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Towards Tunable Advantages of Quantum-Like Teams. Interdependent Teams Counter the Disadvantages of Gen-AI

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We provide a mathematical overview to enable any agentic system of “intelligent” machines, artificial intelligence (AI) and humans to interact in roles forming the structure interdependently performing team tasks. Our quantum-like model, maybe the only mathematical model of interdependence, captures the tradeoffs by a team’s choices as it expends its available energy on structure versus performance, forming an uncertainty (entropy) relationship. We address the support for our quantum-like model of uncertainty relations, the goals in this research, and the future for our research: 1. Redundancy reduces interdependence. With this finding, we confirm the existence of interdependence in all systems with teams. 2. Teams with orthogonal roles are best. This second finding is the root cause of humans, including scientists, not appreciating the role of interdependence in “squeezing” information states in teams. 3. Cognitive reports seldom equal behavior. The last finding solidifies our research, and explains why social scientists are absent from contributing to the mathematics of team science. In this talk, we review the need of a mathematics for team operations, the literature, the quantum-like mathematics in our model of agents, our hypothesis that freely organized teams enjoy significant advantages over command decision making (CDM) systems, and field results. We close with future plans and a generalization about squeezing states to control interdependent systems.

Keywords: Symmetry, Quantum-Like Uncertainty Relationships, Team Mechanics, Control of Interdependence, Cognition and Behavior, “Squeezed” Information in Teams