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William Finzer* (bfinzer@keypress.com). *Properties of measures—Statistics investigations with Fathom.*

Computer intensive methods have dramatically changed the nature of applied and theoretical statistics. In this presentation we will look at ways that Fathom, a dynamic mathematics tool designed with teaching and learning statistics in mind, can also be used to investigate theoretical questions. We will look at the “German Tank Problem” using Fathom. During WWII the Allies found that German tanks were numbered sequentially. The practical question then arose: “Given the serial numbers of captured tanks, how well could the total number of tanks manufactured be estimated?” We will look at methods, some from the literature and some created by students in the classroom, for making this estimate and ways to compare the efficacy of these methods. Fathom’s simulation capabilities bring investigation of these questions within the range of an introductory course. By looking at three different methods for estimating from a sample of only five tanks, and how Fathom allows students to generate and investigate these estimates and their distributions, we will see how students can reason not only about the data, but about the statistical processes themselves. (Received October 03, 2000)