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NEUROLOGICAL ETIOLOGIES AND GLOBAL BRAIN STATES: COGNITIVE DISEASE AND THE DETERIORATION OF THE SELF-CONSTRUCT

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Current evidence now indicates that several of the most prevalent cognitive diseases impact the phenomenal construct of the self, diminishing the capacity to unify brain and bodily operation. Disturbances of the self, for example, mark diagnostic evaluation of the schizophrenia patient, affecting such symptoms as an abnormal sense of the body, loss of ego boundary and a confused sense of agency. Similarly, degenerative processes in Alzheimer's dementia progressively diminish the control of self circuitries in the default mode network over regional operation. Increasing evidence indicates that universal constructs like the self emerge from the activity of global brain states. Global function emerges from the local dynamics of each area while global dynamics in turn constrain local activity, a reciprocal influence that is mediated via recurrent interaction and 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. Although the etiologies of such diseases remain to be determined, key mechanisms likely to be impacted are those encapsulating the representational content of the body's 3-dimensional image. The neural representation of the self, notably, is directly structured by somatotopic input originating throughout the body yielding a three dimensional body image that is invested with protagonist features. Schizophrenia patients, for example, are consistently less able to associate their bodily actions with actions undertaken by the self-indicating that this representation is likely to be affected. Existing studies suggest that the self representation is mechanistically associated with unique, global oscillatory activity that is modulated according to interactive context, like that of action attribution or social engagement. Accordingly, this talk will explore current evidence that cognitive diseases like AD and schizophrenia impact the self construct through global oscillatory activity associated with the representation of the body.

Biography

Dr. 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), EC Neurology (UK), 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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