1125-J5-2846 **Catherine Case***, catherine.case@uga.edu, and **Tim Jacobbe**. *Statistical Modeling as a Thought-Revealing Activity.*

Traditional inference methods use theoretical probability distributions (e.g., Normal distribution, t distribution, chi-squared distribution) to model the outcomes that would occur by chance under the null hypothesis. However, in recent years, simulation-based inference methods have begun to replace or complement traditional methods in many introductory courses, resulting in a proliferation of possible models and representational systems to express the logic of inference. In this study, pairs of introductory statistics students were recorded as they used various models to reason about a statistical inference task. This session will highlight how students made their thinking visible to each other through competing simulation models, thus challenging each other's statistical conceptions. In particular, as students proposed and evaluated different models – which involved both physical chance devices (e.g., coins, dice, spinners) and computer models – they spontaneously raised important conceptual issues. Examples include the distinction between random assignment and random selection; between initial randomization in data production and simulated re-randomization for inference; and between outcomes that occur "just by chance" and outcomes that are equally likely. (Received September 20, 2016)