Preface

Murray Rosenblatt was born in New York City on September 7, 1926. After completing an undergraduate degree in mathematics at the City College of New York, he entered graduate school in mathematics at Cornell in 1946. While at Cornell, he studied both physics and probability theory and benefited greatly from his contact and exposure to some of the great minds of the day including Feynman, Feller, and Kac. It was under the direction of Marc Kac that Murray wrote his PhD dissertation in 1949 on extensions of the famed Feynman-Kac integral.

Murray met his wife Ady in the late 1940s; they were married in Ithaca in 1949, and subsequently had two children, Karin and Daniel. After receiving his PhD, Murray joined the "Committee on Statistics" at the University of Chicago. He held academic positions at the University of Indiana and Brown University before settling in the University of California at San Diego (UCSD) in 1964. He remains at UCSD to date—as Distinguished Professor Emeritus since 1994—having survived the loss of his wife Ady in 2009 after a courageous battle with cancer. The Statistical Science interview [1] provides further insights into Murray's professional life and career; more details are also found in the short section on key events included in this volume.

During the second half of the 20th century, Murray was one of the most celebrated and leading figures in probability and statistics with particular emphasis on time series, Markov processes, and nonparametric function estimation. In addition to being a fellow of IMS and AAAS, he was a Guggenheim fellow twice (1965–66, 1971–72), and was elected to the National Academy of Sciences in 1984. Among his many contributions, Murray conducted seminal work on density estimation, central limit theorems under strong mixing, spectral domain methods, long memory processes and Markov processes.

During his long—and continuing—career, Murray has published over 130 papers, and 5 books. His earliest book, the time series monograph [2] written jointly with U. Grenander, was published in 1957 and remains a classic today. This book was the first to lay out a comprehensive and modern set of techniques for modeling time series backed up by rigorous arguments. It had wide appeal to researchers and practitioners alike. Many of the results in this book are as relevant today as when they first appeared more than 50 years ago. In tribute to Murray's seminal contributions, the Rosenblatt name has been attached to two notable terms, the Rosenblatt Transformation (based on his 1952 paper [3]) and the Rosenblatt Process—a term coined by Murad Taqqu. At the close of 2009, these terms have an astonishing 506K and 1870K search listings, respectively, in Google.

We are delighted that several leading experts agreed to provide commentary and reflections on various directions of Murray's research portfolio. Rick Bradley gives a nice overview of some of Murray's work related to the central limit theory under strong mixing conditions. Peter Bickel describes Murray's insight into their papers on global measures of density estimates. David Brillinger provides a behind-the-scenes look at his papers with Murray on higher-order spectra. Murad Taqqu describes how Murray's paper on independence and dependence [4] inspired him to look at a class of limit processes with long memory, the aforementioned Rosenblatt Processes. T.-C. Sun gives an interesting account of Murray's work on Markov processes on semi-groups and the connections to results by Lévy, and Kawada and Itô. Finally, Keh-Shin Lii, a long time collaborator of Murray's, describes some of their joint work and problems in deconvolution and non-Gaussian time series modeling.

Murray was an accomplished advisor with over 20 PhD students to his credit. He had an interesting style of advising that may have reflected his experience with his own mentor Marc Kac. In his interview [1], Murray says Kac "helped occasionally with suggestions, but sort of left you alone without saying you've got to do this or that so forth and so on. He let you to go your own way." Murray breaks down his own style of advising by "suggesting an area" and "if a student is bright enough to make his own way, why do you have to impose on him?" Of course, as two of the undersigned can attest, it was not always clear that we could make it on our own! In meetings during our graduate student days, Murray was fond of frequently uttering the "what if" refrain. He was not only trying to probe our level of understanding, but trying to push us to think more broadly beyond the conventional boundaries. Murray has extraordinary insight which, unfortunately, is something that is not readily passed on to one's students. It was often a revelation when after studying a topic, one would finally come to understand the insight Murray had expressed years earlier.

This volume is a celebration of Murray Rosenblatt's stellar research career that spans over six decades. While space limitations prevented us from publishing all of Murray's numerous research papers, we have attempted to gather in this volume some of his most interesting and influential papers. The task was difficult—and in the end rather subjective—but we received help and guidance from our six expert discussants and from Murray himself.

We would like to thank Anirban DasGupta, past editor of the IMS Collections and Lectures Notes—Monograph Series, who first proposed putting a volume together in honor of Murray. Even though IMS had to back out of its commitment to this series as a result of unanticipated financial concerns, Anirban, together with Jim Pitman, Peter Hall and Jon Wellner, have been stalwart supporters of these "Selected Works" projects. We are indebted to John Kimmel and Springer for stepping in and salvaging the "Selected Works Series" that honors some of the leading figures in our field.

New York — *Richard A. Davis*
Riverside — *Keh-Shin Lii*
La Jolla — *Dimitris N. Politis*



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