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Epileptic discharge and global representation: Impairments in motor plan execution

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Current evidence indicates that several prevalent cognitive diseases affect the phenomenal construct of self, diminishing the capacity to unify brain and bodily operation. For example, disturbances of the self mark the clinical determination for schizophrenia, which are characterized by symptoms of an abnormal sense of the bodily awareness, loss of ego boundary, and a confused sense of agency. Similarly, degeneration of the default mode network (DMN) in Alzheimer's Dementia progressively diminishes control of self circuitries regulating regional brain states. By extension, the disruption of global operation seen in epileptic discharges, are likely to affect self representation. Increasing evidence indicates that universal constructs like the self emerge from the activity of global brain states that are mediated via recurrent interactions ordered to self-organization. Fundamentally, these dynamical models of cognition link constitutive operational features to properties of stability, flexibility, and hierarchy, which are required for performance and that, give rise to the construct. Among the key mechanisms likely to be affected are those linking motor planning and execution to self agency. Neural representation of the self appears to be configured by somatotopic input, where bodily mapping generates a three dimensional postural image that is invested with protagonist features. This bodily image undergirds neural self representation and is critical to operationalizing motor events. Several observations indicate that epilepsy may influence this construct since a) epilepsy affects global oscillatory events, b) these appear to be evoked through the global workspace, a phenomenal feature needed in goal directed action, and c) epilepsy affects the basal ganglia, a central subcortical structure mediating motor actions. Accordingly, this talk will explore current evidence pertaining to how epilepsy influences neural self representation in executing the motor plan.

Biography

Denis Larrivee is a Visiting Scholar at the Mind and Brain Institute, University of Navarra Medical School and Loyola University Chicago and has held professorships at the Weill Cornell University Medical College, NYC, and Purdue University, Indiana. A former fellow at Yale University's Medical School he received the Association for Research in Vision and Ophthalmology's first place award for studies on photoreceptor degenerative and developmental mechanisms. He is the editor of a recently released text on Brain Computer Interfacing with InTech Publishing and an editorial board member of the journals Annals of Neurology and Neurological Sciences (USA) and EC Neurology (UK). An International Neuroethics Society Expert he is the author of more than 70 papers and book chapters in such varied journals/venues as Neurology and Neurological Sciences (USA), Journal of Neuroscience, Journal of Religion and Mental Health, and IEEE Explore. In 2018 he was a finalist in the international Joseph Ratzinger Expanded Reason award.

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