

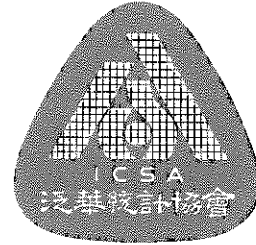
泛華統計協會 會刊

International Chinese Statistical Association

Website: <http://icsa.org>



Bulletin
July 2001



編者的話：

會刊是我們會員的主要交流園地，預計每年在一月及七月發行兩期，希望各位踴躍賜稿，文章以一至二頁為主，須用中文繁體字或英文書寫，文章性質以一般性非專門學術的文章為主，以前或本期會刊內的各篇短文都是很好的範例，稿件如採用，我們希望能由作者安排打字，完稿的上，下，左，右邊 (margin) 至少要有四分之三英吋，頁碼離底邊二分之一英吋，打字打在 8" x 11" 的白紙上。為統一起見，若以英文書寫，請用 Microsoft Word 打字，中文繁體字請用 Microsoft Word with Valupack Fareast feature 打字。稿件的截止日期是六月十五日及十二月十五日。截止日期後收到的將列為下一期的稿件。

刊內付有本會的申請表 (application form)，其中會員動態內的著作 (publication) 以一年內的新作品為限。

從 1994 年度起本會酌收徵才廣告費一頁 U.S. \$200 或半頁 U.S. \$120。

對於以上的一些構想，如果您有任何建議，請與泛華協會執行長莊易 (地址見下) 聯絡，以期這份刊物更為完善。

2000 會刊通訊錄編輯人員

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蔡高太

熊昭

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楊海亮

魏成鋼

黃養新

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Zhiliang Ying (Chair),

James J. Chen,

Ker-Chau Li,

I-Shou Chang

Sue-Jane Wang

Yi Tsong

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EXECUTIVES AND MEMBERS OF THE COMMITTEES OF ICSA 2001

EXECUTIVES

President:	Chao Agnes Hsiung (2001)
Past President:	Chien-Pai Han (2001)
President-elect:	William W.S. Wei (2001)
Executive director:	Yi Tsong (2001-03)
Treasurer:	H.-M. James Hung (2001-03)

BOARD OF DIRECTORS

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STANDING COMMITTEES

PROGRAM COMMITTEE:

Hubert J. Chen (chair 2001; member 2001-02), Yu-Sheng Hsu (2001), Xiang Rong Yin (2001), Ouhong Wang (2000-01)
Term of reference: to plan, coordinate and arrange the annual meeting, 2001.

FINANCE COMMITTEE:

H.-M. James Hung (chair 2001-03), Xiu-Chen(2001-03), Wei-Ying Yuan(2001-03)
Term of reference: to oversee the budget and financial situation of the Association.

NOMINATING AND ELECTION COMMITTEE:

Mei-Cheng Wang (chair 2001; member 2000-01), Dennis K.-J. Lin (2000-01), Jen-Pei Liu (2001-02), Frank Shen (2001-02)
Term of reference: to nominate the candidates for the President-elect and members of Board of Directors.

PUBLICATION COMMITTEE:

Zhiliang Ying (chair 2001; member 1999-01), I-Shou Chang (2001-03) James J. Chen (2000-02), Sue-Jane Wang (Bulletin), Ker-Chau Li (Statistica Sinica), Yi Tsong (ex-officio)
Term of reference: to supervise the publication policy of the Association and make recommendations with respect to the editorial policy of various publications.

CURRENT COMMITTEES

MEMBERSHIP COMMITTEE:

Tzu-Cheng Kao (Chair 2001, member 2000-02), James J. Chen (1999-01), Rongdean Chen (2001-03), Chong Gu (2000-02), Zhaohai Li (2000-02), Xufeng Niu (2000-02), Ming Tan (2001-03), Jane-Ling Wang (1999-01), Heping Zhang (2001-03), Hung Chen (1999-01, Taiwan), Yeh Lam (1999-01, Hong Kong), Bo-Cheng Wei (1999-01, China)
Term of reference: to recruit more new members and contact interested potential individuals and organizations.

FUNDRAISING COMMITTEE:

Jianping Dong (Chair 2001, member 2000-02), Alice Hsuan (2001-03), Kuang-Chao Chang (2000-02, Taiwan)
Term of reference: to consider fund raising drive through individuals and corporations.

PUBLIC RELATIONS COMMITTEE:

Yi Tsong (Chair 2001, member 2000-02), Naisyin Wang (2000-02), Shi-Yong Feng (China), Sik-Yum Lee (Hong Kong), Lung-An Li (Taiwan)
Term of reference: to contact news media and publicize ICSA activities, to serve as a liaison between ICSA and other professional organizations such as ASA, Biometric Society for joint activities.

AWARDS COMMITTEE:

Cun-Hui Zhang (Chair, 2001; member 1999-01), Wen-Jang Huang (2001-03), Lynn Kuo (2000-02), Zhaohai Li (2001-03), Ming Tan (2000-02), Mark Yang (1999-01),
Term of reference: to accept, evaluate, and recommend nominations for ICSA various awards.

PROFESSIONAL ACHIEVEMENT COMMITTEE:

Yuan S. Chow (chair 2001; member 1999-01), James C. Fu (2000-02), Jane-Ling Wang (2001-03), Cun-Hui Zhang (2001-03), Zhenhai Yang (2000-02, China)
Term of reference: to discuss ICSA Fellows and Chinese COPSS award.

COMMUNICATION COMMITTEE:

Chung Chen (chair 2001; member 1999-01), Don Sun (web), Hubert Chen (listserv)
Term of reference: to evaluate the database and the use of internet.

CONFERENCE COMMITTEE:

Wai-Keung Li (chair), Xiao-Li Meng, Howell Tong, Kai-Tai Fang, Fred Ho, Jianqing Fan
Term of reference: to arrange the 5th ICSA International Conference, 2001.

APPLIED STATISTICS SYMPOSIUM COMMITTEE:

Rongd Chen (co-chair), J.P. Hsu (co-chair), Jianqing Fan, Hung-ir Li, Jun Liu, Xiaoli Meng, Vincent Shu, Donald Tong, Ruey Tsay, Andrew Xiao-Hua Zhou
Term of reference: to organize the Applied Statistics Symposium, 2001.

BOOK AND JOURNAL DONATION COMMITTEE:

Tar Timothy Chen (Chair)
Term of reference: to solicit book and journal donations and to arrange the delivery to universities or colleges in need.

LONG RANGE FINANCIAL PLANNING COMMITTEE:

Smiley W. Cheng (Chair 2001; member 2000-2003), Fanny Ki (2000-02), Frank Shen (2000-03), Naitee Ting (2000-02)
Term of reference: to plan long-term financial strategies, such as studying suitable avenues for investing our assets.

SYMPOSIUM PLANNING COMMITTEE:

WeiChung J. Shih (Chair 2001; 2000-04), James J. Chen (2000-02), Rony Chen (2000-03), Tar Timothy Chen (2000-02), Jiann-Ping Hsu (2000-04), Zhiliang Ying (2000-03)
Term of reference: to recommend future symposium site to the Board

STRATEGIC COMMITTEE: (all former presidents)

Chien-Pai Han (Chair 2001), Tar Timothy Chen, Jeff C. F. Wu, Shein-Chung Chow, Kuang-Fu Cheng, Smiley Cheng, Chiao Yeh, Yuan S. Chow, Jack C Lee, Grace Yang, Jia-Yeong Tsay, James Fu, George Tiao
Term of reference: to plan long-term strategies for the Association.

BIOMETRICS SECTION (2001)

Weichung Joe Shih (chair), James J. Chen (past chair), H.-M. James Hung (chair-elect), Shou-en Lu (secretary), Gang Li (treasurer), Frank Shen (ICSA Representative 2000-02)

**EXPRESS YOUR
OPINION...**

Dear ICSA Members,

We have expanded the regional news/activities to include a few European regions. The 5th international (Hong Kong) conference of 2001 and the year 2002 Philadelphia applied statistics symposium are sponsored by the ICSA. In this issue, we have asked Dr. Timothy Chen to serve as the Guest Editor, as he has been very much involved and helped with the Bulletin for many years. Your suggestions/comments are welcomed. Details inside ...

Sue-Jane Wang
Editor-in-Chief

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**GET INVOLVED IN
NEXT ISSUE**

Special topic—
Pharmacogenomics
Controversial statistical
Issue—Missing data

Get involved in the next
issue by email your
articles to the Editorial
Board at

WANGS@CDER.FDA.GOV

Guest Editor's Page

Chance With A Purpose

The ICSA Bulletin has evolved into a good publication under the leadership of the current chair-editor Dr. Sue-Jane Wang (2000-) and the previous chair-editor Dr. Karl Lin (1997-9). First, the size was enlarged in July 1997, then the number of pages was increased from 36 to 68 in July 1999. Starting from 2000, the Bulletin has special topics (seismology, survey/poll, finance, actuary), and controversial issues (Bayesian approach in clinical trials, active-controlled clinical trials, bootstrap/MCMC). The Bulletin now looks like a hybrid of AMSTAT News and American Statistician. It has served the need of ICSA members with news on ICSA and member activities and with reviews of interesting statistical topics. We do hope that this trend of improvement will continue.

As ICSA grows from her childhood into the stage of young adult, we become interested in the history of statistics in China and the lives of Chinese pioneer statisticians. Starting from July 1998, we have published memoir, interviews, conversations with Chin Long Chiang (1914-), Harry Hsien Hsiang Ku (1918-1999), Bangnee Alfred Liu (1901-1988), Pao-Lu Hsu (1910-1970), and Pei-Ching Tang (1903-1988). In this issue, we can read the interview of Chien-Fu Jeff Wu. More efforts to come in the near future. From these interviews, we hope that their perseverance and contribution will inspire more ICSA members to follow their footsteps.

Statistical journals are the stores of treasures of statistical knowledge. Every generation needs to stand on the shoulder of previous generation to accomplish greater things. When universities lack the collection of journals, learning and instruction are handicapped. After the Cultural Revolution, Chinese universities have not rebuilt the collection of statistical journals in their libraries. ICSA wants to help all major universities in China to acquire important statistical journals. Since 1999, we have asked for donations from ICSA members, and ICSA paid the cost for mailing them to China. Many retiring ICSA members have donated their journal and book collections. We expect this service to continue, so that these journals could make some impact on the research, and scholarly contributions from Chinese universities to the field of statistics could increase in the future.

Regarding the (non)-controversial issue discussed in this issue—Bootstrapping and Markov Chain Monte Carlo, we have four articles written by distinguished contributors. I suggested the topic to the chair-editor, so I am invited to write this guest-editor page. Most statisticians have recognized that the greatest contribution made by R. A. Fisher was the use of randomization in experiments. I see simulation also as a purposive use of randomization. As the computing speed increases, we can use simulation and our mind (so not mindless) to generate the sampling distributions or the posterior distributions of very complicated estimators. We usually are afraid of unknown or chance events; but chance does not necessary mean haphazard. Since we could use chance purposively to achieve the goal of understanding natural phenomenon and discovering truth, we may also imagine that the events in history or the evolution of the universe could be a purposive use of chance mechanism to achieve a higher purpose.

Tar Timothy Chen, Guest Editor

MESSAGE FROM THE PRESIDENT

July 2001

Dear ICSA Members:

We had a very successful Applied Statistics Symposium held in Chicago. The theme of the Symposium: "Statistics in Genomics, Statistical Finance and Data Mining" reflects the important role of statisticians in the cutting edge sciences of the 21st century. It was the first time that the Applied Statistics Symposium of ICSA held in place outside the east coast of U.S. The Symposium organizers had spent a great deal effort to make the program attractive. It turned out that we got around 150 attendants, which gave our members confidence to organize symposium/workshops in other regions.

In the 2001 January issue of ICSA Bulletin, I mentioned that "Bridging will be the key word in developing many of our programs". The forthcoming 2002 Applied Statistics Symposium has decided the theme to be "the Leading Edge of Statistics in Health Science". The Board Meeting has approved the proposal for 2003 Applied Statistics Symposium, which will be held in San Diego. The theme of that Symposium will be "Statistics in Biotechnology Research and Computer Intensive Methodologies". 2003 Symposium will be the first time that the activity takes place in west coast of U.S.

We are encouraging ICSA members to propose activities that may benefit our members in different regions. In May 2001, ICSA co-sponsored the "Symposium on statistics methods for evaluation of bridging evidence", organized by the National Health Research Institutes in Taiwan. In that workshop, several our distinguished members had provided their expert opinions in forming the statistics methodologies for bridging study.

In August 17-19, 2001, we are going to have the fifth ICSA International Conference in Hong Kong, there will be 78 parallel sessions with 234 speakers in various areas of statistics and its applications. Traditionally, the ICSA International Conferences had been held in Asia: Hong Kong (90), Taipei (93), Beijing (95), Kunming (98). The fifth one will be in Hong Kong (2001) and the sixth one in Singapore. It is a big event of ICSA, many members attend the conference. The fifth one will be co-sponsored by the Institute of Mathematical Statistics, through which ICSA establishes collaboration with other statistical societies.

There are a lot to talk about ICSA activities. We thank Tim Chen and several senior members, who donated their journals and books to more than 20 university libraries in China. We are also trying to improve our website so that you can access the information more easily and efficiently.

Have a nice summer and work productively,

Chao Agnes Hsiung President

**Special Thanks
from The
Editorial Board**

The Editorial Board is happy to note that our working committee is expanding and the materials (to be) delivered are shared, enjoyed, appreciated by the members.

If you have a new idea and are interested in joining us, please send your C.V. including your plan to the Editorial Board WANGS@CDER.FDA.GOV for consideration.

We encourage your active involvement in the ICSA Bulletin. Every effort counts.



FROM THE EXECUTIVE DIRECTOR

Dear friends:

ICSA is in its 14th year now! With the effort of our Executives, members of the Board of Directors and Committees and support from all of you, our organization has been successful throughout these years. Year 2000 is an extremely prosperous year under the steeling of President Chien-Pai Han, Executive Director Naitee Ting and Treasurer Xiu Xhen. I would like to thank the three for their contributions.

Under their direction, ICSA is marching into electronic and Web page age. The Web page directory database is successfully established and is in functioning now. When it is functioning, the electronic directory will allow each member to update his/her own address, telephone # and e-mail address. The updated e-mail address will be merged into an ever-updating e-mail distribution list. Many possibilities such as sending organization news through the updating distribution list and membership renew through internet are also at various development stages.

Taking over the job so successfully accomplished by Naitee for the next 3 years is a challenge. I will work carefully with Naitee's experience and your support. Leaving also the position with our Executive Director is Treasure Xiu Chen. As Naitee's silent partner, her contribution should also be recognized. I am pleased that Hsien-Ming James Hung is willing to step into her shoes for the next three years.

I am grateful that I was given this opportunity to make some contribution to this organization. Due to the impressive progress of this association, many changes and adjustments are needed. The following are the three priority projects that I will be work on closely with James, our Treasurer and Don, our Web Master.

1. Accounting and tax report: James and I are working closely with Ms. Li-Ming Li, a CPA specialized on non-profit organization at Rockville, Maryland to reorganize our bookkeeping and tax planning. We also worked closely with Capital Bank of Maryland to study the financial planning and investment of ICSA capitals. We are also investigating on credit card online registration and payment.
2. Homepage and Web service: We are investigating the possibility of expending ICSA online services including real-time news, chat-room, and e-mailing system.
3. Electronic archiving of old documents: With this project, we will scan all the important documents including financial-related statements and old ICSA Bulletins into e-file and eliminate most of the bulky paper files. Hopefully, the e-archived ICSA Bulletins can be made available to our new members next year.

I am looking forward to hearing your comments and suggestions on what can we do to improve our services and our association.

Yours, Yi Tsong, 301-827-3206, tsong@cder.fda.gov

Note: There was no ICSA Members meeting held at the 2001 ICSA Applied Statistics Symposium at Chicago.

Brief Biography of Candidates

CANDIDATES FOR PRESIDENT-ELECT (in Alphabetical Order)

Hsu, Jiann-Ping 徐建萍

Dr. JP Hsu is currently the CEO and President of Biopharmaceutical Research Consultants, Inc. (BRCI), a contract research firm specializing in clinical research of pharmaceutical and biotech products. JP Hsu joined BRCI in 1993 as the Director of Statistics and Data Management. Prior to that, she was the Section Head of the Biometrics Section at Proctor and Gamble Pharmaceuticals, Associate Director of Biometrics at Schering-Plough, Senior Manager at Parke-Davis Pharmaceutical Division, and Senior Investigator at the SmithKline & French Labs. She was a Mathematical Statistician and later became the Acting Group Leader at Center for Drug Evaluation and Research at FDA (1979-1986). Her research positions include Biostatistician on an NIH-funded research project at Kaiser-Permanente Medical Center in Walnut Creek, California and the Research Worker on an epidemiology research study at School of Public Health, Columbia University. She received her Ph.D. in Biostatistics, from University of California at Berkeley; M.A. in Mathematical Statistics, from Columbia University; and B.S. in Mathematics at National Taiwan University. JP Hsu's publications appear in the *Journal of Analytical Toxicology*, *British Medical Journal*, *Drug Information Journal*, *Mathematical Biosciences* and others. She has contributed chapters to books on drug development, stochastic processes and applied statistics.

