

# Evolution and the Neurodynamics of Consciousness

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The essay explores how the intrinsic dynamics of the nervous system might shed light on the origins and nature of simple forms of consciousness – *sentience* or *primordial consciousness* – in animals. It seems beyond dispute that the nervous system plays an essential role in the generation of consciousness. But how is it possible for consciousness to emerge from the nervous system?

The predominant paradigm in contemporary neuroscience, stemming from the pioneering neurophysiological work of Sherrington and Parker, views the nervous system as a complex input/output system whose essential function is to process information presented to the sensory receptors of the organism. The origin and evolution of the nervous system is seen, according to this paradigm, as the increasingly sophisticated ways of connecting pre-existing sensory receptors to pre-existing effectors. The upshot of this view is that the nervous system is essentially a complex connecting device between sensory input and motor output. However; is the nervous system essentially a complex input/output system?

I will argue that the traditional account fails to grasp the nature of causation in nervous systems, and the relationships between nervous system, brain and environment. According to a radically different paradigm, what characterise the fundamental nature of the nervous system is not the *function* of connecting input to output but the *structure* of the intrinsic dynamics of neural activity. Moreover, sensation is not input in the traditional sense at all; instead it is taken to be based on temporal perturbations of the intrinsic dynamic stability of the system. The nervous system is modulated by the senses; it does not process information given by the senses.