- **Professor George Box went to Madison, Wisconsin in 1959 to build a statistics department**

- **By the mid 1970s there was a saying in the profession that**

  --If you want to study mathematical theory of statistics, go to *Columbia* or the west coast;

  --on the other hand, if you want a *balanced* education in statistics, go to *Wisconsin*!

I am delighted to attend here the 50th anniversary celebration of the department and to talk about

The earlier years of the Statistics Department

I also went to Madison in 1959, but as a student in the School of Commerce and ended up writing my thesis under Professor Box, joined the department in 1962, staying for the next 20 years. I earnestly hope that the Wisconsin experience can be useful in the further development of statistics programs in schools of higher education

Topics

- Guiding principles for Wisconsin statistics programs
- Some earlier colleagues and departmental atmosphere
- Joint appointments
- Teaching and growth
- Joint Ph. D. programs
- Collaboration with computer science
- Statistical laboratory
- Separation of MS and Ph.D. program requirements
- Some research areas and general research atmosphere
- Some notable students

Guiding Principles

- Statistics is a *tool* for scientific investigation

- Development of *sound statistics* must go hand in hand with

  practice

Some earlier colleagues and departmental atmosphere

1959 – Box, Stu Hunter (DE); *RSM, FFD,EVOP*
1960 – Gurland (MS/Med) , Draper (DE)
1962 – Guttman (MS), Tiao (Econ)
1963 – Sam Wu (ME), Bill Hunter (ChmE)
1964 --Watts (EE-SigP)
1965 – Klotz, Harris (MS)
1966 – Roussas, Johnson, Bhattacharyya, Basu (MS)
1967 – Stigler, Wahba (MS)
1968 – Van Ryzin, Sedransk (MS)

Many distinguished visitors including G. Jenkins, R. A. Fisher, G. Barnard, D. Lindley, J. Durbin, M. Stone, H. Raiffa, R. Schlaiffer, F. Mosteller, J. Tukey, F. Anscomb, D. Fraser, S. Geisser, A. Zellner, etc.

Departmental atmosphere was totally *democratic* with everything by vote; new assistant professor has the same vote as Box apart from own promotion; and George was chairman only for a few years, by annual election

Joint Appointments

Statistics department occupies a ***central*** place for teaching and research in statistics, but having joint appointments with various substantive disciplines.

- Engineering:

  Chemical – Box, Hunter(Bill)
  Mechanical – Wu(Sam)

- Medicine: Gurland

- Commerce(Business): Tiao

- Agriculture: Sentura

- MRC, Math, etc

Teaching and growth

- Development of basic service courses: *BS, DE, Eng Stat, TS, etc.*

- Development of introductory math. statistics courses for service and own majors

- Development of core graduate courses: math. stat.; multi. anal., anal. of var.; decision th.; testing hypo.; etc. …

- Growth in method courses for service and major degree programs, e.g. TS, DE

- Shared teaching across disciplines, TA, RA, from application areas

- Long term survival of department: *enrollment, enrollment, enrollment*

Joint Ph. D. Programs

- School of Commerce: Tiao, R. Miller, J. Hickman, D. Wichern, others; influence of HBS; started in late 60s

    Key features: stat. prelim; econ. theory exam; thesis in stat. methods motivated by research topics in econ. and business

    Output: D.A. Hsu, W. S. Wei, S. Hiller, M. Grupe, W. Bell, C. Chen

- School of Engineering: S. M. Wu (mechanical); Box, W. Hunter, (chem.), Jeff Wu

    Army of Ph. Ds in mech. eng.; revival of production eng.; important joint work with chem.. eng.; quality & prod.

- School of Medicine: J. Gurland, J. Klotz, Van Ryzin, J. Matter, de Mets, L. J. Wei, others; distinctive biostat. program

- School of Agriculture: J. Sentura, R. Nordheim

Collaboration with computer sciences

- Sharing of office building

- Sandwiching faculty office assignments

- Nonlinear regression program

Statistical Laboratory

- Initially proposed by Asit Basu in late 60s; *paired-t test*

- A year course required of all masters and Ph. D. students

- Lab course co-taught and/or co-led by a "Statistician in Residence" and a senior faculty, usually the associate chairman,(First pair: Stu Hunter, Don Watts)

- Soliciting empirical stat. problems across campus, presentation of problems to class, and assignment of projects to participating students

- Project report and funding

- Role of B. Joiner

- Monday night beer seminar(in the 80s)

Separation of MS and Ph.D. Program Requirements

- Motivation

- Separation of course requirements

- Totally different exam requirements

- Revolutionary in nature

- Field of concentration in an appl. area

My Wisconsin years, some research areas and atmosphere

- Bayes – Robustness, non informative prior, random effect models, outliers, etc.

- Time Series -- Box & Jenkins

> ARIMA models : seasonal models-Bacon; residuals test-
> Pierce, Ljung, Newbold,…
> Iterative model building procedure
> (tentative identification, estimation and diagnostic checks)
> Impacts

- Large data set analyses – L. A. ozone and air pollution, stratospheric ozone & temperature

- Other areas e. g. cross validation; empirical Bayes; DE; history of statistics…

- Tech report series

- Literature reading and discussions, beer seminar, extensive
  collaborations among colleagues and students, and across fields of appl.

- Software development—NREG; T.S.; MTS;

Key Features of my early Wisconsin years:

- Theory and Practice
- Joint appointments and programs
- Statistical lab.
- Separation of masters and Ph. D. programs
- Stimulating research environment & democratic atmosphere
- Air pollution and environmental data analyses
- Involvement with Census Bureau

- Some notable students : Many outstanding ones in academia : L. J. Wei, Wing Wong and Ruey Tsay; in industrial and government, Bill Hill, Bill Bell, and many others

THANK YOU!