JP Hsu's professional interests include design, analysis and reporting of clinical and preclinical studies, clinical trial monitoring, clinical trial data management, pharmaceutical research and development, regulatory affairs, and consulting. JP Hsu was elected to

serve two terms on the ICSA Board (1991-1993 and 1997-1999). She was a member of the ICSA Nominating and Election Committee in 1994 and the chair of the same committee in 1995. She was the first chair for ICSA Biometrics Section (1994). She received ICSA Award in 1995. JP Hsu is currently the co-chair of the ICSA 2001 Applied Statistics Symposium. She is a lifetime member of ICSA. JP Hsu is currently a member of the American Statistical Association's Committee on Women in Statistics. She served as a referee for the Biometric Society and an Associate Editor for the *Journal of Biopharmaceutical Statistics*. She organized sessions in professional conferences. Her firm, BRCI, has sponsored the annual Biopharmaceutical Applied Statistics Symposium (BASS) since 1993. She was an elected member of the Steering Committee of Biostatistics Subsection in Pharmaceutical Manufacturers Association (1993). She served on review panels for the grants and contract proposals submitted to National Institute on Drug Abuse (1999-2000).

JP Hsu's campaign statements:

ICSA has experienced impressive growth over the years. With the explosive advancement of sciences and technology, this is an exciting time for the organization to undertake an ambitious strategy for the future. The success of ICSA hinges on each member's support. Being honored with the candidacy for the president-elect in 2002, JP Hsu outlines her perception of ICSA's emphases in three areas.

(1) Commitment to the Profession: as information technology continues to influence the profession of the statistician, ICSA will assume an active role in fostering the growth of the profession in statistics through development of methodologies, transfer of methodologies to industry, business and government, and application. ICSA will communicate with private sectors and government agencies about

potential opportunities to use statistics, and communicate with academic institutions concerning the education and training of statisticians.

(2) Directions of Growth: ICSA will seek growth within and outside the organization. ICSA will continue its efforts in recruiting and retaining members. ICSA will actively support its members' participation in the elected offices and committees, and in the nomination of awards or recognition in other professional organizations in the field of statistics or biostatistics. ICSA will strengthen its liaison with other professional organizations. ICSA will continue to pursue a full member status in COPSS (Committee of Presidents of Statistical Societies). ICSA will ensure the continuing success of *Statistica Sinica*, and explore further publication opportunities. ICSA will support increased professional activities at local, national or international levels to enhance communication among members and other professional organizations.

(3) High-Quality Services: A good strategy to attract and retain members is to provide high quality services. It is crucial for ICSA to understand what its members want and why some statisticians choose not to join. Such information will be useful for ICSA to determine how it can improve its services.

Ying, Zhiliang 應志良

Dr. Zhiliang Ying is currently Professor of Statistics at Columbia University. He is also a Professor of Statistics and Director of the Institute of Biostatistics at Rutgers University (on leave), as well as a Chang-Jiang Scholar at University of Science and Technology of China. His past position include Assistant/Associate Professor of Statistics at University of Illinois; visiting scholar/scientist at Hong Kong University of Science and Technology, National Taiwan University, Academia Sinica, National Cancer Institute, Educational Testing Service. Zhiliang Ying received BS in Mathematics from Fudan

University in 1982; MA in Statistics from Columbia University in 1984; and PhD in Statistics, from Columbia University in 1987. Zhiliang Ying's professional interest is in both theory and

practice of statistics, biostatistics, semiparametric inference, survival analysis, sequential methodology, stochastic control, psychological measurements. Zhiliang Ying has published in *Annals of Statistics*, *Applied Psychological Measurement*, *Biometrics*, *Biometrika*, *IEEE Automatic Control*, *JASA*, *JRSS*, *JMA*, *SIAM J. of Control and Optimization*, *Statistics in Medicine*, *Statistica Sinica* and other statistical journals, as well as many medical journals.

Zhiliang Ying has been the co-Chairs of the 1997 and 2000 ICSA Applied Statistics Symposiums, program co-chair of 1998 ICSA Conference in Kunming, member of ICSA Board of Directors (1999-2001), Associate editor of *Statistica Sinica* (1993--). He has served as current/past associate editors of *Annals of Statistics*, *Biometrics*, *Lifetime Data Analysis*. He is a Fellow of American Statistical Association, Fellow of Institute of Mathematical Statistics, Member of International Biometric Society (ENAR), Member of Psychometric Society, IMS program chair for 2002 Joint Statistical Meetings.

Zhiliang Ying's campaign statements:

I wish to continue the fine tradition of our Association that builds strong and broad membership base from academia, industry, research organizations and government institutions and across all geographic regions. I will try my best to promote activities that can meet members' growing needs, strengthen communication within this organization and interaction with others, and increase visibility, not only within the Chinese statistical community but also among non-Chinese statisticians, to continue membership drive, especially among young Chinese statisticians, and to coordinate/co-sponsor professional meetings/events with other professional societies (ASA, IMS, regional societies in Asia etc).

CANDIDATES FOR THE BOARD OF DIRECTORS (In Alphabetical order)

Chan, Ivan Siu-Fung 陳韻風

Dr. Ivan Siu-Fung Chan is currently the Associate Director - Scientific Staff, of the Department of Clinical Biostatistics, Biostatistics and Research Data System, Merck Research Laboratories, West Point, Pennsylvania. Ivan received his Ph.D. in Biostatistics (1995) and M.S. in Biostatistics (1993) from University of Minnesota; M.Phil in Statistics (1991) and B.S. in Statistics (1989) from The Chinese University of Hong Kong. Dr. Chan's research interests include exact inference, analysis of non-inferiority and equivalence trials, clinical trial methodologies in vaccines, and goodness-of-fit tests in sparse tables. Dr. Chan has published papers in many leading statistical journals including *Biometrics*, *Statistics in Medicine*, *The American Statistician*, *Computational Statistics and Data Analysis*, and *Communications in Statistics*. He also has many publications in clinical journals such as *AIDS*, *The Journal of Infectious Diseases*, *Vaccine*, and *Journal of Epidemiology and Biostatistics*. Dr. Chan has been a member of ICSA since 1996. He currently serves on the Program Committee for the 2002 ICSA Symposium on Applied Statistics. He has also helped organize the first ICSA International Conference in Hong Kong in 1990, chaired a section at the 1998 ICSA Symposium on Applied Statistics, and made several presentations at previous Symposiums. Dr. Chan is a member of the ICSA, American Statistical Association, and International Biometric Society. He currently serves as Associate Editor for *Biometrics*, as Associate Editor for *Bio/Pharma Quarterly* (Society of Chinese Bioscientists in America) and as Program Committee member and Session Moderator for the Deming Conference on Applied Statistics. In addition, Dr. Chan has given short courses and numerous presentations at professional meetings, universities, and the FDA. He also has served as referee for many statistical journals.

Chen, Rong 陳嶸

Dr. Rong Chen is a Professor of Statistics at the Department of Information and Decision Sciences, College of Business Administration, University of

Illinois at Chicago. Before joining UIC in 1999, he was at Department of Statistics, Texas A&M University. Rong Chen receives his B.S. (1985) in Mathematics from Peking University, P.R. China, his M.S. (1987) and Ph.D. (1990) in Statistics from Carnegie Mellon University. Dr. Chen's main research interests are in time series analysis, statistical computing and Monte Carlo methods in dynamic systems, and statistical applications in engineering and business. He has received five NSF grants for his research in time series and dynamic systems. He also has a US patent pending for a novice method in digital wireless communications. Dr. Chen has extensive publications in both statistical and engineering journals. Dr. Chen is the co-chair of the program committee and chair of the local organizing committee for ICSA 2001 Applied Statistics Symposium to be held in Chicago, June 7-9, 2001. Dr. Chen is an Associate Editor for *Journal of Business and Economic Statistics*, *Statistica Sinica* and *Computational Statistics*. He also served as a panel reviewer for NSF SBIR program and Probability and Statistics program. He is a member of the advisory board of XploRe, an advanced statistical software.

Lee, Jack 李君愷

Dr. Jack Lee is currently Associate Professor of Biostatistics, Department of Biostatistics, M.D. Anderson Cancer Center, the University of Texas. Formerly, Dr. Lee was Visiting Scholar, Merck Research Laboratories and Assistant Professor of Biomathematics, UTMDACC. He received his Ph.D. in Biostatistics in 1989 at UCLA; B.D.S. in Dentistry in 1982 at National Taiwan University. His professional interests include Design and analysis of cancer clinical trials, biomarker analysis, survival analysis, longitudinal data analysis, statistical computation and graphics. Jack Lee's articles published in *JASA*, *Biometrics*, *Journal Computational and Graphical Statistics*, *American Statisticians*, *Statistics in Medicine*, *Biometrical Journal* and numerous medical publications. He is an ICSA member since its inception, attended and presented in ICSA Joint Statistical Conference and Applied Statistics

Symposium. He is also a member of ASA, ENAR, Society of Clinical Trials, American Society of Preventive Oncology, American Association of Cancer Research. He is also a member of the organized committee of Applied Statistics Workshop, Southern California Chapter of ASA. He Served in NIH Special Review Groups and Special Emphasis Panels.

Li, Wai-Keung 李偉強

Dr. Wai-Keung Li is currently professor of Department of Statistics & Actuarial Science, University of Hong Kong, Hong Kong. Wai-Keung Li grew up in Hong Kong but received his university education in Canada, including a PhD in Statistics from the University of Western Ontario. After teaching briefly at the National University of Singapore, he returned to Hong Kong and took a position at the University of Hong Kong. Wai-Keung Li is a life member of ICSA and a member of several other international statistical societies. Prof. Li chairs the organizing committee for the 5th ICSA International Conference. He is an associate editor of *Statistica Sinica*, *Communications in Statistics: Theory and Methods*, and *Communications in Statistics: Simulation & Computation*. His areas of research are time series analysis, econometrics, financial applications, sampling theory, stochastic processes, and stochastic climatology. Hong Kong has a vital statistics community that is under-represented on the Board. With his good contacts in Hong Kong and elsewhere, he is in a prime position to serve the members of ICSA.

Li, Zhaohai 李照海

Dr. Zhaohai Li is an Associate Professor at the Biostatistics Center of the Department of Statistics, George Washington University. He also holds an IPA visiting scientist position at the NCI. He received his M.S. from Central China Normal University in 1981 and Ph.D. from Columbia University in 1989. He served as a member of the Program Committee for 1999 ICSA Applied Statistics Symposium. He is currently a member in the ICSA Membership Committee. Zhaohai Li currently serves on NIH study section and is a participant of NIA (National Institute on Aging)

Advisory Panel on Exceptional Longevity (APEL). His research areas include statistical methods for meta-analysis and genetic analysis, genetic epidemiology, and biostatistics. Dr. Li has published papers in leading journals such as *J. Roy. Statist. Soc. Ser. B*, *JASA*, *Biometrics*, *Genetic Epidemiology*, *American Journal of Human Biology* and *Human Heredity*.

Lin, Shang P. 林尚平

Dr. Shang P. Lin is currently a Research Biostatistician, Statistical Sciences and Epidemiology Division, Nathan S. Kline Institute for Psychiatric Research since 1979. Formerly, he was a staff Statistician of Gary Income Maintenance Experiment, Indiana University Northwest in 1972-75. He was an assistant Professor at Department of Mathematical Sciences, Memphis State University in 1977-79; Adjunct Instructor, Division of Business Administration, Dominican College, New York 1983-85. Shang P. Lin received B.S. in Mathematics in 1967 at National Taiwan University; M.S. in Statistics in 1972 at The University of Chicago; Ph.D. in Statistics in 1977 at The University of Chicago. His professional interests include Categorical data analysis, computational statistics, clinical trial methodology, cost-effectiveness research, health care research, and psychiatric research. Shang P. Lin published over 50 papers in peer-reviewed journals, including *JASA*, *Applied Statistics*, *Communication in Statistics - Theory and Methods*, *American Statistician*, *Journal of Clinical Epidemiology*, *Journal of Statistical Computation and Simulation*, *Archives of General Psychiatry*, *American Journal of Psychiatry*, *British Journal of Psychiatry*, *Journal of Health Economics*, and *Medical Care*. He is a Permanent member of ICSA and frequent participant at ICSA Applied Statistics Symposium. He is a Statistical reviewer for psychiatric journals; member of JCGS (journal of computational and graphical statistics) management committee, 2000-02.

Shih, Joanna 黃瓊安

Dr. Joanna Shih is currently Mathematical Statistician of the National Heart, Lung, and Blood

Institute. Joanna Shih received her Ph.D. in Biostatistics in 1992, from University of Minnesota; M.S. in statistics in 1984 from University of Minnesota; and B.A in Statistics in 1981, from National Cheng-Chi University, Statistics. Dr. Shih has been actively involved in the design and analysis of multi-center clinical trials and epidemiological studies, and providing statistical consulting to medical investigators. Her methodological research includes semiparametric analysis of correlated survival time data, statistical methods for case-control family studies, permutation tests using estimated distribution functions, and latent models of diagnostic accuracy. Dr. Shih's publications has appeared in many journals, including *JASA*, *Biometrics*, *Biometrika*, *Life Time Data Analysis*, *Controlled Clinical Trials*, *Genetic Epidemiology* (in press), *Journal of Statistical Planning and Inference* (in press), and several medical journals. Dr. Shih participated in several ICSA conferences. She served as a program committee member of the 1994 ENAR Meeting. Dr. Shih is currently an associate editor for *Controlled Clinical Trials* and *Life Time Data Analysis*. She will be the program chair of the 2002 ENAR Meeting.

Ting, Naitee 丁迺迪

Dr. Naitee Ting is currently an Associate Director in the biostatistics group of Pfizer Global Research and Development at Groton, CT. He has been with Pfizer since 1987. Naitee Ting received his Ph.D. in 1987 from Colorado State University (major in Statistics). He has an M.S. degree from Mississippi State University (1979, Statistics) and a B.S. degree from College of Chinese Culture (1976, Forestry). His interests include clinical trial design and analysis; dropouts in longitudinal data analysis; laboratory safety data analysis; and confidence intervals on variance components. Dr. Ting published articles in *Technometrics*, *Drug Information Journal*, *Journal of Statistical Planning and Inference*, *Journal of Biopharmaceutical Statistics*, *Biometrical Journal*, *Statistics and Probability Letters* and *Journal of Statistical Computation and Simulation*. He also published a few book chapters. Naitee Ting served as the first secretary of the Biometrics

Section of ICSA (1995-1996), and was the Executive Director of ICSA for the past 3 years (1998-2000). Dr. Ting has been and is still heavily involved in many academic and administrative activities of ICSA. Naitee Ting served various roles in ASA: Representative at Council of Chapters for the Connecticut Chapter (1997-1999), Reviewed papers for Student Paper Awards for Biopharmaceutical Section (1997-1999), President of the Connecticut Chapter (1991-1992), and Vice President of the Connecticut Chapter (1990-1991)

Wang, Naisyin 王乃昕

Dr. Naisyin Wang is currently Associate Professor of Statistics and Toxicology, Texas A&M University. She received her Ph.D. in Statistics in 1992 from Cornell University; M.A.S. in Statistics in 1987 from Ohio State University; and B.S. in Mathematics in 1986 from National Tsing-Hua University. Her research interest includes measurement error models, missing data problems, nonlinear mixed effect models and nonparametric and semiparametric approaches. She is also actively working with nutrition and toxicology researchers on problems relating to cancer etiology. Naisyin Wang has published substantially in statistical and subject oriented journals. She currently serves as Associate Editor on the editorial board of *Journal of the American Statistical Association*, *Biometrics* and *Communications in Statistics*. She has chaired and organized many sessions in the joint ASA meetings and Biometrics ENAR meetings throughout the years. She was a co-organizer of an informative missing data conference funded by National Cancer Institute in 1998.

