

A Speculation About Consciousness

This is a sketch of a speculation about the basis and role of consciousness as well as of the minimally required elements and constraints of any setting that produces consciousness. It proposes that consciousness (as we know it) is a biologically-mediated product of evolved recursive and hierarchically nested representational systems that obey information theoretic principles as well and highly dynamic Bayesian (probabilistic) feedback and feedforward predictive modeling processes. As such, it is not a conventional piece of philosophical thinking.

It accepts a form of monism that regards the traditional ontologies (and explanatory resources) of the physical and the mental as either incomplete and problematically bounded characterizations of states that are ontologically neutral – yet conceptualized dualistically -- *or* as states that are jointly (bi-directionally) supervenient and causal (each grounding, constraining and activating the other). It is motivated by the inability of these ontologies to account for some states and events occurring within and, arguably, between them. It accepts the Principle of Causal Closure in physics, in its standing as a limited ontology, while also postulating a Principle of Causal Configuration whereby active and latent controls and constraints are implemented within (but are not reducible to) neurological networks that are configured and activated (caused) by informational states and events. Such informational states and events (some mental) are regarded as ontologically conjoint with, yet causally discriminable from, the neurological systems within which they reside and operate. Causal over-determination is thereby avoided. It takes consciousness seriously while rejecting the bridging failures of dualisms and grounding physicalisms as well as the explanatory poverty of reductive physicalism, supervenience and eliminativism.

It hypothesizes that consciousness is manifested only in low-entropy neurological systems that process and integrate local, global and latent signals (environmental stimuli, standing state internal signals and stored re-instated representations) and that exhibit specific program and instruction set properties. As such, this is a neurologically and informationally-centric (embodied and situated) rather than a brain-centric hypothesis and considers highly-evolved complex organisms to be information processing systems that generate multi-dimensional representations (images, patterns, models, constructs) of themselves and their states. It regards as plausible that consciousness is limited to narrow-band or narrow-field states directed by signal or event dominance protocols and that many neurally-instantiated informational processes run unconsciously. It also regards as plausible that convergent background informational processes – such as perceptual integration -- produce a unity of function and feedback that enables coherent experience and phenomenal consciousness.

In the instance of humans, the following is hypothesized to occur (nomenclature of stages is merely suggestive): **Stage 1** –

increasingly robust representations and predictions (i.e., with lowering error rates) of signals from external states; **Stage 2 and the First Derivative of Stage 1** – increasingly integrated (interdependent and derived) representations of external and internal states, generating types and levels of awareness, an indexical point of view and phenomenal, i.e., 'felt', experience. Neural binding, harmonic resonance and coded perceptual segment synthesis may be implicated here as well as informational binding exceeding thresholds of logical coherence and range. Phenomenality arises in processes of situated sensory synthesis and representation that are looped and modally multi-dimensional; **Stage 3 and the Second Derivative** – representations of representations of awareness, generating standing cognitive states and, perhaps, consciousness (nested routines and loop processing) (cf. J. Kilverstein 2021); **Stage 4 and the Third Derivative** – representations of the act of representing through time, generating fully-implemented consciousness, historical self-narratives (symbolically or linguistically rendered), internal speech and first-order abstractions (concepts); **Stage 5 and the Fourth Derivative** – *n*-order representations of world and self-narratives, critical self-awareness, and *n*-order cognitive events and constructions underwritten by consciousness.

Any representation or output from any stage may loop back to an earlier stage where modeling is fine-tuned (cf. J. Hohwy) and informational processes (represented and not represented in consciousness) develop further with statistically larger degrees of freedom and range. Exponentially many points of re-entry/emergence may arise, yielding indeterminately many possible conscious states.

Consciousness, then, is construed as a biologically-mediated and signal-dependent product of indexical experience and not as an intrinsic property of any non-historical entity. It is a recursive product (information systems talking to themselves) of signal-rich indexing, predictive modeling and neural and informational binding processes that generate robust, retrievable and multiply-derivative representations of its states, itself and its world. Functionally, such processes (e.g., detection, signaling, imaging, analysis, correction, prediction, selection, control, feedback, feedforward and conscious thinking) direct, update and constrain neurological behavior. This occurs, arguably, by encoding (causally configuring) deterministic and randomized neural systems and by controlling state changes within those systems (informational content, gating, on/off signals, loops, read-offs and activations).

Finally, consciousness amplifies select capacities such as dedicated processing (concentration), recall, and extended abstraction. And, from the first derivative perhaps, it has a phenomenal 'feel'.