

Sylvester and Petersen and the Emergence of Graph Theory

Henry Martyn Mulder, Erasmus University, Rotterdam

In February 1878, in a letter to Nature, Sylvester coined the word *graph* as we now know it. He envisioned a great future for *graph theory*. Surprisingly, he did not contribute any result to his new theory. But in another way, his ideas were seminal for the emergence of graph theory. He met the Danish mathematician Julius Petersen a couple of times and had an extensive correspondence with him. From this emerged the first significant contribution to graph theory that was phrased in graph theoretical language: Petersen's theorem on the factorization of cubic graphs of 1891. In this talk we will focus on these results of Petersen, and will appreciate their depth and influence on the future.



Dr. Mulder studied Mathematics and Philosophy at the Vrije Unioersiteit, Amsterdam, where he obtained his PhD in mathematics 1980. From 1980 until 1988 he was professionally working in the history and philosophy of science, pursuing graph theory only in his free time, as a true "amateur" in the positive sense of the word. During these years he also studied the history of graph theory. In 1986 he gave a historical talk at the "250th Anniversary Conference", also held at IPFW: "To see the history for the trees", on the first non-trivial results on trees in the 1850's and 1860's. In 1989 he joined the Econometric Institute of Erasmus University, Rotterdam, returning to his original profession: mathematics, teaching as well as research, with graph theory and applications as main focus of his research.

His thesis from 1980, entitled "The Interval Function of a Graph", had turned out to be the starting point of several research fields, the most important of which being that of "median graphs and related structures", in which to this day many papers have appeared and are still being written.