Wang, Sue-Jane 王淑貞

Dr. Sue-Jane Wang is currently a senior mathematical statistician in Division of Biometrics II, Office of Biostatistics, Center for Drug Evaluation and Research, Food and Drug Administration. Dr. Wang received her Ph.D. degree from University of Southern California in 1993; M.S. degree in Biostatistics from UCLA, and M.A. degree in Statistics from University of Missouri, Columbia. Her research include four

areas of intense interest to the clinical trial fields: (1) analysis methodologies for non-inferiority active-controlled clinical trials, (2) impacts and adaptive strategies on the mid-course change of clinical trial conduct, (3) application of time to recurrent event analysis, (4) analysis methods for multiple efficacy endpoints. She and her FDA colleagues received several joint research grants in 1997-2001. Her research interests extended from experiences before joining FDA include Bayesian utility, Gibbs sampling/Markov chain Monte Carlo approach, and biomedical application of statistics in clinical trials, genetic and epidemiologic studies, and pharmacogenomics. Dr. Wang has published in statistical journals including *Biometrics*, *Statistics in Medicine*, *The American Statistician*, *Communications in Statistics: Theory and Methods* as well as medical journals such as *American Journal of Medical Genetics*, *Gastroenterology*, *Molecular and Cellular Probes*, *Tissue Antigens*, and *Obstetrics and Gynecology*. Sue-Jane has been a member of ICSA since 1994. She served as the Chair and Organizer of "Statistics in Genetic Epidemiology" Session, ICSA applied symposium in 1996. She was invited to give a presentation in 1999 and 2000 ICSA applied Statistics symposia. She served as the Chair and Organizer of "analysis of multivariate failure time outcomes in biomedical fields" invited Session in 2001 ICSA applied symposium. She is currently the Editor-in-Chief of *ICSA Bulletin*, 2000-2002 and a member of the publication committee. Her professional services included Chair of Invited Paper Session of ASA 2000, Chair of Special Topic Contributed Session of American Statistical Association 2001, Co-Chair of Pharmacogenomics Session of FDA/Industry workshop 2001, an Ad-Hoc Referee of *Communication in Statistics: Theory and Method* in 1997, and referee services for *Biostatistics and Statistics in Medicine*. Dr. Wang's professional society membership and participation included a member of American Society of Human Genetics and a member of Genetic Epidemiology for several years. She is currently a member of ASA, SCT and ICSA.

Wei, Greg CG 魏成鋼

Dr. Greg CG Wei is currently an Associate Director of Biometrics, Pfizer Global Research

and Development. Dr. Wei received Ph.D. in Biostatistics 1989, from University of Wisconsin-Madison, M.S. in Statistics 1985, University of Southern Illinois-Carbondale. His professional interests include Clinical Trials Design, Drug Safety Evaluation, PK/PD Modeling. Greg Wei has published papers in journals such as *JASA*, *Biometrika*, *Biometrics*, *Journal of Biopharmaceutical Statistics*, *DIA*, and *Journal of The Chinese Statistical Association*. Dr. Wei has been a member of ICSA since 1991. He was a member of organizing committee for ICSA Applied Statistics Symposium of 1998 in Connecticut.

Zhang, Heping 張和平

Dr. Zhang is Associate Professor of Biostatistics Statistics, and Child Study at the Department of Epidemiology and Public Health, the Department of Statistics, and Child Study Center, Yale University. He received his B.S (1982) in Mathematics from Jiangxi Normal University and his Ph.D. (1991) in Statistics from Stanford University. His research interest includes nonparametric methods, longitudinal data, statistical genetics, statistical modeling of epidemiological data, brain imaging analysis, statistical computation, and statistical methods in behavioral sciences. As a fellow of the American Statistical Association and an elected member of the International Statistical Institute, he currently serves on the editorial board of *Biometrics* and *Current Index to Statistics*, and as a member of a study section at the National Institutes of Health. Dr. Zhang has made significant contributions to methodology in nonparametric classification and nonlinear regression and published influential work in statistical genetics, in addition to his contributions in epidemiology and psychiatry. Dr. Zhang is an author of a book on *Recursive Partitioning* published by Springer, and has also published extensively in statistical, genetic, epidemiological, and psychiatric journals from the *Annals of Statistics* and the *American Journal of Statistical Association to Science*. He has chaired, organized, presented invited sessions in the joint statistical meetings as well as the International Chinese Statistical Association meetings.

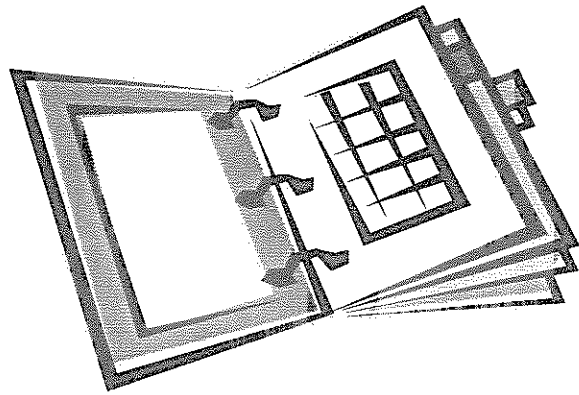
Candidates for the Chair of Biometrics Section (In Alphabetical Order)

Liu, Jen-pei 劉仁沛

Jen-pei Liu is Investigator, Division of Biostatistics and Bioinformatics, National Health Research Institutes, Taipei, Taiwan; and Professor, Department of Statistics, National Cheng-kung University, Tainan, Taiwan. Before returning to academia in Taiwan, he had accumulated extensive hand-on experience in pharmaceutical and clinical research and development in the United States. He has done extensive research on statistical methodology in bioequivalence, biomedical, clinical research, diagnostic and pharmaceutical development. He is the co-author of the books "Design and Analysis of Bioavailability and Bioequivalence Studies"(1st and 2nd edition), "Statistical Design and Analysis in Pharmaceutical Science", "Design and Analysis of Animal Studies in Pharmaceutical Development", and "Design and Analysis of Clinical Trials"(all with Dr. Shein-Chung Chow) and the author or co-author of over 100 research and professional papers in peer-reviewed academic journals. He is actively involved in establishment of infrastructure and inspection system for clinical trials and pharmaceutical development in Taiwan. He is also active in statistical methodology research in every stage of biotechnology and pharmaceutical development. Dr. Liu is a member of the American Statistical Association, the Biometry Society, the Drug Information Association, the International Chinese Statistical Association, and ICH-Taiwan. He received the B.S. degree in Agronomy and the M.S. degree in Biometry from the National Taiwan University, and the M.S. and Ph.D. degrees in Statistics from the University of Kentucky.

Ouyang, Soo Peter 歐陽蘇

Dr. Soo Ouyang is currently Senior Director, Global Biometrics, Janssen Research Foundation. He received his Ph.D. in Statistics from SUNY at Stony Brook in 1982, and is a member of ASA, ICSA, and ASCPT. His current responsibility is Advanced Modeling and Simulation and Computer Assisted Trial Design. He has extensive experience in statistical design, analysis, and reporting in the pre-clinical area and all phases of clinical drug development in many therapeutic areas. He has been directing a successful cooperative program between the two Biostatistics departments at Janssen and Johns Hopkins University. He organized many short courses within Janssen covering areas in Group Sequential Analysis, Interim Analysis, Analysis of Dependent Responses, Multiple Comparisons, Survival Analysis, Repeated Measures, Longitudinal Data analysis and Missing Data Handling; Population and Individual Bioequivalence, Analysis of Dose Response Data, and Longitudinal Analysis of QoL Data. He also organized several professional meetings: PK/PD analysis and Outcomes Research & Pharmacoeconomics sessions, both held at ICSA meeting, and Symposium on Longitudinal Studies of Quality of Life Data held at Johns Hopkins University. His research interests include clinical trial design, group sequential methods, multiple comparisons, and the application of statistics in computer assisted trial design, PK/PD modeling and pharmacogenomics.



Report on the ICSA 2001 Applied Statistics Symposium

Rong Chen, JP Hsu, Hung-Ir Li

Held at Chicago, Illinois

The ICSA 2001 Applied Statistics Symposium was held at the Congress Plaza Hotel and Convention Center in Chicago on June 7-9, 2001. This was the first time the ICSA Symposium took place outside the East Coast of the United States. There were more than 150 registered participants who attended 4 plenary sessions and 29 parallel sessions, under the conference theme 'New Frontier of Statistics - Statistics in Genomics, Statistical Finance and Data Mining'.

Three pre-conference short courses were conducted on June 7. The most popular one was 'Tutorial of Bioinformatics' given by Professors Charles Lawrence and Jun Liu. The other two, 'Statistical Methods in Gene Mapping' given by Professor Dan Nicolae and 'Rank-based Analyses of Linear Models' given by Professor Joseph McKean were also well received.

The next two days were packed with interesting and stimulating plenary sessions and parallel sessions. Professor George Tiao's warm welcome remark kicked off the conference on June 8. It was followed by brief remarks from three distinguished international

guests. They are Dr. Chao Agnes Hsiung, president of ICSA and director of National Health Research Institute, Taiwan, Professor Xueren Wang of Yunan University, China, and organizer of the 1998 ICSA International Conference in Kunming, China, and Professor Young Truong of National University of Singapore, who will organize the next ICSA International Conference in Singapore. Professor Rong Chen, co-chair of the symposium program committee and chair of the local committee, introduced the members of both committees to the audience and praised these members' unselfish efforts and countless hours in organizing and preparing for the symposium.

The four symposium plenary sessions were 'Steps toward real time data mining' by Professor Robert Grossman, 'Application of statistics in functional genomics' by Professor Wing Hung Wong; 'Large-scale analyses of genomic sequence data' by Professor Wen-Hsiung Li and 'The statistics of sharp ratios' by Professor Andrew Lo. The combination of these inspiring plenary sessions closely reflects the theme of the conference and the current frontier of statistics.

The 29 parallel sessions covered almost all areas of statistics. In addition to the traditional statistical topics of interest to regulatory agencies and pharmaceutical industry, there are also sessions on bioinformatics, statistical finance, data mining, statistical inferences and testing, nonparametric statistics, Bayesian methods, time series analysis and many others.

The organizing committees also arranged two major activities for the symposium attendees. On the night of June 8, participants took a two-hour Chicago architecture boat tour and enjoyed the world famous Chicago architecture treasures along Chicago River as well as the impressive Chicago skyline at night from Lake Michigan. It was a nice surprise to all that the Congress Hotel where the symposium was held was one of the tour highlights. The beauty of Chicago impressed even several Chicago local participants.

The symposium banquet and karaoke took place on the night of June 9 at New Three Happiness Restaurant in Chicago's Chinatown. Participants enjoyed excellent food and professional level karaoke singing by many outstanding statistician/singers. The question 'why did you become a statistician, not a professional singer' popped up several times to several people during the karaoke. Professor Kirk Wolter of National Opinion Research Center made an interesting presentation at the banquet on the timely topic of recounting Florida 2000 Presidential Votes. Even without the final (re) count (which may not be reached in years and may never be agreed upon), the procedure amazed all.

Recognition plaques to previous symposium organizers were presented afterward. So were corporate sponsors recognized and appreciation plaques presented to the individual corporate representatives. Under Dr. Hung-Ir Li's extraordinary leadership and a few members' help, the symposium was able to generate more

than \$25,000 of corporate support. Without the generous support, the symposium would not have been possible.

Two outstanding student paper awards, each with a certificate and \$1000 check, were also presented to the winners: Yuguo Chen of Stanford University and Yi-Chuan Zhao of Florida State University.

One interesting observation of this successful symposium is that more than 70 of the 150 participants were not ICSA members and more than 40 of them used this opportunity to join ICSA. We believe this may be a nice consequence of moving the Symposium to a new location.

In closing, we wish to thank all members of the symposium program committee, local committee and student helper team (see the attached list) for their hard work and unselfish and unconditional support. We also wish to thank all the corporate sponsors (see the attached list) for their generous support. Of course, the success of the symposium was mainly due to all the stimulating and excellent presentations by the speakers and many interesting and outstanding discussions by the participants.

ICSA 2001 Symposium Organization

Program Committee

Rong Chen (Co-Chair), U. Illinois at Chicago
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Xiaoli Meng, Univ. of Chicago
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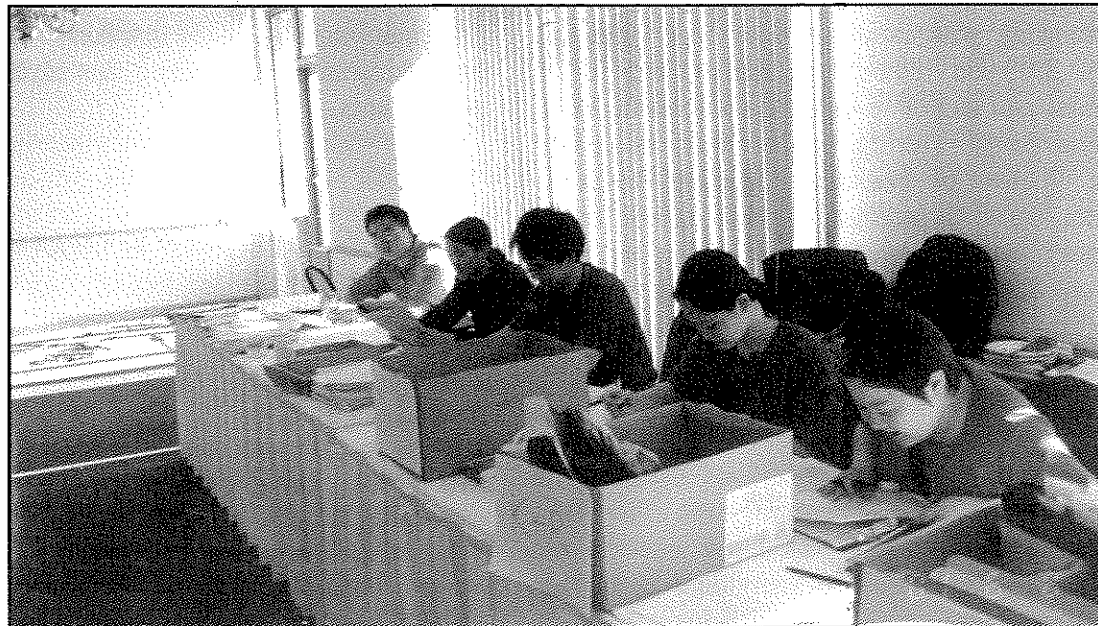
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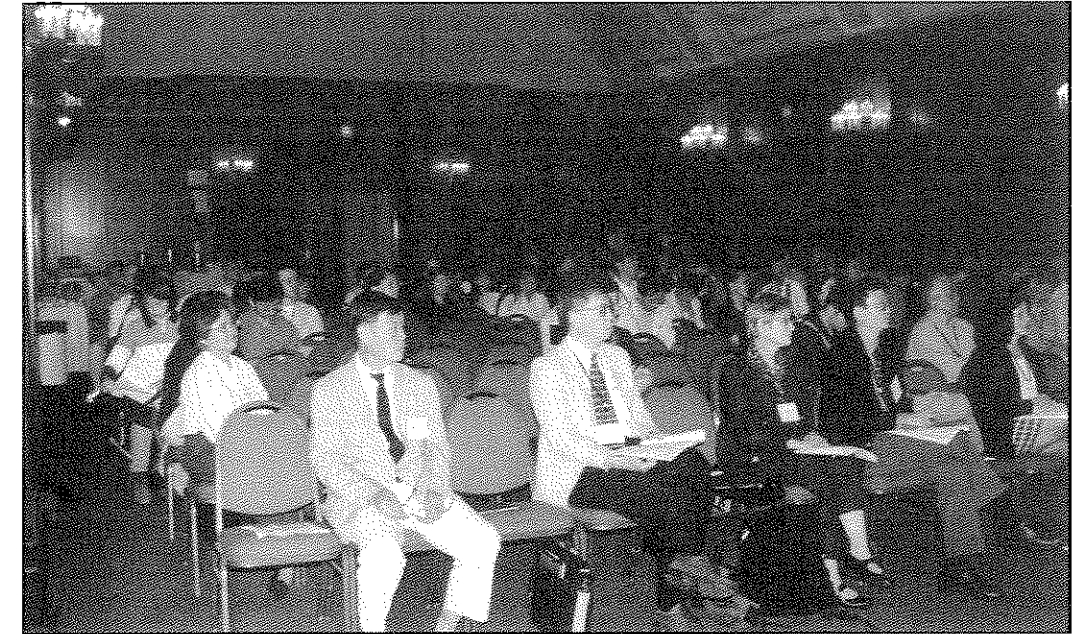
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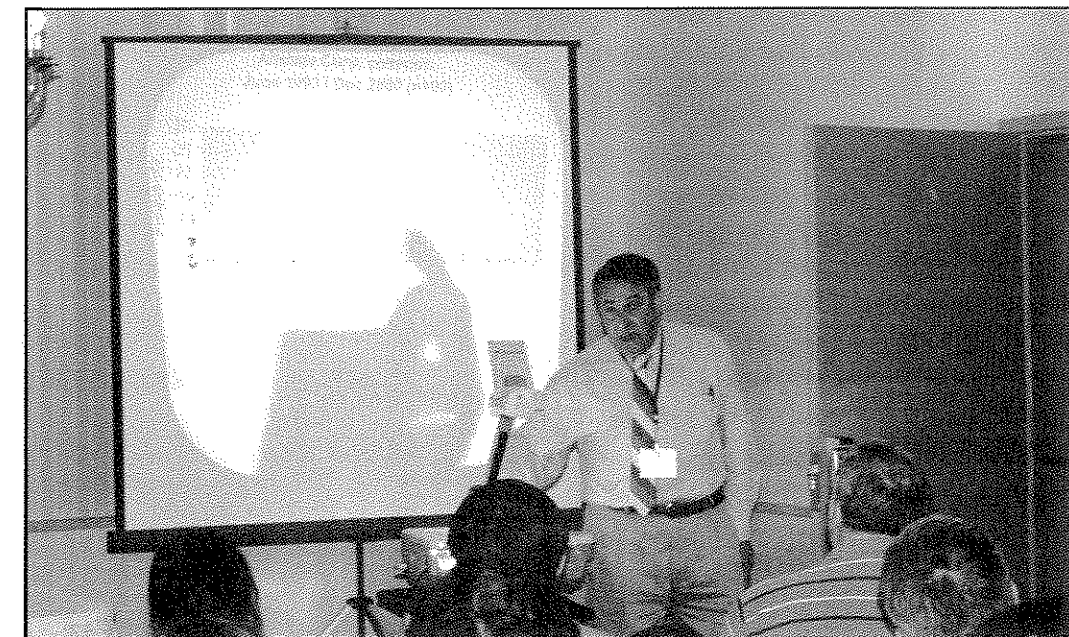
Yu Chen, **Yunfan Deng,** **Gang Li,** **Jun Liu,**
Yu Liu, **Xu Yan,** **Chen Yang,** **Jinfeng Zhang**



