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Mike May* (maymk@slu.edu) and **Tom Banchoff** (banchoff@math.brown.edu). *Rethinking calculus of several variables in the era of computers*. Preliminary report.

Traditional multivariable calculus texts written before the development of computer graphing technology emphasized algebraic techniques for analyzing equations. Graphing functions by hand was hard and symbol manipulation dominated, downplaying or eliminating geometric approaches. Even after computer generated illustrations became possible, they often appeared only briefly after which algebra took over. All that has changed with the introduction of readily available tools for visualization and manipulation of three-dimensional graphs and other illustrations. Geometry can take its place along with algebra and numerical techniques at all stages in the study of functions of two and more variables. The authors will discuss advances in visualization technology for teaching and for student use over the past two decades. They will describe and demonstrate their current project, a fully interactive electronic text in multivariable calculus that can give both instructors and students the ability to explore basic phenomena and large families of examples using computer enhanced geometric techniques. (Received September 22, 2012)