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Fundamentals of Consciousness

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Introduction

A model of consciousness is presented that both accounts for the special nature of first-person (1P) experience and is consistent with nonhuman consciousness.

Logic

The 1P experience of “qualia” is both incorrigible and inaccessible to other persons. Chalmers (1996) calls this the “hard problem” of consciousness. It is possible in principle that I am the only 1P experiencer in the entire universe.

We start with a Wittgensteinian axiom: *I am my world*. For each conscious subject, identification of the external world with the subject is a precondition for rationality. In Newtonian terms, subject and object are equal and opposite. In Kantian terms, the transcendental ego reflects its object.

A second axiom: *My world is the totality of facts*. The facts constituting a world are synthesized into a structured unity by the subject. In Kantian terms, the phenomenal manifold is unified under the categories in the synthetic unity of apperception.

Both subject and object evolve in a temporal process of mutual accommodation: *My world unfolds in time*. The world reflected by the conscious subject changes with every moment of experience.

Consciousness evolves along an epistemo-ontic dimension. The epistemic progress of the reflecting subject reflects comprehension of new ontic domains. Each worldview is a static freeze-frame, and the jump to the next view is a relocation. Each view is realized as totality by the reflecting subject and is contradicted by the next view: *Each worldview contradicts its precursors*. New facts force reconception of the totality. The dialectic of epistemology and ontology is an evolutionary process.

This dialectic is recognized in constructive logic. Constructivists do not admit the truth or falsity of propositions for which we cannot specify the conditions under which we would recognize them as true or as false.

Formalized, the logic generates a tree, whose nodes are epistemic situations, each reflecting an ontic domain. For consciousness, the nodes are qualia sets or totalities of facts. The formal semantics is like that for modal logic: among a set of possible worlds is the actual world, which becomes momentarily identical with a series of different possible worlds as time passes. The actual world is centered on the reflecting subject.

Physics

In quantum physics, the observer interacts with physical reality by making measurements. The observer chooses what to measure. Wave-particle duality implies that these choices give rise to an ontic complementarity, not merely an epistemic one. The observer chooses a temporal path through a branching tree of possible worlds.

Quantum systems exist in superpositions of states. When an experimental outcome is consistent with several superposed states, the states interfere. A centered phenomenal world is symmetrical with respect to all the states superposed beneath its phenomenal surface. The symmetry is broken by the “jump” following a measurement.

A subject-object pair has a spatiotemporal location that may be more or less extended and more or less sharply bounded. The future is indeterminate and the pair accumulates determinacy as time passes.

Consciousness is experienced as the inner transparency of a world of objects, which may require a quantum explanation (Penrose, 1989). A candidate substrate is a Bose-Einstein condensate formed in the brain by decahertz or gigahertz photons. Such a condensate may also be possible in an electronic configuration in a machine, or even in superfluid neutronium in a pulsar.

Psychology

Humans know what it is to be conscious from the 1P case. Only after they recognize 2P and 3P cases do they have *personal* consciousness. Simple 1P consciousness may be easy to implement in an artificial neuronet using modern genetic algorithms.

Philosophy

We can stipulate that 1P consciousness is unique. The subject of logic or physics is 1P and need not be personalized. If human subjectivity is polymorphous, we can morph into the *same* subject whenever we do mathematics or physics.

References

- Chalmers, D.J. (1996). *The Conscious Mind*. New York: Oxford University Press.
Penrose, R. (1989). *The Emperor's New Mind*. Oxford: Oxford University Press.