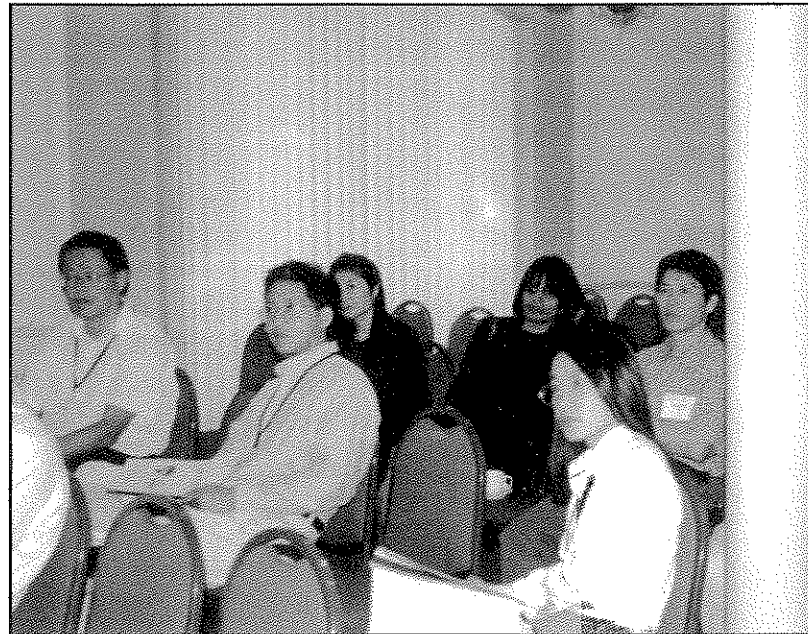
Student helpers running the registration desk



During Plenary Session



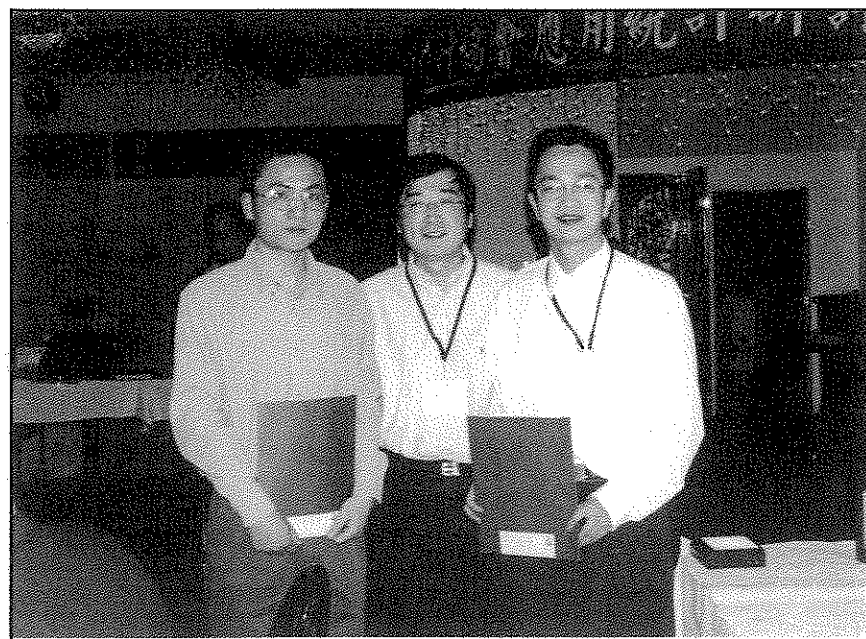
Professor Stan Sclove is serious about money investment



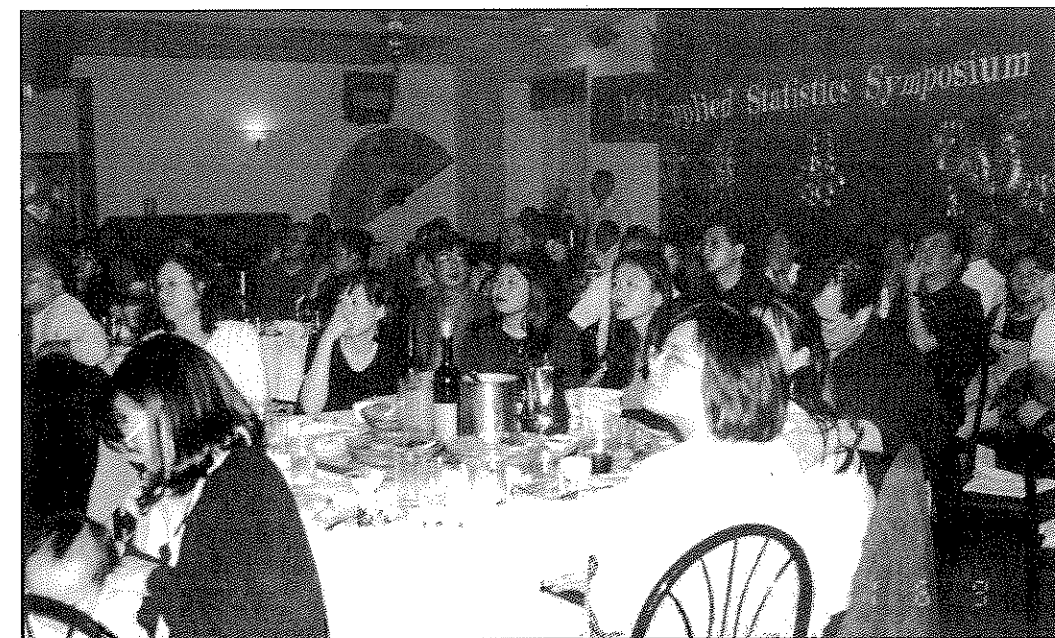
Intensive concentration in one of the parallel sessions



Dr. Chao Angeles, Hsiung, President of ICSA, gives the closing



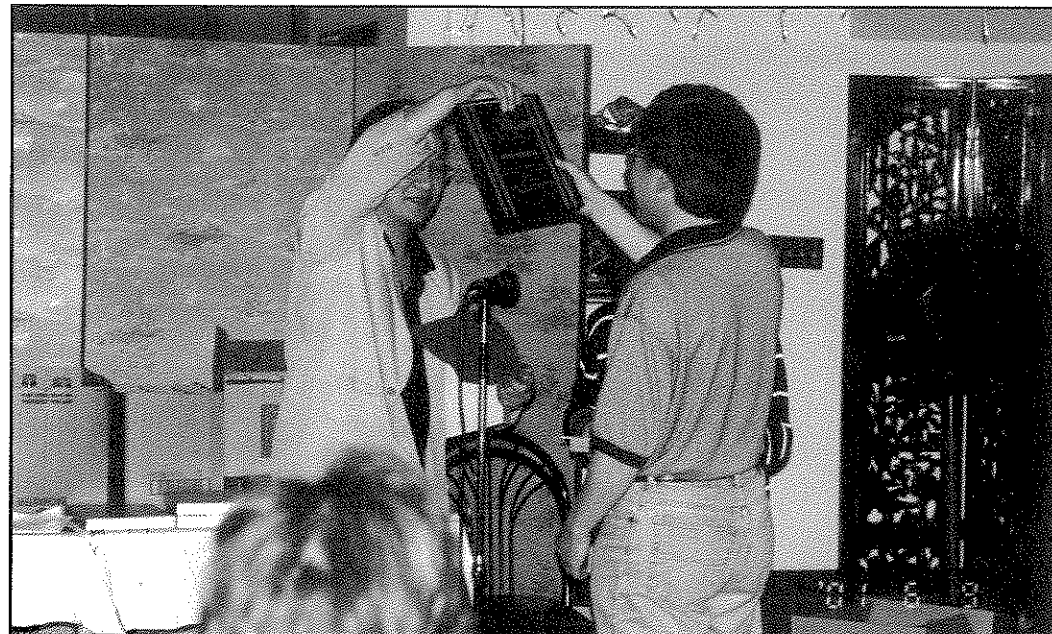
Student award winners YuGuo Chen (left, the serious one) and Yi-Chuan Zhao (right, the smiling one) with the happy symposium co-chair Rong Chen (center)



Listening to the banquet speaker on Florida recounting during the symposium banquet at New Three Happiness Restaurant



Here is a passionate singer (Dr. Lawrence Lin)

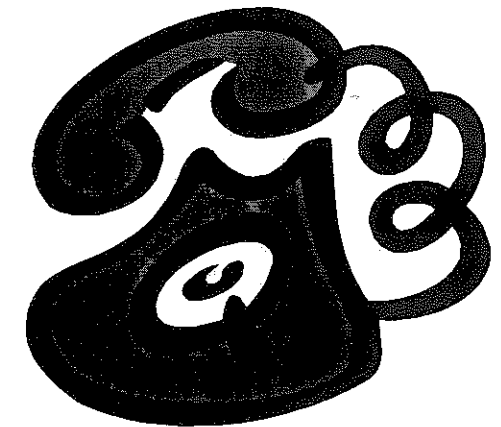
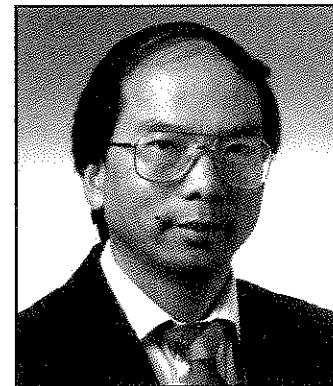


Xiao-li Meng hands out the corporation donation appreciation plaque to Zhenming Shun, Aventis Corp. Hiding behind Dr. Shun is Dr. Hung-Ir Li who was in charge of fund raising for the symposium

Interview* with Professor C.F. Jeff Wu

By Drs. Sue Jane Wang and Greg Wei

Date: March 23, 2001



***** Ring

Ring

***** Ring

BACKGROUND

Chien-Fu Jeff Wu was born in Hsinchu, Taiwan. His parents and grand parents immigrated to Taiwan from the Fujian Province in 1930's during the time Japanese occupied Taiwan. He was ranked first in the written exam for high school admission in the Hsinchu region. After graduating from Provincial Hsinchu High School, he was admitted to the Mathematics Department at National Taiwan University without written examination, where he got his BS degree. After two years of compulsory military service, he came to University of California to study Statistics in 1973 and got his Ph.D. in 1976. After teaching one year at Berkeley, he moved to the Statistics Department, University of Wisconsin (Asst. Professor 77-80, Assoc. Professor 80-83, Professor 83-88). He moved to the University of Waterloo, Canada as its first GM/NSERC Chair in Quality and Productivity in 1988-93. Then he returned to the US as Professor of Statistics and of Industrial and Operations Engineering, University of Michigan in 1993. He was Chair of the Statistics Department 1995-98 and is now the H. C. Carver Collegiate Professor.

*This interview was conducted via 3-way phone connection, with Professor Wu being in Michigan, Dr. Wei being in New Jersey, and Dr. Wang being in Maryland. With all the planning and coordination among the three parties, it was a successful and fun experience.

Q1: Can you share with us an event in your life that has touched you or had the most significant impact on you?

Jeff: There was one event, which I cannot forget. I was seven, in grade one. My father suddenly became mentally ill. Mental illness in those days was treated with contempt. Without a bread earner, we were forced to move out of a large house, which we were renting. My parents came from Fujian Province to Taiwan in the 30's, so we were outsiders. My mom had to start a shoe store to support her six children. Before then she [had] never worked, just took care of [the] kids. That was so traumatic I could never forget. I learned to be independent, because I knew there was no fallback if I did not succeed. I guess my hard drive is partly nature and partly from that environment.

Sue-Jane: Of the six children, which order are you?

Jeff: I am the fifth, the one often forgotten. The youngest brother got all the attention, so are the eldest brother and the eldest sister. I was getting nowhere. It was interesting.

Sue-Jane: Once you got stuck somewhere in between, actually you had more freedom because they didn't pay much attention to you.

Jeff: Yes, I played a lot outside. I wandered around in town and only came back to eat. No one noticed me.

Q2: I had spoken to a few people who are your fellow alumni from UC Berkeley. You were described as very bright and affable during your graduate years. How did these characters help you in your graduate study?

Jeff: I do not know how to answer this question. I probably do not relate this character to my study there. First I like to say there are a lot of bright people. We see bright people in each year's class, either in Michigan, Wisconsin, or Berkeley. I do not think I am brighter than those kids. I have learned many things in Berkeley outside the classroom. For example, I saw what is and what makes a great scholar.

I would like to share with you three things I did in Berkeley, which might be of interest as a student. One, I was not shy to ask [questions]. When I was a third year student, I was looking for a thesis topic. At that time Jack Kiefer visited Berkeley from Cornell. He was scheduled to teach sequential analysis while I was getting interested in optimal designs without any real understanding. It appeared to

be an interesting and intriguing subject. I went to see him, but he did not know me. I tried to persuade him to change the course from sequential analysis to optimal designs. This was one week before the start of the term. He did not say "no". These were the reasons I gave him in a polite way, I said "In Berkeley there are professors who can teach sequential analysis, but you are the only professor who can teach optimal design". He said, "Well, if you can line up four to five students to meet the minimum requirement, I will give it." Within two days, I persuaded several classmates and visiting faculties to take the course. So he agreed. At the end, only three students survived. I was also an avid reader of statistical journals. I was once bragging that I read every statistical journal in the library for a number of years. I picked up an issue, I read every title and abstract; if there was more interest, I would read the introduction; and if there was further interest, I would read the whole paper (if not in details). I read hundreds of papers when I was there.

Sue-Jane: That was during your third year?

Jeff: From the first year, I started reading almost right away. I came from Taiwan with a bachelor degree. I did not have any graduate train-

ing, nor [did I have] any fine knowledge of statistics or research experience. But doing research was an instinct.

The third thing was related to the great Neyman. He had a personal collection of papers and reprints, which were kept in many black boxes in a room adjacent to the department lounge. People went there for coffee or birthday cake, also to have lunch. I went there to listen to professors' conversation[s]. I thought that was the best part of my education. When I saw those many black boxes, I started to read. I was young and had incredible enthusiasm. I still remember that the famous guys had many boxes, like Tukey had five to six boxes, Box had three to four boxes. I read many of their papers. When I started in Wisconsin, they were surprised I seemed to be very familiar with Box's work. I said "Well, I learned from Neyman's collection of papers, not from classes".

Q3: What do you see as advantages or disadvantages for students like yourself who chose to earn graduate degrees in Statistics and who, equipped with strong mathematics background compared with those who had studied other undergraduate majors, such as, Literature, Art, Chemistry, Physics, Biology, Pathology, etc. ?

Jeff: It is obvious that strong mathematical background is an advantage. It makes it easier to understand the derivations, the formulas, and to pass the qualifying exams. But there is a hidden disadvantage if it is not broadened with knowledge from other disciplines. Usually students do not see this in the beginning. They may be concerned about the exams, qualifiers, and jobs. Chinese training tends to be much narrower because of the curriculum. Many do well in exams and getting jobs. But relatively fewer become research leaders. There are some people who came from non-mathematical background (Box from chemistry and Tiao from economics). However, if you look at the recent trend, it is getting harder to succeed in statistics without a good mathematical background. The reason is that the problems we are tackling are more complicated. We are trying to understand more complex systems, which need higher mathematics for modeling.

I would like to make one last point. Some people equate mathematics to probability theory, because if you look at the Ph.D. training in statistics, probability is required. But different applied mathematical tool, like discrete mathematics or numerical analysis may be more essential. I am particularly skeptical about

curriculum that emphasizes the measure-theoretic aspect.

Q4: You have been very active in various research areas. Can you tell us one or two accomplishments in those areas you are most proud of and why?

Jeff: I'd mention three. The most important contribution is on experimental design. I have developed over the last twelve years a system of experimental design that embodies major work of the last 70 years. This has influenced the writing of my book with Mike Hamada [senior researcher, Los Alamos Nat. Research Labs.] entitled "Experiments: Planning, Analysis, and Parameter Design Optimization", (2000, John Wiley). In the 80's, I had written a series of papers on re-sampling, particularly on the jackknife. Some were co-authored with Jun Shao (邵军), now in Wisconsin. The third is a paper on the convergence of the EM algorithm. I heard the original proof was flawed. I was young and undaunted. So I started working on the problem without knowing much about it. Initially I got stuck for a few months, but I was thinking, thinking, and thinking. One evening, while I was baby-sitting my daughter Emily in the family room, one idea struck me. It took a few

days to write a draft. The key technique in this paper was what I learned at Berkeley in an optimization course in the electrical engineering department. You really gain a lot of knowledge from courses in other departments.

