Ryutaro Uchiyama – Abstract

An Episodic Theory of the Organization of Causal Knowledge

We outline an episodic theory of the organization and transmission of causal knowledge. On our account, narrative, which is the key medium of communication, is structured as a serially unfolding causal explanation of some significant target event. Narratives not only convey information about particular episodes, they do so in a representational format that brings out the cause–effect structure that underlies the narrated episode. Because this causal knowledge is imparted episodically rather in an explicit propositional form ("x causes y"), learning from narrative resembles learning from direct sensorimotor experience, taking advantage of computational techniques such as model-based reinforcement learning. In addition to conveying causal structure, narrative also supports the learning of complex, culturally specific concepts (e.g., fate, greed) insofar as these are characterized by their causal roles. This capacity to afford the simultaneous learning of conceptual richness and causal structure may be what renders narrative so attractive, compelling, and cognitively potent. We present the motivation behind this theory, along with the results of an agent-based model simulation, in which we examine the social dynamics of a population of agents who deal with events while learning the causal structure of the environment either through direct experience or through episodic retelling.