

**Physics Education Research Conference
"The Practice of Analysis as a Window on Theory"**

**August 6-7, 2003
Monona Terrace Convention Center - Madison WI**

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"The questions we ask and why: Methodological orientation in physics education research"* (Wednesday 4:00 PM)

I will review my research for a recent project on student learning of thermodynamics, focusing on over 35 hours of interview data. I will describe some of the hypotheses I had about students' thinking when I began the interviews, and the basis for those hypotheses in previous research. I will describe the design and revision of the interview protocol, and outline the evolution in my own thinking regarding students' ideas. I will review the principles underlying the research methodology and the assumptions implicit in its design. I will describe the type of evidence I was seeking, why I was looking for it and not for other types and what I actually found. I will discuss constraints of my methodology with respect to what the data do and do not reveal about the process through which students arrived at the ideas they expressed. Finally, I will draw some general implications for PER.

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