Q5: What is your current research focus and why are you interested in this topic?

Jeff: I spent six years writing the book. It was a difficult time because I was the chair of the [Statistics] department in Michigan and also the editor of *Statistica Sinica* for three years. There is an anecdote about the book. My co-author Mike Hamada got up very early in the morning and I worked very late. So we worked like this: I wrote some materials by midnight; then I drove to his apartment (even during snow storm[s]) to drop the disk in his mailbox; he got up at 6am and started writing. Sometimes Mike sent e-mails to me or [to] my students at 6 am, so the joke was that we together could work for more than 24 hours a day.

Back to your question about what I am doing now, I am actually in a transition in my research. I would like to consider some basic principles and new ideas for the design and analysis of computer experiments (as opposed to physical experiments). These

are very important in computer modeling, CAD and CAM. Others I am exploring are bioinformatics and drug discovery. But it is too early to say what will come out.

Sue-Jane: It looks like you have a lot of energy, these really step forward from what you are currently doing.

Jeff: Well I've done it in the past. If you look at the early record, I was doing work on EM algorithm and optimal design, then I moved to survey sampling and jackknife/bootstrap. I was always on the move. The only time I was settled in one field was from 1987 to 2000, which were on design of experiments and quality improvement because there was a window of opportunity to do something of real significance.

Sue-Jane: Well, people will definitely admire your enthusiasm and energy in all these important fields. On that note, we'd like to know what you are most proud of in terms of your contribution to the Chinese community?

Jeff: Of course I interpret Chinese community without politics. I mean Chinese speaking community. Probably the most important [one] is the editing of *Statistica Sinica*. I was its 2nd editor following the footsteps of George Tiao, (刁錦囊) whom I really admire.

He is a role model for us. He was the first editor, not at a very young age and he did a great job. The journal has already reached a very high status according to the SCI - Science Citation Index. It is a real collaboration between ICSA and the Institute of Statistical Science, Academia Sinica in Taipei. The journal belongs to everybody, Chinese of any origin and non-Chinese. I have also spent time visiting Taiwan and China, giving lectures, recruiting students, sharing new research findings, and serving on committees.

Q6: Over the past 20 years, you have supervised more than 27 Ph.D. students. This is an enormous undertaking. What have you taken from these didactic experiences?

All my students know two things I do as Supervisor. Even when I have clues about the solutions and approaches, I never tell them. I would say, "you try this, you try that, and think about it". And this can take a long time. Because the only way students can really discover ideas, derive results, and develop independent thinking is to learn from frustration and stumbling. You need to stumble before you can do research, you need to stumble before you can walk. (Of course, if a student is really in trouble, I would come to

the rescue.) The second point is (因材施教); it translates as "teaching your students in accordance with their aptitude". I have students of different backgrounds (mathematics, engineering, chemistry, etc.). So, I usually suggest quite different research topics. Many of them do well, and [do so] happily.

Q7: It is widely considered the highest honor in Taiwan to be elected as a member of Academia Sinica. Could you share with us what went through your mind when you were notified that you would be the recipient of such an honor? What specific achievements do you believe were the reasons for your nomination for this stature honor?

Jeff: I actually do not remember what went through my mind. I took this as a high honor. Its membership includes leaders of many disciplines. I am really a small person there. Many of its members are not from Taiwan. This is for scholars of Chinese origin. The Taiwan academic establishment treats this issue very differently from China.

Q8: You were the COPSS (Committee of Presidents of Statistical Societies) Award recipient in 1987. This out-

standing young investigator award is known as one of the highest honors in the Statistical Science Profession. We are curious about your work and efforts that led to this prestigious award.

Jeff: Back in 1987, my main works in chronological order were optimal design, asymptotic theory, EM algorithm, sample survey, and re-sampling theory. My best work was actually done after the Award. Back then I had barely started the important work in design and analysis of experiments. Statistics and mathematics are quite different in nature. Many mathematicians do their best work before 40, while in statistics it is more rare to have a breakthrough before 40. It takes more time for a statistician to become mature, to understand and tackle really important problems. So the award was in a way just a beginning.

Q9: With many of the National/International Awards and Honors you had earned through the years, I am sure that you are not one to stop pursuing new interests. We have heard some of the things you have mentioned this far, new adventure into computer experiments, etc. What is your immediate next goal?

Jeff: I actually do not work by setting goals. When you do your work, you should take more of a historical perspective, not just initial research findings and trendy stuffs. I think one's work should be judged by history, not by contemporaries. Of course I would like to make one more contribution of some significance.

Q10: Generally speaking, Asian Statisticians have shown great contributions in the research arena. However, it seems that there is a lack of representation of Asian leaders serving as board members or program staffs in professional organizations such as ASA. What are the areas you would suggest that we, Asian statisticians, could and should get actively involved in our professional community?

Jeff: Asians is a very large group. Let me refer to the Oriental that includes Chinese, Japanese and Koreans. Because of our education and culture, we don't go out, we don't confront, and we don't express openly. We are subtler. I think we should be more active in committee work and community service, even things that may not benefit us. Be active in ASA local chapters, councils, and sections.

Q11: You have shown that you plan well career-wise every step of the way. As old Chinese saying: "manage oneself, the family, the country, and the world"?

(修身,齊家,治國,平天下。)

We have learned all about your achievements, your contributions to the academic and professional communities nationally and internationally. Could you tell us a little about your family?

Jeff: I met my wife Susan in Wisconsin and got married in

1979. Both kids were born in Madison. I always have a very special feeling about Madison. Emily is a sophomore at Harvard. Justin is a sophomore in high school.

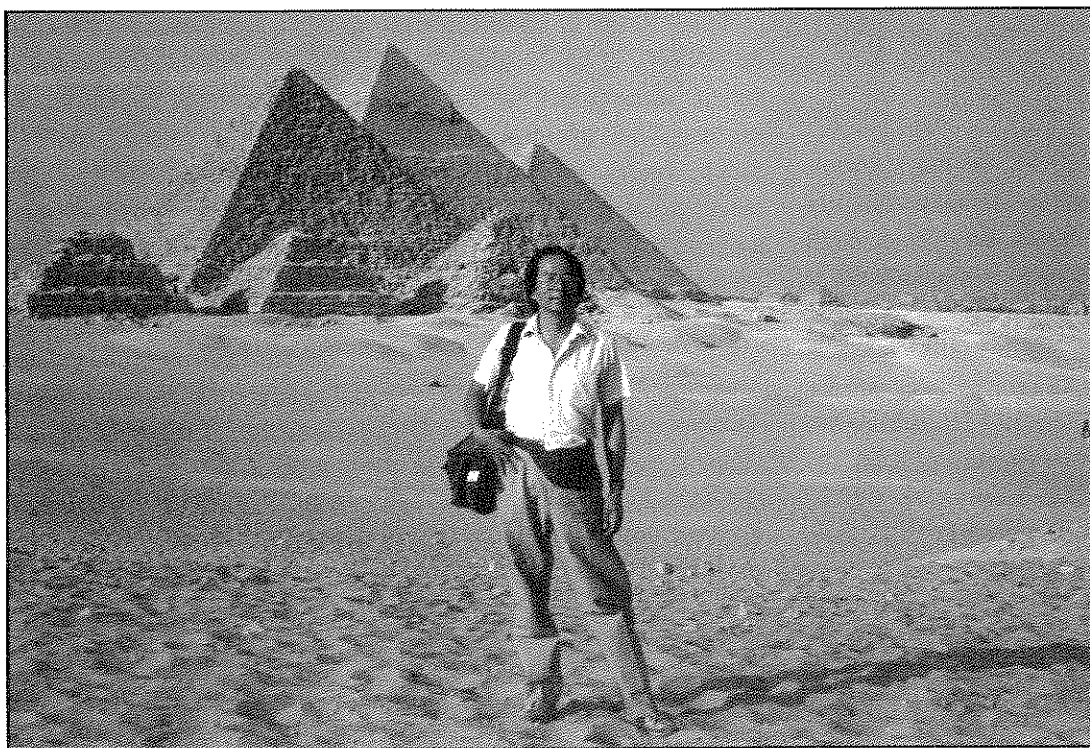
Sue-Jane: Well, I think they see you as a model that working hard actually has some rewarding outcome from it, it earns a lot of satisfaction. In term of your kids seeing your success, have they gotten motivated?

Jeff: We have many intellectual discussions at the dinner

table. When we read some news/reports, we talk and argue about it. But I can guarantee you that neither will do statistics.

Sue-Jane: Do you have anything else you like to share with us?

Jeff: Well, I've said a lot. You spent a lot of time preparing the questions. I thank you for your effort and interest in doing this interview.



Jeff Wu in front of the pyramid, south of Cairo, Egypt, 1991

SPECIAL TOPIC

ACTUARY SCIENCE

保險精算與統計

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藉由電視、報紙等媒體的報導，近年來「保險」之類的话题曝光率非常高，舉凡已由政府開辦的全民健康保險，規劃中的國民年金、勞工失業保險等，抑或是由民間保險公司提供的癌症險、退休金保險、學生意外保險等，保險似乎是現代人不可或缺的生活要素。而與保險有關的精算師(Actuary)更因名列 21 世紀十大熱門行業之一，對許多數學、統計相關科系的畢業生形成不可抗拒的吸引力，認為精算師等於金飯碗，因此台灣精算保險從業人員其大學畢業科系半數以上為數學或統計。然而從事保險業是否一本萬利，考上精算師是否代表擁有一張鍍金的飯票？

與大多數台灣居民相同，筆者在大學時對保險並無清楚的概念或了解，只大略知其可能是一個發展潛力很好的新興產業。然而在考過一些美國精算學會(Society of Actuaries; SOA)科目的考試以及這幾年在精算方面的粗淺研究後，對精算保險產生比較不一樣的看法。以下僅就個人的認知，提供一些淺見作為參考。

根據中華民國保險法第一章總則

的保險定義：

「本法所稱保險，謂當事人約定，一方交付保險費於他方，他方對於因不可預料，或不可抗力之事故所致之傷害，負擔賠償財物之行為」

保險公司透過整合性質類似的保戶集中承擔損失(Sharing loss)，並藉由大數法則達到降低風險的目的，也就是統計學的增加樣本數、降低變異數的概念。對保戶而言，藉由購買保險將被保險人的生命、健康等的可能損傷而引起的財務損失，以付出保險費的方式將風險轉移給保險公司，以換取保障。

增加樣本數固然可降低變異數，保戶願意付出的保費必須高於其預期損失，否則保險公司至多從保費收入及理賠支出中取得平衡，無法獲得利潤。效用理論(Utility Theory)保證了保險公司長期營運下獲利的必然性。因為一般人的效用函數多屬於凹函數，願意付出多於預期損失的保險費(讀者可藉由 Jensen's Inequality 自行驗證)。因此對保險公司而言，精確的計

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算出保戶的預期損失及其費率是首要步驟。(筆者註：因為保險需要針對不同保戶“精確”地計算出相對的數值，有別於其他行業的總和或大略計算，這或許是「精算」這個名詞的來源吧！)

精算師負責保險公司的費率釐訂。當然，精算師的工作不只費率的計算，也負責保險商品的設計(包含相關法規、各保單的責任準備金計算/提列、解約金及保單紅利的計算、營業費用分析等項目)、分析公司整體的財務規劃、評量公司的資產與負債、量化風險與協助公司制定決策等，將精算師比喻為保險公司的 CPU (中央處理器)並不為過。正因為精算師舉足輕重，其報酬自然就水漲船高，平均薪水遠高於其他行業。(筆者按：根據筆者的資訊，資淺的正精算師一般的月薪在新台幣十萬元以上，而月薪超過新台幣 20 萬元的老牌正精算師比比皆是。但「高報酬、高風險」，精算師的資格取得需要至少五至十年的考試，難度不低於會計師或律師；又精算師也須對保險公司的盈虧負起責任，因之承受的壓力不在話下，所以離職率也不小，絕非「位高權重責任輕」。)

由於精算師的工作與數字、尤其是與統計息息相關，具有統計、數學背景知識的人較易駕輕就熟，因此統計及數學系的畢業生進入這個領域的人數較多。但由前段說明可知精算師的工作不限於費率計算，角色扮演當然也跨越統計分析及程式設計，根據

Rappaport (North American Actuarial Journal, 1999, Volume 3, Number 2, pages iv-viii) 的定義，她認為精算師同時扮演三種角色：科學家 (Scientist)、顧問 (Advisor)、財務經理 (Financial manager)。筆者非常贊成 Rappaport 的說法，關於科學家的角色可由筆者近幾年在死亡率方面的研究為例，除了使用適當的統計方法及理論外，死亡率的變化與生物學、人口統計學、經濟學等學門都有關係，合理的死亡率推估不但須符合統計原理，在生物、人口、經濟方面也應有合理的詮釋。所以在死亡率方面的研究不應侷限於原先精算保險的考量，須有科學家「實事求是」、「追根究底」的求知精神。

另外，因為保戶時常需要專業協助、建議符合其需求的保單，精算師也扮演財務顧問的角色；相同的，對保險公司而言，精算師需要將保費收入做完善的投資運用，保障該公司的財務自主 (Financial Solvency)。後兩者的角色不全然與統計直接相關，筆者建議有意朝精算保險發展的朋友多接觸經濟、財務方面的資訊，健全此一領域需要的背景知識。

大體而言，筆者認為精算是統計的一種應用，在精算領域使用的數量分析大抵都可歸類為統計的方法及技巧之一。但精算保險的原理其內涵包含人文、自然科學等諸多學門，它不等於統計，更不是統計的部份集合，僅從統計的角度無法窺得保險之全貌。

For the past few decades or so, actuaries have been using fixed (level) rate assumptions for pricing, reserving or other actuarial calculations. However, the use of stochastic modelling techniques has been increasingly widespread amongst actuaries around the world. Most notable is the pioneering work of the British Actuary, A. D. Wilkie, who developed a linear time series system for force of price inflation, share dividend yield, force of share yield growth, and long-term interest rate in the United Kingdom (Wilkie, 1986, 1995). These variables are very useful in many actuarial applications (e.g., calculation of valuation reserves for maturity guarantees in insurance contracts, see Ford, *et al.*, 1980).

The Wilkie model displays a cascade structure for the investment series as shown in Figure 1. Inflation is postulated as the sole driving force for the system. The relationships between the variables are based on a blend of statistical evidence and economic belief.

However, the problem of upward skewness and leptokurtosis (heavy “tail”) of the residuals obtained from the Wilkie model has caused some concerns for many authors (see, for example, Huber 1997). Furthermore, the Wilkie model is a transfer function type model with fixed unidirectional relations. In many applications, however, unidirectional assumptions may not be appropriate. For example, it is often difficult to postulate the one-way

dynamic relationships between major economic variables using only economic theory. On the contrary, when studying such variables, a primary objective may be to uncover the interdependence among the variables of the system.

To improve the Wilkie model, Wright (1998) proposed an alternative model based on vector autoregression. Chan and Wang (1998) refined the price inflation component of the Wilkie model by performing a time-series outlier analysis. Whitten and Thomas (1999) suggested a threshold-type non-linear model for UK investment series.

Following Wilkie's footsteps stochastic investment models have been developed for other countries. They include Metz and Ort (1993) for Switzerland; Deaves (1993) for Canada; Daykin *et al.* (1994) for Finland; Thomson (1996) for South Africa; Frees *et al.* (1997) for the United States of America; and Sherris *et al.* (1999) for Australia.

In addition to Wilkie's method, other non-linear or non-Gaussian approaches for building stochastic asset models have been discussed in the literature including Praetz (1972), Carter (1991), Clarkson (1991), Klein (1993), Finkelstein (1997), Whitten and Thomas (1999), and Wong and Li (2000). Inter-disciplinary research in statistics and actuarial science is scanty and very much at an infantile stage. Insurance companies, insurance regulators and actuarial practitioners may want to see more joint academic research in this area.

