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Kevin Charles Moore* (kvcmoore@uga.edu), 110 Carlton St., Dept. of Mathematics & Science Education, UGA, Athens, GA 30602. *Graphing and Fostering Operative Thought.*

Piaget and mathematics education researchers have distinguished between thought that is dominated by sensorimotor experience and thought that is dominated by the coordination of mental actions. The latter, which Piaget defined as operative thought, is a hallmark of mathematical reasoning. Researchers have illustrated, however, that students are not receiving sufficient opportunities to construct ways of thinking constituted by operative thought. In such cases, the ways of thinking students construct have limited productivity for their study of undergraduate mathematics. In this talk, I illustrate operative thought in the context of students' ways of thinking for functions and their graphs while drawing comparisons with thought dominated by sensorimotor experience. Using data collected during clinical interviews and teaching experiments with undergraduate students, I also illustrate research and instructional design decisions that provide researchers and teachers opportunities to gain insights into the extent a student's ways of thinking entail operative thought. For example, I illustrate how using non-normative representational systems afford students' reflection on their actions and, hence, students' construction of ways of thinking dominated by operative thought. (Received September 16, 2016)