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# Managing Complexity: An Organizing Framework for Libraries and Learning in the 21st Century

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"Managing cognitive complexity" can play the role of an organizing framework for a host of 21st century library and learning agendas. These agendas span the design of digital libraries (Marchionini, 1995), resource-based learning, thinking-skill development (Collins & Mangieri, 1992), and information literacy (McClure, 1994). The difference between now and a hundred years ago, or even fifty years ago, is the rise in complexity, in the cognitive load on those attempting to solve problems and make judgments or decisions. Thus, the concept of cognitive complexity, understanding its nature, origins, and developing schemes for addressing it, might very well form the common element, the organizing principle, behind new theory and instructional programs in developing life-long thinking skills. In this century we have had an assault on our view of the world as a simple place, but have been given few means of thinking about it; let alone thriving on it. From the last structured world of Newton we have given way to relativity, quantum probabilities, Heisenberg's uncertainty, Gödel's incompleteness proof, fuzzy logic, analog computing, and chaos theory. Within this zeitgeist the author proposes an operationalized description of cognitive complexity, its five sources, and the necessary capacities and stages of an heuristic, synthesized from a series of advanced problem solving skills, that could be used to manage this complexity under a variety of learning and problem solving modes. This is preliminary research on an heuristic guide for building intelligent systems that are capable of handling real-world complexity.

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