Some Recent Research in Risk Theory with Applications

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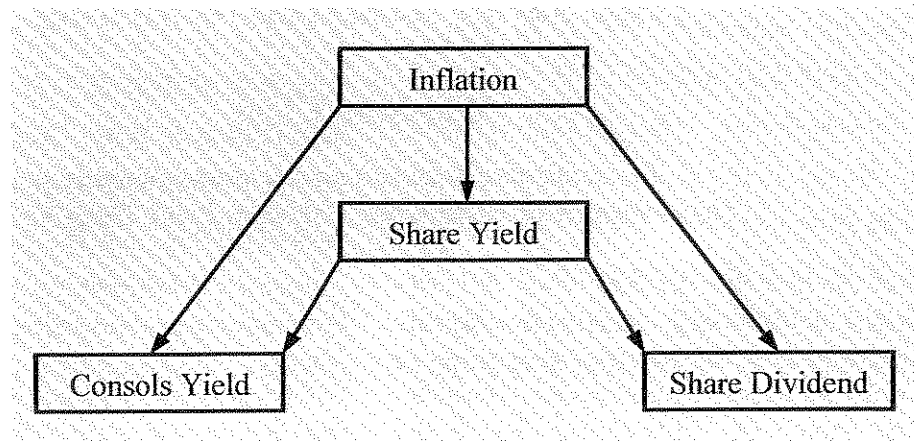


Figure 1. The 'cascade' structure of the Wilkie model

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In the classical risk model (see Grandell (1991), Embrechts et al. (1997)), the risk reserve process $U(t)$ is defined as

$$U(t) = x + ct - \sum_{i=1}^{N(t)} Y_i,$$

where x is an initial risk reserve, and c is the intensity of the gross risk premium. Additional assumptions are as follows: the claim sizes Y_i are *i.i.d.* positive random variables with a common non-lattice distribution function $F(x) = P(Y_1 \leq x)$ and finite mean; the claim arrival process $N(t)$ is a point process and therefore the total amount of the claims can be denoted by

$$S(t) = \sum_{i=1}^{N(t)} Y_i.$$

For a given distribution function F , we call F light-tailed if it has moment generating function at the right hand of the origin, which is corresponding to small or medium claims, otherwise we call F heavy-tailed, which is corresponding to large claims. The most important heavy-tailed subclass is Subexponential Class (denoted by \mathcal{S}). If the claim size is Subexponential, then the tail distribution of the n th partial sum is of the same order as that of the maximum of the first n claims.

Generally speaking, large claim has tremendous influence on the insurance company. So it is necessary to study the heavy-tailed properties of risks deeply. In this direction, Su et al. (2001b) first introduced the equilibrium hazard rate function of a distribution F . This function can be used to distinguish heavy-tailed distributions from those light-tailed distributions.

Asmussen and Klüppelberg (1996), Klüppelberg and Mikosch (1997) and Mikosch and Nagaev (1998) obtained some results of precise large deviations for the total claim amount up to time t when the claim size distributions are of extended regularly varying tails. Su et al. (2001a), Tang et al. (2001) and Tang and Su (2001b) generalized the above results by releasing their conditions on $N(t)$. The conditions on $N(t)$ in Su et al. (2001a), Tang et al. (2001) and Tang and Su (2001b) can be satisfied at least for the so-called compound renewal process, in which case claims occur more than one times in one disaster. This is very common in casualty insurance.

The classical Cramer-Lundberg risk model is far from being realistic. In many cases, the distribution of the inter-arrival times of claims is not an exponential distribution. In this connection the renewal risk model is naturally introduced in risk models. Considering the renewal risk model, when the claim sizes are small, Jiang and Miao (2001) obtained the large deviation ruin probability and the adjust function which is well-known in actuarial science. Tang and Su (2000, 2001a) further discussed the ruin probability for large claims in the delayed renewal case.

Clearly, in financial context, the influence of the interest rate should be taken into account by researchers. The risk models with interest force were first introduced in Sundt and Teugels (1995, 1997). In many recent papers, the ruin probabilities in the models with interest rate are discussed (for details see Asmussen (1998), Kalashnikov and

Konstantinides (2000), Klüppelberg and Stadtmüller (1998)). Konstantinides et al. (2001) discussed the ruin probability for large claims, whereas Miao et al. (2001) discussed the ruin probabilities for medium claims. Furthermore, Konstantinides et al. (2001) gave very fine upper and lower bounds for ruin probabilities in the models with interest rate.

In reality, not only the total claim process but also the management can affect the reserve of the insurance company. Dufresne and Gerber (1991) introduced the following risk model to describe the influence of these factors: The risk reserve process is given by

$$U(t) = x + ct - \sum_{i=1}^{N(t)} Y_i + W(t),$$

where the claim arrival process $N(t)$ is a mixed Poisson process with structure distribution $U(\lambda)$, say $MPP(U)$ (see Grandell (1997)), $W(t)$ is a Wiener Process. Under this model, Miao and Jiang (2000a,b) considered two circumstances that could affect the reserve of the insurance company: one is the random varying of the claim intensity caused by the season or the policy etc; the other one is the uncertainty of the internal management or operation. Jiang and Miao (2001) and Miao and Jiang (2000a,b) obtained the limits of the ruin probability under the small/medium/large claims respectively. They found that the influence of the Wiener process on ruin probability under small claim is large, and the influence on large claim can be omitted.

Hu and Wu (1999) considered the type of negative dependence between the individual risks in a portfolio. This paper obtained the safest aggregate claims in the sense of the minimal stop-loss premiums. Here the portfolio consists of m life insurance policies with each policy having a positive face amount during a certain reference period. This result was extended

to more general risks in Dhaene and Denuit (1999). Hu and Wu (1999) also investigated the notion of multivariate dependence between individuals and its effect on the related stop-loss premiums. Hu and Pan (1999) considered the following multivariate claim model: An insurance company consists of m subsidiaries. For $i=1, \dots, m$, the i th subsidiary is subjected to claims occurring randomly in time at the epoch times of the counting process Γ_i . The i th subsidiary can handle M_i claims before bankruptcy (for example, each claim may yield a random payment, and the i th subsidiary bankrupts at time Z_i when the total payments exceed some given threshold). Thus, $\mathbf{Z}=(Z_1, \dots, Z_m)$ models the vector of the bankruptcy times of the m subsidiaries. They showed that the super modular dependence order and some notions of multivariate dependence are preserved by these models under some condition on non-homogeneous pure birth processes, which govern the arrival of claims. The main results of Hu and Pan (1999) were generalized in Lillo et al. (2000) and Belzunce et al. (2001).

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!!! Controversial !!!
Statistical
Issue

Bootstrap vs. Markov Chain Monte Carlo

Why Bootstrapping?

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Why do you use the bootstrap? This is a question many statisticians frequently face when they apply the bootstrap in solving statistical problems or propose the bootstrap method in their research articles. Two typical answers to this question are: (1) There exists no other methods, and (2) The bootstrap is better. In my opinion, both answers are inappropriate. Before explaining why these answers are not appropriate, let me first briefly describe what the bootstrap is.

The process of a statistical analysis can be summarized as follows:

postulated model \rightarrow data \rightarrow estimates of parameters \rightarrow assessment/inference.

That is, we believe that the observed data are from a postulated model; unknown

parameters are estimated based on the observed data; estimates are assessed using some accuracy measures (e.g., variance or mean squared error), and further inference may be made based on these estimates and their accuracy measures and/or other properties. In the traditional (or non-bootstrap) approach, accuracy measures are estimated by first deriving their theoretical (approximate) formulas and then estimating unknown quantities in these formulas. The derivations involved may be difficult, complicated, and/or tedious.

Suppose that we can generate B (a large number) data sets from the postulated model. Then, we may replace the derivations in the traditional approach by empirical estimates based on the B data sets. For example, instead

of using the theoretical formula for the variance of an estimator, we can calculate the same estimator repeatedly B times and use the sample variance based on the resulting B estimates. We may call this the simulation approach.

In practice, however, generating multiple data sets is impossible, since the postulated model usually involves unknown quantities. What we can do is to substitute unknown quantities in the postulated model by some estimates (based on the original data) and then apply the simulation approach. This combination of substitution and simulation is exactly the bootstrap method, which was first proposed by Bradley Efron in 1979. Note that generating multiple data sets and re-calculating estimates requires a large amount of computation, which explains why the bootstrap has a short history of about 22 years. Because of the availability of high-speed computer, the bootstrap has become very popular and attractive to researchers in recent years.

Hence, my answer to the question about why the bootstrap is used is that it replaces complicated theoretical derivations by repeated computations. Note that even a derivation of a Taylor's expansion may be quite involved, if the problem is high dimensional and/or the differentiable function is defined implicitly. Another example is a survey problem with imputed nonrespondents. In sample surveys, nonrespondents are often imputed using auxiliary data (covariates). In the traditional approach of variance estimation, a variance formula has to be derived based on the response model and the adopted imputation method. This derivation may be very complicated and tedious, because of the existence of different types of imputation and large dimensional auxiliary data. The bootstrap can be applied to obtain variance estimates, at the expense of a large amount of computation, which includes generating a

large number of bootstrap data sets with respondents and nonrespondents, imputing nonrespondents in the bootstrap data sets, and computing survey estimates based on imputed bootstrap data sets (Shao and Sitter, 1996).

However, I would like to emphasize that replacing derivations by computations can be done only when the bootstrap is known to produce valid results. The validity of the bootstrap depends on how the postulated model is estimated or how the bootstrap data sets are generated. Thus, on one hand, practical users can apply the bootstrap to replace theoretical derivations (provided that the validity of the bootstrap is established); on the other hand, theoretical and empirical research is needed to show the validity of the bootstrap in situations where no theoretical confirmation has been made. Note that the theoretical work required in establishing the validity of the bootstrap may be different from the derivations required by the traditional approach. In the survey problem with imputed nonrespondents, for example, the bootstrap is asymptotically valid if the point estimator is a differentiable function of sample means and regression imputation is applied (Shao and Sitter, 1996) so that the point estimator based on imputed data is another differentiable function of some sample means; however, the exact forms of the partial derivatives of this perhaps very complicated function are not needed in applying the bootstrap, whereas they have to be explicitly derived if the traditional approach (Taylor's expansion method) is applied. Sometimes, establishing the theoretical validity of the bootstrap is a very difficult research problem (e.g., Hall,

1992; Shao and Tu, 1995). But showing the existence of the partial derivatives of a function is very different from deriving the exact forms of these partial derivatives.

Let me now explain why answers (1) and (2) are inappropriate. For (1), "there exists no other methods" is usually not true. In a situation where "no other methods exists", it is unlikely that the validity of the bootstrap has been established. Thus, one has to first justify the use of the bootstrap. If one can show that the bootstrap is valid, then, according to my experience, at the same time one can derive a non-bootstrap method that is also valid. This is because the validity of the bootstrap is usually established via an asymptotic analysis. This asymptotic analysis usually produces an approximation to the bootstrap that itself is an asymptotically valid method. Perhaps, "there exists no other methods" should be replaced by "no other methods can be found". However, "no other methods can be found" should not be used as a reason/excuse to use the bootstrap.

There are many results showing that the bootstrap is better than some non-bootstrap methods such as the normal approximation (Hall, 1992). However, whether the bootstrap is better depends on which method the bootstrap is compared with. In setting confidence bounds, for example, the bootstrap-t confidence bounds are shown to be asymptotically more accurate than the confidence bounds obtained by using normal approximation, but are asymptotically equivalent to the confidence bounds obtained by using one term Edgeworth or Cornish-Fisher's expansion (Hall, 1992). Thus, the reason why the bootstrap is used is not because "the bootstrap is better", but because the bootstrap can replace the complicated derivation of the Edgeworth or Cornish-Fisher's expansion by repeated computations.

To further elaborate, let me discuss the following example in the study of *in vivo*

bioequivalence. Bioequivalence testing based on pharmacokinetic responses (such as area under the blood or plasma concentration-time curve) is considered as a surrogate for clinical evaluation of the therapeutic equivalence between a brand-name drug and its generic copies. In its 1997 draft guidance (FDA, 1997), the U.S. Food and Drug Administration (FDA) proposed to focus on population bioequivalence (PBE) and individual bioequivalence (IBE). The PBE addresses drug prescribability, which is referred to as the physician's choice for prescribing an appropriate drug for his/her new patients among the drug products available, while the IBE refers to as drug switchability, which is related to the switch from a drug product to an alternative drug product within the same patient. In assessing PBE and IBE, the key statistical issue is to set a confidence bound for a function of population means and variance components. In FDA (1997), the bootstrap method is proposed for setting confidence bounds in assessing PBE and IBE, without any indication of why the bootstrap is recommended. Either "no other methods" or "the bootstrap is better" could be a reason at that time. Since the publication of FDA's draft guidance in 1997, on one hand, theoretical and empirical research on the validity of the bootstrap confidence bounds has been carried out (Shao, Chow and Wang, 2000; Shao, Kbler and Pigeot, 2000); on the other hand, some non-bootstrap methods in assessing IBE have been found (Wang, 1999; Hyslop, Hsuan and Holder, 2000). Thus, the bootstrap is a valid method to apply, but is neither the only method that can be used in assessing IBE and PBE nor the better method than the non-bootstrap approach. As a result,

in its 2001 guidance (FDA, 2001), the FDA adopted the method developed in Hyslop, Hsuan and Holder (2000) in assessing IBE, which is based on the approach of Cornish-Fisher's expansion that produces an accurate confidence bound. This does not mean that the bootstrap is worse than Hyslop, Hsuan and Holder's method. When properly used, the bootstrap should be as accurate as the approach based on Cornish-Fisher's expansion. However, since the required theoretical derivation is done in Hyslop, Hsuan and Holder (2000), replacing derivations by computations is no longer necessary and, thus, it is natural for the FDA to adopt Hyslop, Hsuan and Holder's method (the non-bootstrap approach) for assessing IBE.

Unfortunately, the FDA incorrectly applied Hyslop, Hsuan and Holder's method to the PBE problem. One of the key assumption in using Hyslop, Hsuan and Holder's method is the independence of estimated variance components, which is true in the IBE problem but not true in the PBE problem (details can be found in Wang, Shao and Chow, 2001). On the other hand, the application of the bootstrap does not require this assumption. This shows another possible advantage of using the bootstrap over a non-bootstrap (traditional) method that requires theoretical formulas. Note that theoretical formulas in the traditional approach are frequently derived under some assumptions that vary from problem to problem. If one does not carefully check these assumptions, he/she may incorrectly use some formulas. The bootstrap, however, is frequently insensitive to the violation of assumptions, since the bootstrap does not directly use these theoretical formulas. Of course, the bootstrap may also be misused. But the example of IBE and PBE shows that using the bootstrap may avoid the kind of mistake made by the FDA.

In conclusion, the bootstrap is a popular method that can be used to replace complicated derivations of theoretical formulas by an intensive computation. It is more insensitive than the traditional approach in terms of model assumptions, but it should be applied only when theoretical confirmation on its validity has been made. "No other methods can be found" should not be a reason to use the bootstrap.

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Bootstrap vs Markov Chain Monte Carlo: a Powerful Partnership

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Sharing a somewhat similar history, the ideas underpinning the bootstrap and the Markov Chain Monte Carlo (MCMC) date back to at least several decades ago and have recently been receiving increasing attention from researchers and practitioners owing in part to the rapid advance of computer power. Formally speaking, the two methodologies deal with distinct problems and possess their respective realms of applications. In its most general form, the bootstrap sets out to solve analytically intractable problems which are statistical by nature, and almost always requires brute force Monte Carlo simulation (or even MCMC) for its implementation. The objective of the MCMC is mainly computational, whose effectiveness rests upon sophisticated statistical reasoning. Instead of being competitors, the bootstrap and the MCMC supplement each other in the provision of a powerful device for solving complicated problems to an extent previously undreamt of. There may be applications where the bootstrap idea prevails and the MCMC plays a subordinate role, or vice versa, but it is rather difficult to imagine a situation where one faces a critical choice between them. The misconceived rivalry between the two methodologies is perhaps a consequence of their close association with certain statistical or computational

problems. While the MCMC finds very important applications in Bayesian statistical calculations, it is to the Bayesian approach rather than the MCMC that the bootstrap may pose as an alternative. While the bootstrap should invariably be implemented by a Monte Carlo procedure in practice, the MCMC offers a computational technique which competes with other Monte Carlo approaches but not with the bootstrap itself.

In what follows we describe two examples to illustrate the constructive partnership between the bootstrap and the MCMC. The first example sees the MCMC in a predominant role which appeals to the bootstrap for critical assessment. Their roles are somewhat swapped in the second example, where the MCMC serves as a computational means to implement the bootstrap.

First, we consider a parametric model consisting of probability functions of the form $f(\cdot|\theta)$, where θ denotes the indexing parameter. Suppose that a sample x is observed from $f(\cdot|\theta)$ with θ unknown and we wish to estimate the true θ . A typical Bayesian approach assumes a prior distribution $\pi(\cdot)$ for θ and estimates θ by its posterior mean $E(\theta|x)$, namely, the mean of the posterior probability function

$\pi(\theta|x)$ which is equal to the product $f(x|\theta)\pi(\theta)$ up to a normalizing constant. Analytic calculation of $E(\theta|x)$ typically involves numerical integration, probably high-dimensional, which may be computationally prohibitive. The MCMC suggests a convenient simulation method to alleviate the computational burden by approximating $E(\theta|x)$ with a large number of simulated dependent replicates of θ . For a frequentist assessment of the estimator $E(\theta|x)$ one requires information about its sampling behaviour, which is often extremely difficult to obtain. The bootstrap heuristic can be applied in this context to estimate, for example, the sampling distribution of $E(\theta|x) - \theta$ by the bootstrap distribution of $E(\theta|x^*) - E(\theta|x)$, where x^* denotes a bootstrap sample drawn from x . The (frequentist) performance of the MCMC-approximated posterior mean can therefore be assessed by a supplementary bootstrap procedure.

