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Robert L. Bryant*, MSRI, 17 Gauss Way, Berkeley, CA 94720. *A visit to the Finsler world.*

Many people aren't aware that, when Bernard Riemann revolutionized the study of differential geometry in his famous 1854 lecture, he had in mind a more general concept of geometry than what we now call Riemannian geometry. His original vision included a kind of geometry that could be used to study a wide range of problems in the calculus of variations and optimization, but the development of this more general geometry, nowadays called Finsler geometry, had to wait many more years before being explored in depth.

It is now in a vigorous phase of development, and, in this short lecture, I want to (re-)introduce Riemann's original idea and sketch some of the new developments. I'll emphasize how the Finsler world compares and contrasts with the more familiar Riemannian world and illustrate some of its applications and surprising connections with other areas of mathematics. (Received April 21, 2010)