Learning Pathways to Temporal Inference

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Abstract

Temporal inference is defined as the cognitive capacity that motivates and implements the acquisition and use of a system's derivatives to infer future conditions and influence behavior. This poster discusses learning pathways to develop temporal inference using "information-flow/processor" graphs.

Simulation learning environments teach us things about our world without the costs associated with moving masses or waiting long time periods. Simulations for most of us have been a scarce resource. Our cognitive abilities were developed without many simulations, robust simulations, and simulations that we ourselves helped create.

This poster opens a dialogue about how the inclusion of simulations will change our cognition. Once we begin to create our own simulations to achieve our own goals, we open the door to understanding a wider definition of inference. Temporal inference addresses motions that exist only in abstraction. For example, inferring the motions and consequences of systems where the motions are too fast or too slow to be observed physiologically. The motions during a car accident happen too fast to use physiological experience to learn their implications in enough detail to extract which behaviors would have attenuated injury. The motions of a society during the 40 years preceding a war, a famine or a pollution crisis are too slow to help guide behavior during that 40 year time period. These motions must be dealt with in the abstract. They must be observed in simulations. They must be of interest to the individual before the crisis. Something in the environment must call attention to the possibility of crisis before its existence. It is a mix of knowledge, values, dependent on inferential abilities that most of lack.

However, an individual in the future, exposed to some combination of learning events might be able to acquire these temporal inference abilities. The lower diagram, shows the relationships between simulations used to help choose behavior in our physical world, and the meta skills one might learn. For example, a) to observe difference between what the simulation predicted and what the real world did, b) to fix the simulation, and c) to fix the tools that built the simulation.

The model shows a pathway for building the meta skills which a) determine the behavior to try in the simulation, and b) how, by looking at the physical world, that a simulation maybe required.

The upper model shows the pathways of information and the cognitive processes in temporal inference are uniquely different than, those that support experiential learning or language supported learning.

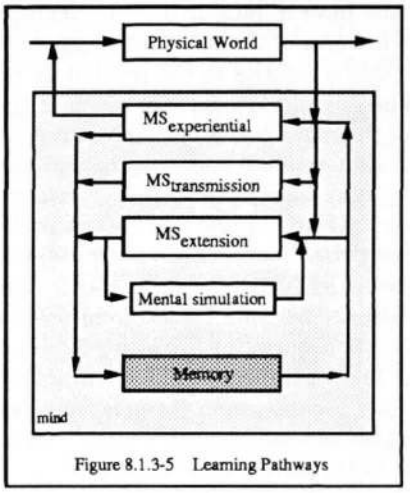

Figure 8.1.3-5 Learning Pathways