Our second example concerns a simple linear regression setup in which the response variable y is related to a covariate x via $y = \alpha + \beta x + \varepsilon$, where α and β are unknown regression coefficients and ε is a random error with an unspecified zero-mean density function f . Let $(x_1, y_1), \dots, (x_n, y_n)$ be the actual observed data. It is well known that the standardized residuals a_1, \dots, a_n derived from ordinary least squares calculations are partially ancillary for (α, β) . Invoking the conditionality principle, inference about (α, β) ought to be made conditional on the standardized residuals. The conventional nonparametric bootstrap method, usually in the form of a residual bootstrap or a pairwise bootstrap, pays no regard to conditionality and is therefore no longer useful in estimating the sampling distributions of the estimators of (α, β) , which should now be interpreted conditionally on a_1, \dots, a_n .

Denote by (a, b) any location- and scale-equivariant estimators of (α, β) , and by S any location-invariant and scale-equivariant estimator of the standard deviation of f . Set $A = (a - \alpha)/S$ and $B = (b - \beta)/S$. It is known that the conditional joint density $k(A, B, S)$ of (A, B, S) , given the ancillary standardized residuals a_1, \dots, a_n , is equal to $S^{n-1} \Pi_i f(S(a_i + A + Bx_i))$ up to a normalizing constant. Conditional inference about (α, β) should be made with reference to data simulated, or bootstrapped, from a nonparametric estimate of $k(A, B, S)$, which can be obtained by replacing f in the above formula with a kernel density estimate calculated from the standardized residuals. This procedure is generally known as the smoothed bootstrap. The complex structure of the estimated $k(A, B, S)$ and the lack of an explicit normalizing constant both suggest that the MCMC may be an ideal candidate in practice to simulate "conditional" data from the desired joint density, hence making conditional inference possible for regression models by means of the smoothed bootstrap.

There are obviously a lot more potential applications amenable to the collaboration between the bootstrap and the MCMC. Apart from the two aforementioned examples, a much less conventional partnership between the two methodologies may be found in the iterated bootstrap scheme, which has been proposed to improve upon the ordinary bootstrap by iterating the bootstrap idea. Practically speaking, the iterated bootstrap calls for nested levels of simulation of bootstrap samples from bootstrap samples. Interestingly, this process of nested sampling induces a Markov structure, in which the bootstrap sample drawn at the $(j+1)^{\text{th}}$ level depends stochastically on the bootstrap sample drawn at the j^{th} level.

The sequence of bootstrap samples at successive levels thus constitutes a Markov chain on a finite state space made up of all possible bootstrap samples obtainable from the parent sample. In this perspective, the iterated bootstrap can be regarded, quite literally, as an MCMC procedure per se, which now takes on a

very different interpretation. How the current research findings in the MCMC literature, by now very sizeable, can be adapted to the iterated bootstrap, which remains computationally embryonic despite its encouraging theoretical implication, is an intriguing question worth further investigation.

Hypothesis Testing by the Bootstrap?

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The bootstrap is concerned with the inference regarding a characteristic $\mu = \mu(F)$ of an unknown distribution F . This is achieved by the "plug-in" principle of replacing F by its empirical distribution F^* estimated from the data. The adequacy of $\mu^* = \mu(F^*)$ would depend on how close the estimate F^* is to F .

For the simple setting where data are independent and identically distributed, the empirical distribution F^* is easily obtained, and F^* converges to F as the sample size goes to infinity. However, there are many situations that the distribution of interest cannot be estimated by an empirical distribution, no matter how large is the

sample size. This occurs in the setting of hypothesis testing where F does not represent the distribution from which the experiment data are generated but rather the distribution under a null hypothesis. With few exceptions, e.g., a location-scale family, F cannot be estimated in general from the experimental data alone, and the use of an empirical distribution is not appropriate.

In a large open label trial to assess the safety of an antibiotic, it is of interest to test if the rate of serious adverse events is below 5%. The observed number of serious adverse events of the trial is zero. Based on the exact binomial distribution, the one-sided p -value against the null hypothesis that the rate of serious adverse events is 5% or greater is 0.0128. This example was brought to my attention from a practitioner complaining a bootstrap method that was used previously did not work this time because the bootstrap p -value is 1.

What could be the reason for such a huge discrepancy? Essentially, the bootstrap distribution of the test statistic, i.e., the total number of serious adverse events, takes only the single value zero, giving rise to the p -value 1. Apparently, it does not represent in any way the null hypothesis of interest, i.e., the rate of serious adverse events is 5% or greater. The use of binomial distribution gives the relevant null distribution by assuming that the

rate of serious adverse events is 5%. Thus, the exact binomial p -value 0.0128 is valid to use.

Most clinical trials involve randomizing patients to one of the several treatment groups, where the null hypothesis is that the treatments are equal with respect to an efficacy endpoint. Because there lacks a random sampling scheme, the validity of a trial lies in the randomization, rather than random sampling. Therefore, hypothesis testing based on a sampling theory, e.g., asymptotic tests, can be potentially misleading. The bootstrap relies on resampling from an empirical distribution, and is justified by the sampling theory. As in the one sample setting, the validity of a bootstrap test depends on the convergence of an empirical distribution to the null distribution of interest.

A colleague at the U.S., Food and Drug Administration (FDA) once told me that a sponsor used the bootstrap to calculate confidence interval for the odds-ratio arising from two binomial distributions. The sponsor reasoned that the bootstrap was used because of the small sample size, and therefore, a more

reliable estimate of the confidence interval could be obtained by using a large number of bootstrap samples. Apparently, the sponsor was neither aware of the existence of an exact confidence interval procedure for odds-ratio nor had the knowledge of the bootstrap itself.

For more general settings of randomized trials, there is usually a test statistic for which an asymptotic theory exists for approximate inference. For situations where the asymptotic result is in doubt, the exact null distribution of the test statistic can be obtained via re-randomization, which is usually referred to as the randomization test. For situations where an asymptotic test does not exist, the randomization test can still be used. Thus, under no circumstances a bootstrap test is ever needed.

In conclusion, it is hard to understand why the bootstrap is often perceived by many as a quick and easy way to perform statistical inference while avoiding the "wall of mathematics". Perhaps, it is important that the limitation of the bootstrap should be willingly acknowledged along side of its potential usefulness. This is certainly the case for hypothesis testing!

MCMC Versus BS: A Statistical Controversy?

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I was both flattered and surprised when I was invited to write something about the controversy regarding Markov chain Monte Carlo (MCMC) versus the bootstrap (BS). I was flattered, because I am neither a BS researcher nor a BS user. The closest encounter I had with BS was when I co-authored a paper that was rejected by a prestigious journal, and on the returned manuscript a referee wrote "This is BS" on a particular page. After tearing out much of my hair, I came to realize that the procedure described on that page was indeed a version of double bootstrap.

That incident made me realize that BS is indeed a powerful idea. The power of an idea can be empirically measured by the frequency of frustration experienced by reasonably trained researchers whose intricate inventions turn out to be simple applications, often after removing red herrings, of the idea. Interestingly, such incidents have occurred for a different BS---bridge sampling, a powerful MCMC method that originated in the physics literature and that Wing Wong and I have helped popularize among statisticians with the help of Statistica Sinica (Meng and Wong, 1996). There have been a number of recent sophisticated "inventions", all of which turned out to be simple applications of bridge sampling. (A free advertisement: come to my talk at the upcoming JSM in Atlanta, if you're interested in knowing more!)

I was surprised, because I had never realized that such a controversy exists. This, of course, largely reflects my ignorance, especially regarding the BS literature. However, in responding to my initial refusal, the editor assured me that it would be just as informative to readers if I were to write

about reasons for the controversy's nonexistence.

First, MCMC refers to a class of simulation methods, whereas BS is a recipe for constructing statistical inference procedures. To many users, the distinction between a computation procedure and an estimation method may appear to be merely an intra-disciplinary quarrel among mathematicians, but confusing computational efficiency with statistical efficiency can do much harm to both fields. For example, I have been quite troubled by several published and unpublished papers that blamed, perhaps unintentionally, a mode-finding algorithm for the (near) flatness of a likelihood! For statistical purposes, the "failure" of the algorithm in such cases is a plus, not a minus, for it helps reveal a much more fundamental inference problem. On the other hand, a Bayesian inference using an MCMC algorithm may appear to be inferior to a BS inference or some other inference, not because of the inferiority of the Bayesian approach, but rather because of the particular MCMC algorithm fails to converge quickly enough on a given computer. Knowing the source of failure can be important even for one who uses the method as a black box (e.g., increasing computing power won't help if the problem is with the Bayesian model). It is certainly much more so for those of us whose main job is to provide better statistical procedures. Putting MCMC and BS on equal footing worries me as it can contribute further to the confusion between computational deficiency and statistical deficiency, which are of different nature and require different efforts to overcome.

Second, even if we temporarily put MCMC and BS on equal footing, either by upgrading MCMC to an inferential class or downgrading BS to a computational recipe, it is still inappropriate to compare them as they are generally designed for different purposes. Treated as a computational method, BS samples from an empirical distribution, where an MCMC algorithm typically attempts to sample from an analytically specified distribution. On the other hand, if we equate an MCMC algorithm with the inferential distribution it intends to sample, then typically it represents a Bayesian inference, while BS is almost always about sampling inference. So if there is any controversy, it is just a version of the well understood (though not well resolved) debate between

Bayesian inference and frequentist analysis. To recast it as a controversy between MCMC and BS can only add unnecessary confusion to an age-old debate.

Third, not only do they not compete with each other, competition being a necessary condition for the two parties of a controversy, MCMC and BS actually share a very distinct feature that has made both of them so popular. That is, both of them are deceptively simple and general. The MCMC paradigm includes simple and general recipes such as Metropolis-Hastings algorithm, which in theory works for any complex distribution with almost any choice of proposal density. For BS, as long as one has enough computing power, one can always "bootstrap" and get an "answer", no matter how complicated the problem is. In fact, in many complicated problems BS might appear to be the only method available, or more precisely the only method an investigator would be willing to try. However, the more complicated a problem is, the greater the difficulty to check the validity of BS, either theoretically (typically out of question for a complex

problem) or empirically (there is no correct answer to compare to). The same is true for MCMC, because if a problem is too complex, then whatever one can get from the MCMC output usually defines the answer!

However, anyone whose interest lies in more than just getting an answer knows that there is no free lunch. There is simply no fully automated method for statistical inference, or more generally for scientific investigation. Whether a problem is "BSable" depends largely on the degree of "realizability" in the dataset under the given assumptions. For example, an identically and independently distributed (iid) sample of size n has the realizability n because there are n realizations of the assumed underlying distribution. BS is most (though not always) successful for iid problems. For some more complicated problems, it is possible to construct enough approximate realizations to make BS work, such as using "moving blocks" for a stationary time series (e.g., Kunsch 1989). It is, however, not always possible to do so. In fact, a recent algebraic study by McCullagh (2000) suggests that mathematically the data model/structures that are suitable for BS appear to be exceptions rather than rules.

The situation is not much better for MCMC, though the problem is a bit easier to deal with, at least in principle. The apparent generality and simplistic nature of Metropolis-Hastings algorithm, the Gibbs sampler, and various other MCMC algorithms have seduced a large number of users and researchers, especially in the Bayesian camp. There had been a large number of published studies based on MCMC output in recent statistical and related literature. As a mental exercise, one could ask what percentage of these MCMC outputs honestly represent the distribution they purport to simulate from? Note that this is a computational question, a question that in principle can be answered if we have infinite labor and computational resources to perform the check.

Projecting from my own experiences (yes, one sample sometimes is very informative), I'm willing to bet anyone that the percentage is far less than 95%! Although I can classify myself as an MCMC researcher and I'm generally quite careful about what I am using, I have had my share of the scary moments when an MCMC

algorithm, that I had so much confidence in both theoretically and empirically, produced simulations that were significantly different from the distribution I intended to sample from! A documented example is in the fourth row of Figure 13 of van Dyk and Meng (2001).

A critical problem for almost any MCMC algorithm is the mixing rate, which determines how long we need to run the algorithm before we can trust the simulation output. While there are many diagnosis tools (see, for example, those documented in Gilks, Richardson and Spiegelhalter 1995 and Cowles and Carlin 1996) and many more are being developed, there will never be a fully fool-proof and completely general and automated method. (Even the recent fascinating advance, perfect simulation or exact sampling (Propp and Wilson 1996), is not fool-proof despite its name, and it is certainly far from being automatic. See Murdoch and Meng (2001) for illustrations of the types of difficulties with using perfect simulation in routine Bayesian inference.) The only fool-proof check is to directly compare the simulation

output with the intended distribution, as done in van Dyk and Meng (2001) where we discovered the aforementioned problem. Of course, this is typically only possible for those of us who use "illustrative" examples to promote a particular algorithm.

Does this mean that we should discourage the use of BS or MCMC? The answer is obviously no as they are among the most powerful statistical and computational tools that we have. What should be discouraged is the "mindless" use, namely, applying BS or MCMC without understanding them and without at least considering the possibility that they may produce meaningless results for the problem at hand. However, this is much easier said than done! When one is starving (or perhaps just a bit gluttonous), it would be laughable to try to stop him from eating "Dong Po pork" because it may increase his cholesterol! With the rapid advance in technology and science, especially in information and financial technologies and biological and medical sciences, there is a huge craving for statistical analysis. Given the almost negligible number of trained statisticians available compared to the astronomical amount of data being produced literally every second, it is inevitable that the majority of data analysts out there lack minimum statistical training. Naturally, they will do whatever they can and use whatever they can find, and whenever a method produces something looks reasonable or meets their "expectation", they will move on---they have a job to do! When someone is trying to find enough food for his family, it would be utterly nonsense to talk him about the "visual, olfactory, and savory" requirements of the Chinese culinary art. However, within the available food he can find, it is still possible to consider what is more suitable for the children, for the elderly, and so forth. And it is certainly important to let him know that the delicious looking mushroom he found in his backyard might be the last thing he would ever taste! It is in a similar sense that I believe we should spend our efforts in terms of reducing the amount of abuse of popular methods such as BS and MCMC.

To conclude my discourse, I believe the core of our discussions shouldn't be on MCMC versus BS, but rather on their proper uses versus improper uses, as in the discussions led by Gelman and

Rubin (1992) for MCMC and in the discussions provoked by Young (1994) for BS. Of course, such discussions can and should take place for any statistical or computational method. But the deceptively simplistic and general nature of BS and MCMC makes it particularly important to have such discussions as often as possible. Resisting harmful temptation is an on-going effort, as most of us learn in life.

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Some Upcoming Statistical Meetings

Fifth ICSA International Conference, Hong Kong,
August 17 - August 19, 2001

Society for Clinical Trials
May 12-15, 2002, Hyatt Regency Crystal City, Arlington, Virginia

ICSA 2002 Applied Statistics Symposium, at Greater Philadelphia, Pennsylvania
June 6-8, 2002. Details see Meeting Announcement in this issue.

Event Title: Beyond The Formula
Event Dates: Thursday August 02 - Friday August 03 **City:** Rochester **State:** New York **Country:** USA

Event Title: NSF-CBMS Regional Research Conference in the Mathematical Sciences entitled
Event Dates: Monday August 13 - Friday August 17 **City:** Philadelphia **State:** Pennsylvania
Country: USA

Event Title: FDA/INDUSTRY WORKSHOP
Event Dates: Monday September 24 - Tuesday September 25 **City:** Bethesda **State:** Maryland
Country: USA

Event Title: Sixth Workshop on Case Studies in Bayesian Statistics
Event Dates: Friday September 28 - Saturday September 29 **City:** Pittsburgh **State:** Pennsylvania
Country: USA

Event Title: Statistics in Sports - Department of Mathematics and Statistics, Miami University
Event Dates: Friday September 28 - Saturday September 29 **City:** Oxford **State:** Ohio **Country:** USA

Event Title: Achieving Data Quality in a Statistical Agency : a Methodological Perspective
Event Dates: Tuesday October 16 - Friday October 19 **City:** Hull **State:** Quebec **Country:** CANADA

Event Title: 45th Annual Fall Technical Conference
Event Dates: Thursday October 18 - Friday October 19 **City:** Toronto **State:** Ontario **Country:** Canada

Event Title: Workshop on Effective Consulting & Collaborating
Event Dates: Friday October 19 - Friday October 19 **City:** Claremont **State:** California **Country:** USA

Event Title: Euroworkshop on Nonparametric Models
Event Dates: Thursday November 01 - Sunday November 04 **City:** Munich **State:** International
Country: Germany

Event Title: American Geophysical Union
Event Dates: Monday December 10 - Friday December 14 **City:** San Francisco **State:** California
Country: USA

***** See You at Atlanta *****

INTERNATIONAL CHINESE STATISTICAL ASSOCIATION EVENTS AT 2001 JOINT STATISTICAL MEETING

Caucus of Women in Statistics (ICSA cosponsored):

Time: 6:00 pm – 7:30 pm, Sunday, Aug. 5, 2001
Place: TBA

Board of Directors Meeting:

Time: 7:30 pm – 10:00 pm, Sunday, Aug. 5, 2001
Place: Carter Room, Hilton Hotel

Membership Meeting and Honor Award Ceremony:

Time: 6:00 pm – 7:00 pm, Wednesday, Aug. 8, 2001
Place: Grand Salon B Ballroom, Hilton Hotel

Year 2001 Dinner Banquet:

Time: 7:30 pm, Wednesday, Aug. 8, 2001
Place: GRAND BUFFET, 1825 Liddell Lane, Duluth, GA 30096
Transportation: Buses leaves Hilton Hotel at 6:40 pm and 7:20 pm
Buses leaves Grand Buffet at 10:00 pm and 11:00 pm

After Banquet Entertainment: Karaoke (Please bring your disc and call 301-827-3206 or e-mail tsong@cdcr.fda.gov Yi Tsong to register)

Cost: \$25/person (including transportation fee), \$10/child (age 4 to 10)

Please register and pick up ticket at the ICSA Booth at JSM2001. Please do that before Tuesday, Aug 7 for head counts.

