

NORTHWESTERN INSTITUTE ON COMPLEX SYSTEMS PRESENTS

# Wednesdays

# @NICO



## *Applying Computational Methods to the Study of Commonsense Science Knowledge*

**Bruce Sherin, Learning Sciences  
School of Education & Social Policy  
Northwestern University  
Wednesday, April 29, 2009  
12:00 - 1:00 PM  
(Refreshments served at 11:45 AM)  
Chambers Hall, 600 Foster Street  
Lower Level Classroom**

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Over the last three decades, researchers in science education have devoted substantial effort to the study of commonsense science knowledge, the informally-gained knowledge of the natural world that students possess prior to formal instruction in a scientific discipline. Research in this tradition has, to date, generally relied on hand-coding of interview data. In this talk, I will discuss our attempts to automate the coding of data; beginning with data in the form of raw interview transcripts, I will show how it is possible both to induce coding categories and code the transcripts, all without supervision from a human coder. Given the tacit assumptions that are built into the field's theories and methods, this result is quite surprising.

In this work, we make use of a data corpus consisting of clinical interviews in which middle school students were asked to explain the seasons. The computational techniques I will describe are principally based on a combination of Latent Semantic Analysis and Cluster Analysis, and build on initial work, using the same corpus, by Gregory Dam and Stefan Kaufmann (Dam & Kaufmann, 2008).

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**NICO Coffee Hour will follow for questions, networking, and collaboration.**

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