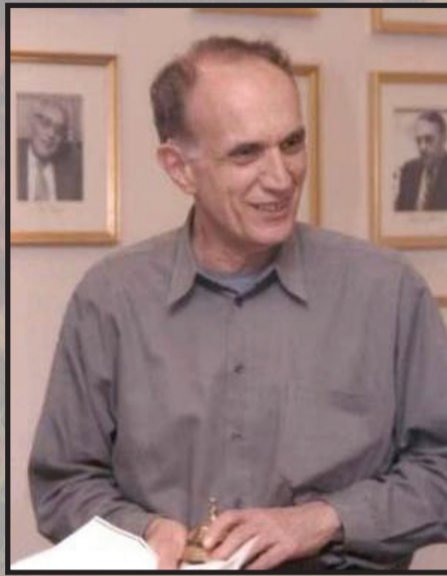


# Center for Applied Mathematical Sciences Distinguished Lecture, Fall 2012



**Bradley Efron**

## **Bayes and Empirical Bayes Information (Learning from the experience of others)**

**Abstract:** Bayesian methods require a catalog of prior experience for the interpretation of statistical evidence. In the absence of prior information, empirical Bayes methods rely instead on a catalog of cases similar to the problem of interest. The crime rate in one small city, for example, may be estimated by modifying its observed rate with evidence from other cities. I will give some examples that show how powerful the empirical Bayes approach can be in practice, both for estimation and testing. The use of “other” cases then raises the question of just which others are relevant, and how their information bears on the case of interest.

Bradley Efron is an American statistician best known for proposing the bootstrap resampling technique, which has had a major impact in the field of statistics and virtually every area of statistical application. The bootstrap was one of the first computer-intensive statistical techniques, replacing traditional algebraic derivations with data-based computer simulations.

He is currently a Professor of Statistics at Stanford University. At Stanford he has been the Chair of the Department of Statistics, Associate Dean of Science, Chair of the University Advisory Board, Chair of the Faculty Senate and Chair of the Undergraduate Program in Applied Mathematics.

Efron holds the Max H. Stein endowed chair as Professor of Humanities and Sciences at Stanford.

He has made many important contributions to different areas of statistics. Efron’s work has spanned both theoretical and applied topics, including empirical Bayes analysis (with Carl Morris), applications of differential geometry to statistical inference, the analysis of survival data, and inference for microarray gene expression data.

He has won many honors, including a MacArthur Prize Fellowship, membership in the National Academy of Sciences and the American Academy of Arts and Sciences, Fellowship in the Institute of Mathematical Statistics (IMS) and the American Statistical Association (ASA), the Wilks Medal and the Parzen Prize.

In 2005, he was awarded the National Medal of Science, the highest scientific honor by the United States, for his exceptional work in the field of statistics.

**Monday, October 15, 2012**  
**University of Southern California**  
**Kaprielian Hall**

**Reception: 3:00 pm**  
KAP 410

**Lecture: 3:30 pm**  
KAP 414

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Southern California