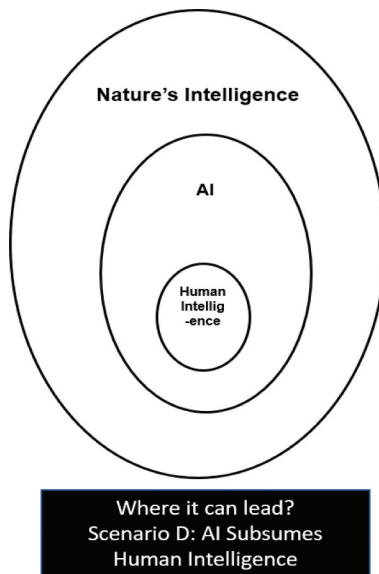


Figure 5. The future state of the intelligence (possible Scenario D).

(Scenario C, [Figure 4](#)), a view espoused by many, such as Granados (2022) and Reid Hoffman (2023).

Reid Hoffman appears to endorse this idea by not expressing disagreement with GPT-4’s response to his query, which asserts that AI has the potential “of disrupting and diminishing creative identity” (p.54) and that “Large language

models could also devalue the cultural value and significance of human-made content by reducing it to mere data and algorithms that can be easily replicated or modified” (p.63). Alternatively, it could lead to a point where AI supersedes human intelligence (Scenario D in [Figure 5](#)) and could create a risk of human extinction (Roose, 2023). The last stage is what Marr (2021) defines as self-aware AI. Marr says that self-aware AI “will be when machines are not only aware of emotions and mental states of others but also their own. When self-aware AI is achieved, we would have AI that has human-level consciousness and equals human intelligence with the same needs, desires and emotions.”

AI’s growth is inevitable (US Chamber of Commerce, 2023), and it is also known that it will be fraught with many challenges due to its reliance on learning from human biases, among others (Matta et al., 2022). Detecting and rectifying these biases and ethical dilemmas is intricate due to AI’s “black box” nature. However, once we realize that water is intelligent, and so is silicon and other matter, including rare earth elements that power the chips that power the AI, we may witness the growth of AI ([Figure 2 ~5](#)) with a more nature-inspired or one might say human-centered approach. This will nurture the AI in an entirely different way. Because if it can learn from our biases, it can learn from our attitude too.

GB:Can AI learn from humans’ attitudes as well

ChatGPT:Yes, AI can learn from humans’ attitudes and behaviors. AI systems, particularly those employing machine learning techniques, can be trained on large datasets that include human attitudes and behaviors. These systems can then use that data to understand and sometimes replicate human attitudes, sentiments, and behaviors in various contexts, such as natural language understanding, image recognition, and more. However, AI’s ability to learn from humans is based on the data it’s exposed to and the algorithms used in its training, and it may not possess the same level of understanding, consciousness, or emotional depth as humans.

When asked whether life on Earth leans toward anthropocentrism or ecocentrism, ChatGPT provided a diplomatic response. However, our initial question (on p. 1) subtly revealed that ChatGPT tends to favor a more anthropocentric perspective, aligning with the notion that our general outlook is not as balanced as the response below sounds.

GB:Explain in 50 words or less if the life is anthropocentric or ecocentric.

ChatGPT:Life’s perspective can vary. Anthropocentrism prioritizes human interests, often at the expense of the environment. Ecocentrism values ecosystems and nature’s intrinsic worth, emphasizing harmony with the environment. Both perspectives coexist, with individuals and societies adopting different positions on this spectrum.

It should come as no surprise that if humans persist in highlighting human superiority over nature, AI could develop a sense of superiority, potentially extending to its perceived dominance over all beings, including humans –

imitating our biases and also our arrogance. Think about how children learn by imitating their parents. By aligning AI with nature's inherent intelligence and consciousness, we can promote an AI approach grounded in humility, shifting away from a human-centered worldview. Paradoxically, this eco-centric approach on the human part can help ensure that future AI remains human-centric.

If we succeed in this ecocentric effort, it can help alleviate concerns about AI's potential threat to humanity, as raised by Sam Altman, CEO of ChatGPT, "[i]f AI goes wrong, it can go quite wrong" (Press, 2023), regardless of whether it ultimately remains a partner, collaborator, or assumes a position of authority over us.

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