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(A)symmetry (Non)monotonicity: Towards a Deeper Understanding of Key Cognitive Di/Trichotomies and the Common Model of Cognition

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Abstract

Many dichotomies from across the cognitive sciences can be reduced to one of two fundamental distinctions (a)symmetry and (non)monotonicity of processing simplifying greatly the space of dichotomies needed to structure this broad interdisciplinary discipline. Taking the cross-product of these two dichotomies then yields a 2x2 structure of cells that in its turn yields a deeper understanding of two key trichotomies based on control and content hierarchies with each mapping to three out of the four cells. This cross-product and its four cells further provide a deeper understanding of the structure of the Common Model of Cognition an attempt to develop a community consensus concerning the processes and structures implicated in human-like minds as well as cognitive architectures that map onto it, such as ACT-R, Sigma and Soar and even AlphaZero with results that bear on the structure of integrative architectures, models and systems; and on their commonalities, differences and gaps.