

A New Lens on Consciousness: Insights from Transitive Inference and Working Memory

By Mike Sandifer

In cognitive science, consciousness remains an enigma. A fresh perspective suggests that transitive inference within working memory is key to conscious thought and creativity.

A Theoretical Framework for the Mind

Consciousness emerges from transitive inference—deducing relationships between items indirectly, allowing logical conclusions based on knowledge. Working memory, the brain's scratchpad, temporarily holds information necessary for reasoning, decision-making, and problem-solving. The prefrontal cortex commands these functions.

Self-symbolic representation is our capacity to view ourselves as distinct entities capable of introspection and self-reflection. Metacognition—thinking about one's thinking—emerges from this, allowing us to monitor cognitive processes, evaluate knowledge, and regulate behavior, enhancing learning and problem-solving.

Consciousness Unveiled

My model suggests that consciousness is the product of transitive inference and metacognition within working memory. By juggling symbolic representations of knowledge, humans can uncover novel relationships and generate creative insights, connecting disparate concepts and sparking new ideas.

The Genesis of Creativity

Creativity is a byproduct of transitive inference in working memory. By reconfiguring knowledge through logical reasoning, individuals can craft original ideas. The flexible nature of working memory facilitates this process.

Implications for Artificial Intelligence

These insights promise advancements in AI. Embedding symbolic representation, transitive inference, and enhanced working memory could enable AI to emulate human-like creative thinking, useful in art, science, and engineering.

Conclusion

This theory offers a framework for understanding consciousness and the cognitive processes behind creative problem-solving. It advances our grasp of human consciousness and sets the stage for AI innovations, narrowing the gap between human and machine intelligence.