

1106-01-563

Chris C Bissell*, chris.bissell@open.ac.uk. *The history and philosophy of mathematics for information engineering.*

By ‘mathematics for information engineering’ I mean the mathematics used in such engineering disciplines as electronics, controls, signal processing and telecommunications. Such mathematics includes Fourier and Laplace transforms, correlation functions, complex algebra and analysis, and general calculus. But the way engineers developed and used these techniques differs enormously from the way the math has been – and still is – taught in conventional scientific and engineering education. From the first half of the 20th century onwards, graphical techniques such as Bode Plots, Nichols Charts and pole-zero diagrams were used to eliminate calculation and algebraic manipulation, and provide engineers with powerful design tools that transcended the mathematical basis of the analysis. The story of this development offers both an intriguing historical perspective on traditional applicable mathematics, but also a radically different view of the philosophy of mathematics as it developed in a novel technological context. This paper will discuss the historical development of such techniques, present the sometimes extraordinarily beautiful design tools developed, and draw some conclusions for the history and philosophy of mathematics. (Received September 02, 2014)