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Megan J Wawro* (megan.wawro@gmail.com), 6475 Alvarado Road, Suite 206, San Diego, CA 92120-5013. *Individual and Collective Analysis of the Genesis of Student Reasoning regarding the Invertible Matrix Theorem in Linear Algebra.*

I present research regarding the development of mathematical meaning in an introductory linear algebra class. In order to analyze how students—both individually and collectively—reasoned about and with the Invertible Matrix Theorem (IMT) over time, I coordinate the analytical tools of adjacency matrices and Toulmin’s (1969) model of argumentation at given instances in the semester as well as over time. Synthesis and elaboration of these analyses was facilitated by microgenetic and ontogenetic analyses (Saxe, 2002) and an approach for documenting classroom mathematics practices (Rasmussen & Stephan, 2008). Finally, a coordination of both the microgenetic and ontogenetic progressions illuminates the strengths and limitations of utilizing both analytical tools in parallel on the given data set. The data comes from video and transcript of whole class and small group discussion, as well as individual interviews with five students during a semester-long classroom teaching experiment (Cobb, 2000). Analysis reveals rich student reasoning about and with the IMT that may not be apparent through use of only one analytical tool. These and other results, as well as the methodological approach, will be discussed in the presentation. (Received September 20, 2010)