

THE UNIVERSITY OF GEORGIA
DEPARTMENT OF STATISTICS
AND
THE STATISTICS CLUB

jointly present

The Bradley Lecture



Friday, April 25, 2014

State Botanical Garden of Georgia | Callaway Building

Dr. C.F. Jeff Wu

Coca-Cola Chair in Engineering Statistics and Professor
Georgia Institute of Technology

From Real World Problems to Esoteric Research: Examples and Personal Experience

Young (and some not-so-young) researchers often wonder how to extract good research ideas and develop useful methodologies from solving real world problems. The path is rarely straightforward and its success depends on the circumstances, tenacity and luck. I will use three examples to illustrate how I trod the path. The first involved an attempt to find optimal growth conditions for nano structures (i.e., wires, belts, saws). It led to the development of a new method “sequential minimum energy design (smed)”, which exploits an analogy to potential energy of charged particles. After a few years of frustrated efforts and relentless pursuit, we realized that smed is more suitable for generating samples adaptively to mimic an arbitrary distribution rather than for optimization. The main objective of the second example was to build an efficient statistical emulator based on finite element simulation results with two mesh densities in cast foundry operations. It eventually led to the development of a class of nonstationary Gaussian process models that can be used to connect simulation data of different precisions and speeds. The third example hails from cell biology. In a T cell adhesion experiment at Georgia Tech, the biologist was not satisfied with the use of graphical method to understand the serial dependency of cell adhesion over repeated trials. It led to the development of hidden Markov models with new features that reflect the nature of the experiment. In each example, the developed methodology has broader applications beyond the original problem. I will explain the thought process in each example. Finally, I will share some secrets about a path to innovation.

▪ *About the Speaker* ▪

Born into a large family in Taiwan, Dr. C.F. Jeff Wu originally considered studying his first passion, history, in college until a teacher advised against it. He then chose to pursue his interest in mathematics graduating from the National Taiwan University in 1971 with a Bachelor of Science in Mathematics. During his tenure there, Dr. Wu inadvertently discovered an interest in statistics through a course in probability taught by Professor Y.S. Chow of Columbia University, who taught at the National Taiwan University as a visiting lecturer. This later led him to pursue his Ph.D. in Statistics at Berkeley where, upon graduation, he began his career in 1976. Throughout his illustrious career, Dr. Wu has served as a faculty member at the University of Wisconsin, the University of Michigan, the University of Waterloo and currently, the Georgia Institute of Technology. Among his many notable accomplishments, he received the COPSS Presidents Award, the Shewart Medal of the American Society for Quality, an honorary doctorate in Mathematics from the University of Waterloo and he was the first academic statistician to be elected a Member of the U.S. National Academy of Engineering. He has also given many prestigious named lectures. Dr. Wu will be further celebrated this July in Mile, Yunnan, China for his 65th birthday.



▪ *History of the Bradley Lecture* ▪

The University of Georgia Department of Statistics and the Statistics Club are proud to host the 22nd Annual Bradley Lecture. The event honors former faculty member Dr. Ralph A. Bradley, who was born on November 28, 1923 in Smith Falls, Ontario, Canada, and who grew up in the village of Wellington. After graduating from Queen's University in 1944 with an honors degree in mathematics and physics, he served in the Canadian Army from 1944 to 1945, and afterwards earned his Masters of Arts degree in 1946. He received his PhD in 1949 at the University of North Carolina Chapel Hill, and went on to a very distinguished career. He was founder of the Department of Statistics at Florida State University and served as its chair from 1959 to 1978. He joined UGA in 1982.

Dr. Ralph Bradley made many contributions to the field of statistics as a researcher in design of experiments, nonparametric statistics, sequential analysis and multivariate analysis. He also had an exemplary record of service to the profession of statistics as a member of ASA, IMS, ISI, as well as by serving as a president of ASA in 1981.

The Bradley Lecture provides an opportunity for UGA graduate students to interact with the speaker, who is normally an eminent statistician of their choice. After the seminar in the afternoon, the speaker gives an after-dinner presentation and often stays for the next day's spring picnic to mingle with faculty and students.

We hope you'll join us for what should be an informative and exciting event!

*John Stufken, Ph.D.
Professor and Head
Department of Statistics*

▪ *Schedule of Events* ▪

Friday, April 25, 2014

4:00pm – 4:30pm

Arrival

(light refreshments will be served)
Main Room | Callaway Building

4:30pm – 5:30pm

Lecture

Dr. C.F. Jeff Wu
Auditorium | Callaway Building

5:30pm – 6:30pm

Happy Hour

(Cash Bar)
Main Room | Callaway Building

6:30pm – 8:30pm

Dinner and After-Dinner Talk

Dr. C.F. Jeff Wu

Main Room | Callaway Building

Saturday, April 26, 2014

11:00am – 3:00pm

Bradley Spring Picnic

Lake Herrick Pavilion | UGA Intramural Fields

▪ *After-Dinner Talk* ▪

Dr. C.F. Jeff Wu

Main Room | Callaway Building

Who Are We? Data Scientists in Disguise



▪ *Bradley Spring Picnic* ▪



Lake Herrick Pavilion | UGA Intramural Fields Saturday, April 26, 2014 | 11:00am – 3:00pm

Enjoy a relaxing afternoon full of food, fun and fellowship! Mingle with the guest speaker, faculty members, and graduate students while watching the students show off their outdoor grilling skills.

Parking is free.

▪ *RSVP* ▪

RSVP Required

Please submit your RSVP at:

www.stat.uga.edu/RSVPbradley

The deadline to RSVP is
Wednesday, April 9, 2014

Dinner Buffett:

\$20 per faculty member or visitor

\$10 per student

We accept cash and checks payable to

"University of Georgia"

Send payment to:

Department of Statistics

*101 Cedar Street | Attn: Megan Weatherford
Athens, GA 30606*