

1125-92-996

William Sulis* (sulisw@mcmaster.ca). *Transient Induced Global Response Synchronization:
Dispositional Cellular Automata.*

The relationship between neural activity and the behaviour of an organism is complex and still poorly understood. There have been attempts to model this connection using the notion of synchronization, but the participating neurons are fungible, their activity transient and stochastic, their dynamics highly variable. In spite of this, the behaviour of the organism may be quite robust. The phenomenon of transient induced global response synchronization (TIGoRS) has been used to explain the emergence of stable responses at the global level in spite of marked variability at the local level. TIGoRS is present when an external stimulus to a complex system causes a non-linear increase in concordance of the resulting driven trajectories over a broad range of initial conditions. A 10% input sample can result in a concordance of outputs of more than 90%, even when the underlying system dynamics is time varying and inhomogeneous across the system. This talk reviews the notion of TIGoRS and its expression in several complex systems models including driven cellular automata, cocktail party and in particular dispositional cellular automata. (Received September 13, 2016)