

Evarist Giné, Vladimir Koltchinskii and Rimas Norvaiša (eds.): *Selected Works of R.M. Dudley*. Springer, Selected Works in Probability and Statistics, New York 2010. 481+xxiv pp., EUR 149.95, £133.00, CHF 229.00. ISBN 978-1-4419-5820-4.

MSC 2010: 60-06; 01A75; 00B60; 26A45; 60F05; 60F17; 60G15; 60J25; 62F15; 62G30.

Richard Mansfield Dudley (born 1938, BA Harvard 1959, PhD Princeton 1962, assistant professor UC Berkeley 1962–1967, since 1967 assistant, then full professor at the M.I.T.) is one of the foremost probabilists in the second half of the 20th century. He is best known for his work in probability theory on Gaussian Processes—this earned him an invited lecture at the 1974 ICM in Vancouver—and in mathematical statistics on Empirical Processes. Dudley also wrote influential papers on (the convergence of) probability measures on metric spaces, on the analysis in abstract Wiener spaces and on the p -variation of random and non-random functions. Since 1961, when his first paper appeared, he has written more than 100 research papers as well as eight monographs and lecture notes. His well-known graduate textbook *Real Analysis and Probability*, [Zbl 0686.60001, Zbl 1023.60001], shows his expository qualities: mathematical elegance, good taste and utmost scholarship. Only few text are as abundant and rigorous with historical notes. Dudley's quality as a teacher is also witnessed by his quite influential St. Flour [Zbl 0554.60029] and Aarhus lecture notes [Zbl 0355.60004, Zbl 0937.28001, *Notes on Empirical Processes*, MaPhySto lecture notes no. 4, Aarhus 1999] all of which found their way into later monographs: *Uniform central limit theorems* [Zbl 0951.60033] and, jointly with R. Norvaiša, *Differentiability of six operators on nonsmooth functions and p -variation*

[Zbl 0973.46033] and *Concrete functional calculus* [Zbl pre05817027].

The current Selecta, edited by one of Dudley's first students (E. Giné) and two collaborators (V. Koltchinskii and R. Norvaiša) contains 23 of Dudley's most important papers. The papers are organized in 5 chapters—Convergence in Law (4 papers), Markov Processes (3 papers), Gaussian Processes (4 papers), Empirical Processes (4 papers), Nonlinear Functionals and p -variation (3 papers) and Miscellanea (5 papers)—showing the breadth of Dudley's research interests. Probably the most influential contributions are his 1967 paper *The sizes of compact subsets of Hilbert space and continuity of Gaussian processes* [Zbl 0188.20502] which started his seminal contributions to Gaussian processes and the groundbreaking *Central limit theorems for empirical measures* paper from 1979 [Zbl 0404.60016], see also the St. Flour lectures (not contained in the present selection) *A course on empirical processes*, 1984, [Zbl 0554.60029]. These contributions revolutionized their subjects. Nowadays it is impossible to imagine Gaussian processes without the notion of metric entropy, GB and GC sets and Dudley taught us indeed [*the Gaussian process and how to approach it*] [Zbl 0338.60022]. His landmark work on (central limit theorems for) empirical processes created a whole new direction; it is interesting to note that these papers are substantially influenced by Dudley's knowledge of metric entropy and the sample paths of Gaussian processes. Again he introduced new concepts into the field, e.g. the VC (short for Vapnik-Červonenkis) classes, which have spread far beyond the field of statistics or probability theory.

Whenever errata to papers were available, they are reprinted with the original contribution, the only exception being the important correction [Zbl 0431.41029] to the 1974 paper *Metric entropy of some classes of sets with differentiable*

boundaries [Zbl 0275.41011]. Of the 481 pages of the book only 19 are reserved for an editorial, a biographical sketch, a complete bibliography, a list of doctoral students and ‘commentaries’. Each of the 5 chapters begins with a very brief introduction—altogether 8 pages—which contains a brief summary of the papers and where the results are sometimes put into their historical perspective. It is a pity and a lost opportunity that these commentaries rarely reach the quality and scholarship of the notes in, for example, Dudley’s own textbook *Real Analysis and Probability*.

This is one of the first books in Springer’s new *Selected Works in Probability and Statistics Se-*

ries. The idea of this series is to offer the scientific community the possibility to assemble major (modern classical) works and to honour distinguished scholars in probability and statistics. Springer is committed that the contents of each volume in the series—with very few exceptions—are freely available on SpringerLink, <http://www.springerlink.com/content/978-1-4419-5820-4>. Of the present selection almost all publishers have agreed on this, the only exception are two papers where Elsevier maintains free access on its own website (the DOI is given, but not linked).

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