1067-Z1-1935   **David Dennis** (`david.dennis@earthlink.net`), 4249 Cedar Dr., San Bernardino, CA 92407, and **Susan L. Addington*** (`saddingt@csusb.edu`), Math Dept., CSUSB, 5500 University Pkwy., San Bernardino, CA 92407. *Euler Drives the Leibniz Machine and Takes the Log and Trig Functions out for a Spin on the Complex Numbers.*

The object of Leibniz's calculus was to create a machine syntax, based on tables, capable of computing all known geometric quantities (tangents, areas, arclengths, etc.). Despite success, his calculus produced no major new results, and was lapsing into obscurity, until Euler used the system and its notation to resolve the issue of how to define the logarithms of negative numbers. He then produced all of the unique definitions of transcendental functions over the complex numbers. Startlingly beautiful geometric mappings result. Now, with the aid of computers, every student can explore this realm without being "analysis incarnate" (Euler's nickname). Using Newton's Binomial Series within a Leibnizian notation, Euler's textbooks persuaded everyone to agree to his definitions. The worldwide spread of Euler's curriculum eventually completed the paradigm shift from mathematics as geometry to mathematics as algebra.

The details of this story can be found at Mathematical Intentions, An Ethnomathematical History of Secondary Mathematics (Algebra I-Calculus), http://www.quadrivium.info. (Received September 22, 2010)