1077-M1-1241   **Elise N Lockwood*** (`elise314@gmail.com`), 1025 West Johnson Street, Suite 695, Madison, WI 53706. *A Model of Students' Combinatorial Thinking.*

The inclusion of combinatorial topics in K-12 and undergraduate curricula has increased in recent decades, and research indicates that students face difficulties when solving counting problems. There is a need to understand the causes of such difficulties and to discover effective ways to present combinatorial concepts in the classroom. To this point, however, the literature has not addressed students' ways of thinking at a level that enables researchers to understand how students conceptualize counting problems. In this talk, a model of students' combinatorial thinking is presented that emphasizes relationships between formulas/expressions, counting processes, and sets of outcomes. The model represents a conceptual analysis of students' thinking and activity related to counting; it not only sheds light on relevant aspects of students' combinatorial thinking, but it also provides language by which to describe and explain aspects of students' counting activity. In this way, the model has practical implications, both for researchers (as a lens through which to examine data on combinatorics education) and for teachers (as an aid to design instruction based student thinking). (Received September 18, 2011)