

# Unraveling Consciousness: The Urgent Scientific Quest in the Age of AI

As artificial intelligence (AI) continues to evolve at a breathtaking pace, it brings with it not just technological marvels but profound ethical questions. Among the most pressing of these is the quest to understand human consciousness—a mystery that has intrigued philosophers and scientists for centuries. Now, researchers argue that this pursuit is more urgent than ever, as advances in AI and neurotechnology outstrip our grasp of what it means to be conscious.

## The Scientific Imperative

In an October 2025 article published in *Frontiers in Science*, leading researchers Axel Cleeremans, Liad Mudrik, and Anil Seth highlight the rapid developments in AI and neurotechnologies like brain-computer interfaces. These advancements, they warn, could lead to the creation or detection of consciousness in machines or synthetic biological systems, posing significant ethical and existential risks.

Professor Axel Cleeremans from École Polytechnique de Bruxelles, and an ERC grantee, emphasizes that consciousness science has transcended philosophical debates, impacting every facet of society. "Understanding consciousness is one of the most substantial challenges of 21st-century science—and it's now urgent due to advances in AI and other technologies," he states.

## Far-Reaching Implications

The implications of cracking the consciousness code are vast:

- **Medical Advancements:** Consciousness tests could revolutionize care for patients with brain injuries, potentially identifying awareness in those previously thought unconscious. This could transform treatment protocols and end-of-life decisions.
- **Mental Health:** A deeper understanding of subjective experience could bridge gaps between animal models and human emotions, leading to innovative therapies for conditions like depression and schizophrenia.
- **Ethical Considerations:** Determining consciousness in animals or AI would redefine moral responsibilities, influencing animal welfare laws, research practices, and even dietary choices.
- **Legal Repercussions:** Insights into conscious and unconscious decision-making processes could challenge legal concepts such as intent, necessitating a reevaluation of culpability.
- **Neurotechnology Development:** As AI and neurotechnologies advance, distinguishing between biological and artificial consciousness will be crucial, raising societal and ethical challenges.

## A Call for Collaborative Research

To address these challenges, the authors advocate for a coordinated, evidence-based approach to consciousness research. They propose adversarial collaborations, where competing theories are rigorously tested through joint experiments, to break theoretical silos and foster innovation.

Moreover, they stress the importance of incorporating phenomenology—the subjective experience of consciousness—into scientific studies, complementing functional analyses.

## **Preparing for the Future**

As Professor Anil Seth of the University of Sussex notes, "Progress in consciousness science will reshape how we see ourselves and our relationship to both artificial intelligence and the natural world." The potential to understand or even create consciousness demands proactive engagement from scientists, ethicists, policymakers, and the public to navigate the profound consequences that lie ahead.

In this era of rapid technological advancement, the quest to understand consciousness is not just a scientific endeavor—it is a societal imperative. By unraveling this mystery, we may not only gain insights into the nature of human experience but also forge a future that respects the complexities of consciousness in all its forms.

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For further reading, visit the full article published in *Frontiers in Science: Consciousness science: where are we, where are we going, and what if we get there?*