



## VORTRAG

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# Restructurations in Learning

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Institut für Islamisch-Theologische Studien, EG Seminarraum Isl.2-3

'Restructuration' is a concept put forth by Wilensky and Papert (2011) to describe deep change in paradigms of thought. For example, the shift from Roman to Arabic numerals made conducting multiplication and division much easier; so that instead of an elite who could make these computations, many people could compute them on their own. One of these restructurations concerns viewing the world through a complexity perspective; how a system's properties and behavior patterns emerge from the interactions of many entities. This view has surfaced about three decades ago, but is recently gaining traction in several disciplines. Examples range from the exact sciences such as interpreting dynamic equilibrium in ecosystems (predator-prey relationships) to the social domain, such understanding social groups in terms of network theory, and the humanities, for example conducting thought experiments in philosophy or computational linguistics. At the Systems Learning & Development Lab we are creating, designing learning and conducting research for several such restructurations in the domains of science, mathematics and engineering. In the talk, some of these restructurations, and research into their impact on people's understanding will be described – specifically related to driving in congested traffic, cell-based learning in biology, reframing the chemical bond and competitive biking in a triathlon. The research will describe the learnability of the restructurations, and the degree to which they support a more scientific understanding.

Sharona T. Levy is a faculty member at the University of Haifa. Her prime interests are in facilitating and studying people's learning about complex systems; and, restructuring conceptual knowledge in science for deeper and easier learning. To this goal, she works with a wide span of age-groups and abilities, and conducts research into people's reasoning about systems they encounter in everyday life and about systems which they construct and explore in the domain of science, technology, and health; and develop and study computer-based and physical learning environments, some of which are based upon embodied learning. She is part of the Preschool Education and Development and Technologies in Education divisions in the Faculty of Education. Sharona T. Levy received her Ph.D. from Tel-Aviv University in 2002, at the Knowledge Technology Lab and was a postdoctoral fellow at the Center for Connected Learning and Computer-based Modeling.