The Role of Information-Driven Interactions in Double-Aspect Theory of Information

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Introduction

The concept of information applied by Chalmers (1996) in his Double-Aspect Theory of Information has much in common with Shannon’s theory (1948). This leads to several problems such as the following:
- It leads to panpsychism.
- It just explains simple perceptual experiences.
- The thesis is unable to give an appropriate account for the unity of consciousness.

Toward solving the problems and to gain better explanatory accounts for different conscious experiences, instead of Shannon information, I project a new concept of information called pragmatic information.

Pragmatic Information

Kueppers (1990), Roederer (2003)

Two Different Classes of Interactions

1. Information-Driven Interactions (living systems)

   - S: A sensor converting physical signals into neural impulses.
   - A, B, C, …: Sequential stages, where one neural activity pattern P is converted into another.
   - Short-Term Memory: Persistence of neural activity patterns specific to a given sensory stimulus for several seconds after the original stimulus has disappeared.
   - Long-Term Memory: The ability of being triggered much later by activity in some “upstream” stages.
   - Memory Recall: Patterns P, P, … being reconstructed without the corresponding full external input P.
   - Thinking: The act of information recall, alteration, and restoration without any external input.

2. Force-Field Driven Interactions (abiotic systems)

   - The concept of force (or force field) is responsible for the change.
   - The change will always depend on some “initial conditions.”
   - The changes that occur in two interacting bodies are coupled energy-wise.

Short & Long-Term Memory and Thinking According to Pragmatic Information

2- During learning

   Repeated simultaneous input patterns Ps and Qs gradually change hardware in B, a new response pattern (PQ) in pair of stimuli emerges.

3- Response in B after learning

   Common response pattern (PQ) can be elicited by either sensory Ps or Qs.

A Crucial Question

Why Isn’t Brain an Equivalent of a Computer?

Computers are so primitive when it comes to processing complex analog pragmatic information.

Brain is so slow in handling digital Shannon information.

Conclusions

Replacing Shannon information with pragmatic information would provide a more natural ground for double-aspect theory. Pragmatic information just occurs in living systems, thus escapes from panpsychism. The combination would construct a powerful theory, explaining different experiences while considering the phenomenal not to be reducible to physical.

References


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