

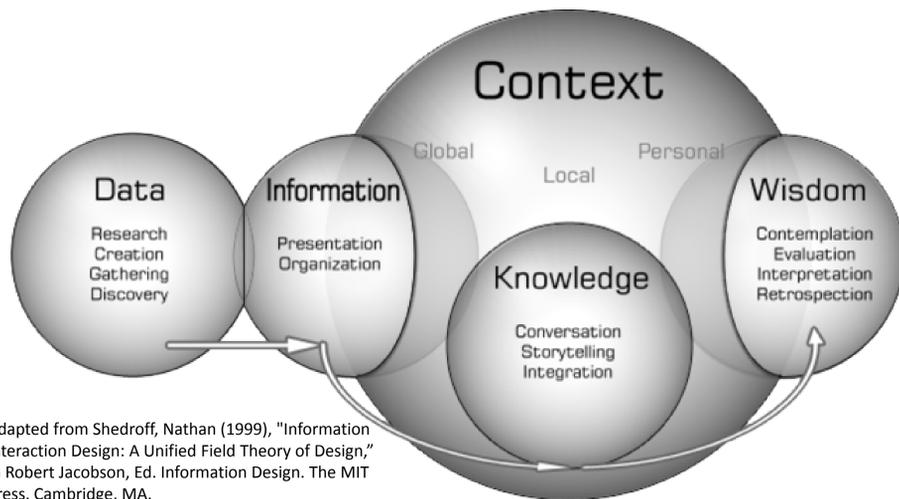


## S&T Campaign: Information Sciences Human-Information Interaction

Adrienne Raglin, (301) 394-2475, [adrienne.j.raglin.civ@mail.mil](mailto:adrienne.j.raglin.civ@mail.mil)  
Andre Harrison, (301) 394-2547, [andre.v.harrison2.ctr@mail.mil](mailto:andre.v.harrison2.ctr@mail.mil)  
Stephen Russell, (301) 394-1221, [stephen.m.russell8.civ@mail.mil](mailto:stephen.m.russell8.civ@mail.mil)

## Research Objective

Using Simon's Decision Model, decision making can be considered as consisting of 3 phases: (1) information exploration; (2) information analysis; and (3) solution selection. This research is focused on Phase (1). The objective is to establish new data identification and/or transformation techniques that provide novel information sparking the generation of creative alternative solutions.



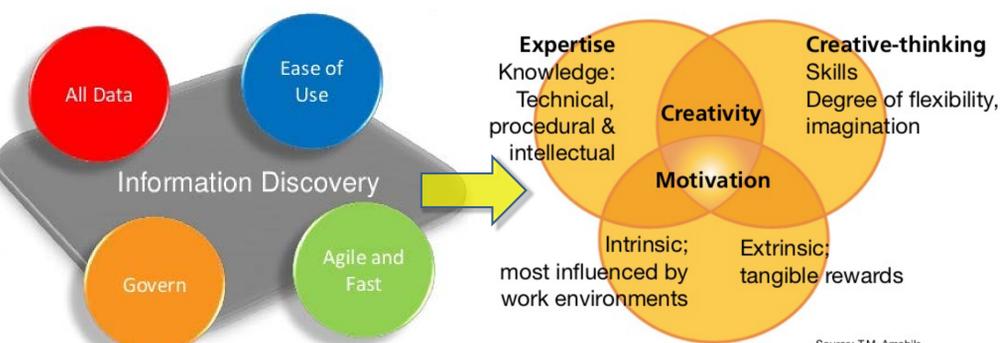
Adapted from Shedroff, Nathan (1999), "Information Interaction Design: A Unified Field Theory of Design," In Robert Jacobson, Ed. Information Design. The MIT Press. Cambridge, MA.

Techniques developed in this research area should go beyond information retrieval (giving users what they request) to information discovery (providing users information they need, but may not think to request). Concepts should also be extensible to a broad range of problems. Research in this area will include both model-based and collaborative recommenders as well as other mathematically-grounded methodologies that reason over humans' profiles, intent, and goals in order to explore and discover information to spur decision-relevant ideas and "out-of-the-box" alternatives.

## Challenges

- Discovery and analysis of dynamic and non-persistent data sources
- Determining value of unstructured information and potentially detrimental alternatives
- Computationally tractable data-driven bounded conceptualization and ideation
- Models of relational utility and generalized contextual disambiguation

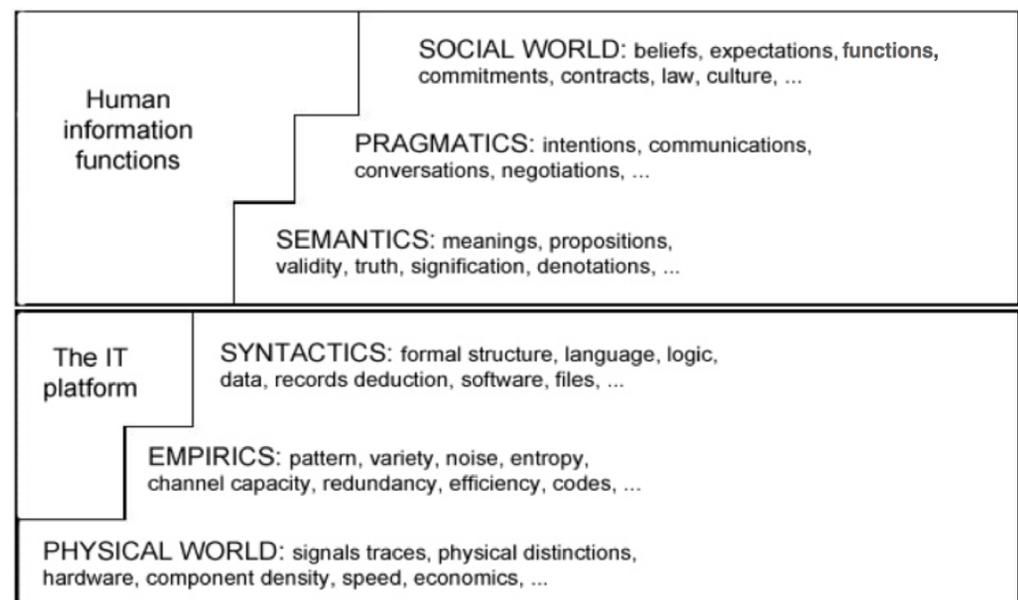
### Three Components of Creativity



Source: T.M. Amabile, Harvard Business Review Oct. 98

## ARL Facilities and Capabilities Available to Support Collaborative Research

- Campus Sensor Network Testbed with live data feeds from a variety of sensors
- Emulated Experimentation Environment with large scale military-realistic scenarios
- Research datasets for experimentation and algorithm evaluation



## Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Novel algorithms for non-deterministically exploring adaptive and dynamic datasets and determining information value
- Approaches for quantifying and ranking relevancy and ideation metrics
- Methods for experimentation with recommender algorithms and new discovery protocols
- Interfaces for creative information presentation, visualization, and interaction
- Military relevant datasets + ground truth information