

**COMPARISON OF MARKOV VERSUS QUANTUM DYNAMICAL MODELS OF HUMAN
DECISION MAKING**

Jerome R. Busemeyer

Indiana University, United States

ABSTRACT

What kind of dynamic decision process do humans use to make decisions? In this talk, two different types of processes are reviewed and compared: Markov and quantum. Markov processes are based on the idea that at any given point in time a decision maker has a definite and specific level of support for available choice alternatives, and the dynamic decision process is represented by a single trajectory that traces out a path across time. When a response is requested, a person's decision or judgment is generated from the current location along the trajectory. By contrast, quantum processes are founded on the idea that a person's state can be represented by a superposition over different degrees of support for available choice options, and that the dynamics of this state form a wave moving across levels of support over time. When a response is requested, a decision or judgment is constructed out of the superposition by “actualizing” a specific degree or range of degrees of support to create a definite state. The purpose of this talk is to introduce these two contrasting theories, review empirical studies comparing the two theories, and identify conditions that determine when each theory is more accurate and useful than the other.

Keywords: Markov process, quantum process, superposition, human decision making