Information and Banquet Registration:

Prof. Hubert Chen, U. of Georgia, 706-542-5232, e-mail: chen@stat.uga.edu

❖ ANNOUNCEMENT ❖

ICSA 2002 APPLIED STATISTICS SYMPOSIUM

JUNE 6-8, 2002

Doubletree Guest Suites at Plymouth Meeting in Greater Philadelphia

Theme: The Leading Edge of Statistics in Health Sciences

The program committee is proud to announce that the 12th annual ICSA symposium will be held in Greater Philadelphia and welcomes your participation.

DATE: June 6 to 8, 2002. Short courses on Thursday, June 6, and technical sessions on Friday, June 7 and Saturday Morning, June 8.

LOCATION: Doubletree Guest Suites at Plymouth Meeting in Greater Philadelphia. For local attractions, please visit the hotel website <http://www.doubletreeplymouth.com/>.

ACCOMMODATIONS: Special group rate \$119 per suite for one or two people at the Doubletree Guest Suites with reservation made no later than May 10, 2002. The number of rooms is limited on a first-come-first-served basis. Be sure to make your reservation early, as the hotel is extremely busy. It allows cancellation any time before 4 p.m. on the date of your arrival. To make a reservation, please call 610-834-8300 or 800-222-8733.

CALL FOR PAPERS: The program committee invites you to submit statistical papers to be considered for presentation at the symposium. Abstracts for contributed papers are due **February 28, 2002**. Please submit abstracts to:

Professor Francis Husan, Temple University, e-mail address: francish@vm.temple.edu

The abstract should include the name, affiliation, mailing address, telephone number, fax number, and e-mail address of the author, and should not exceed 200 words. A template for the abstract can be downloaded from the ICSA website at <http://www.icsa.org>

Please visit <http://www.icsa.org> for further information about the 2002 Symposium.

Program Committee:

Danny Chaing, Janssen Research Foundation, E-mail: dchaing@janus.jnj.com

Ivan Chan, Merck Research Lab., E-mail: ivan_chan@merck.com

George Chao, DuPont Pharmaceuticals Co., E-mail: george.c.chao@dupontpharma.com

Yusong Chen, AstraZeneca, E-mail: yusong.chen@astrazeneca.com

Alice Hsuan, Janssen Research Foundation, E-mail: ahsuan@janus.jnj.com

Francis Hsuan, Temple University, E-mail: francish@vm.temple.edu

Lee Huang, Aventis Pharma., E-mail: lee.huang@aventis.com

Frank Shen, Bristol-Myers Squibb Co., E-mail: frank.shen@bms.com

William Wei (Chair), Temple University, E-mail: v1000e@vm.temple.edu

**PRELIMINARY PROGRAM
ICSA 2002 APPLIED STATISTICS SYMPOSIUM**

- **Keynote Speakers (Friday, June 7, 2002):**
Dr. Bob O'Neill, Director, Office of Biostatistics, CDER, FDA
Dr. George Williams, Sr. VP, Biostatistics and Research Data Systems, Merck & Co., and VP of ASA
- **Plenary Session (Saturday, June 8, 2002):**
Adaptive Design and Analysis, by Gordon Lan
- **Banquet Speaker:** To be announced
- **Short Courses (Thursday, June 6, 2002):**

	Topic	Instructor
1	Design and Analysis of Confirmatory Clinical trials in Global Drug Development (ICH E9/E10)	Irving Hwang Harvard Clinical Research Institute
2	Adaptive Methods and Active Control Non-inferiority Designs in Clinical Trials	Sue-Jane Wang & James Hung FDA
3	Statistical Methods in Pharmacogenomics	Frank Shen & Kim Zerba Bristol-Myers Squibb
4	Advanced Log-linear Models for Categorical Data Analysis	Daniel Zelterman Yale University

- **Invited Sessions (June 7-8, 2002):**

1. Regulatory Issues on Planned Interim Analysis
2. Patient Reported Outcomes, Regulatory Perspective
3. Design and Analysis of Cancer Trials
4. Shortening the Drug Development Process
5. Equivalence/Non-inferiority Trials
6. Statistics Issues in Preclinical Research
7. Statistical Application in Genomic Research
8. Genes Expression
9. Data Mining in Early Drug Discovery
10. Computer-Assisted Trial Design
11. Non-parametric Methods in Longitudinal Analysis
12. Exact Conditional Test for the Analysis of Categorical Data
13. Multiple Imputations of Missing Values
14. Financial Econometrics

ICSA Student Awards and Travel Fellowships

The 12th Annual ICSA Applied Statistics Symposium will be held on June 6-8, 2002 at the Doubletree Guest Suites at Plymouth Meeting in Greater Philadelphia, PA. The Program Committee will again sponsor the Student Awards and Travel Fellowships. The main purpose of the award is to encourage student members of ICSA to participate and present their research work at this annual meeting.

Qualifications: The student must be an ICSA member (or join at the time of manuscript submission), a degree candidate in any term during 2002 at an accredited institute and be able to register and present the work at the 2002 symposium.

Manuscripts should be prepared double spaced using Biometrics or JASA guidelines for authors. They must be no more than 20 pages in length exclusive of tables and figures. Use one-inch margins and no smaller than 12 point type. The work must be that of the student and be relevant to applications in a variety of fields including biomedicine, business, etc. The manuscript may be co-authored with a faculty adviser and/or a small number of collaborators. However, the student must be the first author.

Review and Selection Process: Three review members of the Award Committee, appointed by the Chair of the Committee, will receive blinded copies of the submitted manuscripts from the Committee Chair and review them based on the following criteria:

- The manuscript should be well motivated by an application relevant to the specific field(s).
- The methodology developed should be applicable to the motivating problem.
- Inclusion of an application of the proposed methodology to a particular study will be favorably considered.
- Clarity of presentation in writing will be considered as well.

Up to 3 travel award winners will be selected by the Awards Committee chaired by Prof. Weichung J. Shih. All winners will each receive a certificate, \$400, and tuition for one short course of their choice. The winners will be notified by April 15, 2002.

Submission of Manuscripts: Manuscripts should be received and postmarked no later than **February 28, 2002**. The submission should include

- A cover letter
- **One complete title page with author(s), institutional affiliation, mailing address, phone/fax numbers and e-mail address**
- **Five copies of the manuscripts stating the title only, and neither authors nor affiliation, on the first page.**
- Two copies of the ICSA abstract form
- Two copies of the ICSA membership application for non-members

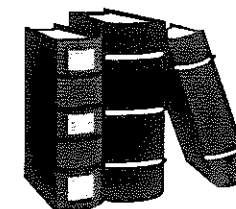
Abstract and membership forms can be downloaded from <http://www.icsa.org>

All materials should be mailed to:

**Professor Weichung J. Shih
Division of Biometrics
UMDNJ-School of Public Health
335 George Street, Suite 2200
Liberty Plaza
New Brunswick, NJ 08901-2688**

ICSA BOOK & JOURNAL DONATION COMMITTEE

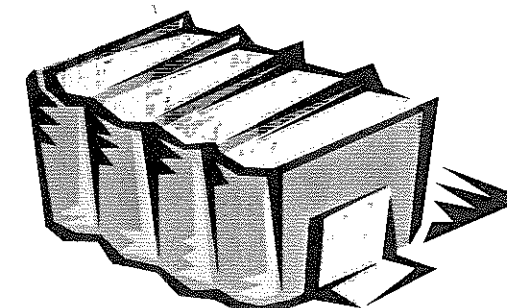
Requests your participation in donating your statistical books and journals, to the university libraries in the developing countries.



Books must be in good condition; journals must be in complete volumes. ICSA will reimburse the mailing cost; you supply books, boxes, and time. Donation of books and journals will be issued a donation receipt from ICSA. It is preferred to have at least 10 books or several years of journal in one shipment.

During last year, we sent 54 books and 9 years (volume 1-9) of *Statistica Sinica* to 5 different institutions in China. During this year, we sent many volumes (total 228 volume-years) of *Biometrics*, *JASA*, *Technometrics*, *Statistical Science*, *Annals of Mathematical Statistics*, *Annals of Probability*, *Annals of Statistics*, *International Statistical Review*, *American Statistician*, *Controlled Clinical Trials* to 25 different institutions in China.

If you are interested in helping the libraries in need, please contact Professor Tar Timothy Chen (陳達) at either tchen001@umaryland.edu or t-chen-10@alumni.uchicago.edu. Regular mailing address –Dr. T. Timothy Chen, Professor and Head of Biostatistics Section, University of Maryland Greenebaum Cancer Center, 22 South Greene Street, Room N9E28, Baltimore, Maryland 21201. You need to send a list of books with information about authors, book title, year of publication, and the name of publisher; or a list of journals with volume number and year of publication. After receiving your list, a detailed instruction about how and where to mail them to will be provided.



If your library would like to receive donated books and journals, please contact Professor Chen to indicate your interest. This service is on the first come, first serve basis, so advance contact is necessary. You can spread the news about this service to your statistician friends in the developing countries.

REGIONAL ACTIVITY

Singapore

By Young K Truong

DEPARTMENT OF STATISTICS AND APPLIED PROBABILITY

The Department is currently developing an undergraduate program, a Masters program and a PhD program in biostatistics in order to support Singapore's efforts in the Life Sciences. The Department aims to start off the biostatistics undergraduate program first in the academic year 2002/2003 to synchronize with the launching of the Life Science Program. Even though the biostatistics program is not officially launched yet, the Department is already teaching a number of biostatistics courses in the Faculty of Medicine.

Visitors to the Department (February 2001 - June 2001)

1. Dr. Dennis Lin, The Pennsylvania State University
2. Prof. Ramesh C. Gupta, Dept. of Mathematics and Statistics, University of Maine
3. Prof. Pushpa L. Gupta, Dept. of Mathematics and Statistics, University of Maine
4. Prof. Myunghee Cho Paik, Division of Biostatistics, Columbia University
5. Prof. Frank Critchley, Dept of Statistics, Open University, UK
6. Prof. Vinsensius Berlian Vega S N, Dept of Computer Science, National University of Singapore
7. Prof. Fan Jianqing, Dept of Statistics, Hong Kong Chinese University
8. Prof. Shi Ningzhong, North-East Normal University, China
9. Prof. S Paul, University of Windsor, Canada

10. Dr Max Porter, Manager-Statistics PPT-A (Process, Product Technology - Actives), GMS (Global Manufacturing and Supply), GlaxoSmithKline
11. Prof J. S. Marron, University of Carolina
12. Prof Roel of Helmers, Center for Mathematics and Computer Science, Amsterdam, The Netherlands
13. Dr Konstantin Borovkov, University of Melbourne
14. Prof. R. A. Maller, Dept of Accounting and Finance, University of Western Australia

Accolades

The Department is pleased to announce that Prof Bai Zhidong recently received the National University of Singapore (NUS)-Outstanding University Researcher Award 2000.

Taiwan

By C. Andy Tsao

網際網路 (World Wide Web) 的普及使得資訊傳播更為便利。然而，中文網頁資料相對較少，搜索也不很容易。介紹幾個台灣新建的機率統計教學相關網站供讀者參考

1. 機率統計學習館 國立高雄大學。
<http://probstat.nuk.edu.tw/>
通俗機率統計介紹、主題網路課程 (powerpoint)、網路資源等
2. 機率網路學習館 (國立中山大學)。
http://www.math.nsysu.edu.tw/NSC_prob/
機率簡史、機率統計名人錄、機率統計辭典等 (建構中)
3. 計網路學習館 (國立成功大學)。
<http://statonline.dynup.net/> 統計圖表、抽樣，統計名詞解釋及範例練習等
這三個網站都是正進行中的計畫，可預期將會更加完備。請拭目以待！

REGIONAL ACTIVITY

German

By Hua Liang

The Compstat 2002 will be organized by the Institute for Statistics and Econometrics (ISE) of the Humboldt-University zu Berlin and will take place from August 24th to 28th 2002.

Speakers:

Trevor Hastie from Stanford U. (keynote speaker)

Chun-houh Chen from Sinica Univ.

Taiwan

J. S. Marron

Jürgen Symanzik

Koichi Yoshioka

Genshiro Kitagawa

Thomas Yee

Mariano Valderrama "Forecasting PC-Arima Models for Functional Data"

Topics

Computational Finance

Statistics of E-commerce

Mining very large statistical databases

Complex Data structures in the

Biosciences

Net based Statistics

For further information, please visit the website: <http://www.compstat2002.de>

Conference for Highdimensional Nonlinear Statistical Modeling, Wulkow September 15-19, 2001.

Please visit the conference home page: sfb.wiwi.hu-berlin.de/HNSM/

UK

By YangXin Huang

Howell Tong* has been awarded a 2000 National Natural Science Prize (Class II) in the mathematics and mechanics group) Beijing, China, for his important research in nonlinear time series analysis.

*H. Tong is a professor in the Department of Statistics at London School of Economics and Political Science.

There will be a new journal 'Law, Probability and Risk: a journal of reasoning under uncertainty (OUP)', its first issue is scheduled to appear at the beginning of 2002. For further information, please visit the website: <http://www3.oup.co.uk/lawprj/>.

For details about RSS (Royal Statistics Society) 2001, please visit the website: <http://www.rss2001.glasgow.ac.uk/>.



STATISTICS' DELIGHT

統計趣聞

統計謎語

- 如果統計是從有限的資料、線索尋找答案的一門學問，則謎語也可以看做是統計問題。

根據以下的提示，射一統計相關語。

1. 舉世皆濁我獨清，眾人皆醉我獨醒。
(語出屈原)
2. 一尺之棰，日取其半，永世不竭。
(語出宋文，中國最早的 LIMIT 觀念)
3. 統計界的帳房師爺。
4. 統計界的吝嗇鬼。
5. 好險!!
6. 人海戰術，前仆後繼。
7. 無中生有
8. 盲人騎瞎馬，夜半臨深池。
9. 一元三角 = 四元三角 - 三元
(以閩南語發音)

答案

1. Outlier
2. Recursive Partitioning
3. 藍光國: He defined the α -spending function
4. O'Brien & Fleming: They hardly spend their α -value
5. $p\text{-value} = 0.049$
6. Sample Size Adjustment
7. Missing Data Imputation
8. Double Blind
9. $\cos 3\theta = 4\cos^3\theta - 3\cos\theta$

Unknown Source

☺☺☺

Variation – what is between two statisticians

Sequential Analysis – A means of stopping a trial before it becomes useful.

☺☺☺

♥ ♥ ♥ All Because
You Are A Statistician

A man is flying in a hot air balloon and realizes he is lost. He reduces height and spots a man down below. He lowers the balloon further and shouts: "Excuse me, can you tell me where I am?"

The man below says: "Yes, you're in a hot air balloon, hovering 30 feet above this field plus minus two standard deviations."
"You must be a statistician," says the balloonist.

"I am", replies the man. "How did you know?"

"Well", says the balloonist, "everything you have told me is technically correct, but it's not much use to anyone."

The man below says, "You must be in management."

"I am", replies the balloonist, "but how did you know?"

"Well", says the man, "you don't have much idea about where you are, or where you're going, but you expect me to be able to help. You are in the same position you were before we met, but now it's all my fault because I did not give you a solution."

FREE joke

sent to you by a friend through
Amused.com <http://www.amused.com/>

10. They have a lot of data but are still clueless.

9. A better model is always just around the corner.

8. They look nice and shiny until you bring them home.

7. It is always necessary to have a backup.

6. They'll do whatever you say if you push the right buttons.

5. The best part of having one is the games you can play.

4. In order to get their attention, you have to turn them on.

3. The lights are on but nobody's home.

2. Big power surges knock them out for the night.

1. Size does matter.

From the Desk of the Editorial Working Committee

ICSA WELCOMES NEW MEMBERS!!!

The following is a partial list of year 2001 new members

Zhang, Yuanjie Michael	Chen, John Tuhao
Chi-Burris, Katherine S.	Li, Zhe
Zhong, Jinglin	Ku, Wen-yao
Yang, Xhen	Liang, Hua
Wang, Yonghua	Dai, Yuqing
Teng, Chi-Hse	Rathouz, Paul J.
Chen, Huann-Sheng	Deng, Yun-fan
Yan, Xu	Li, Gang
Luo, Zhen	Zhen, Xiaotong
Thompson, Peter Michael	Bassett, Gib
Qu, Xianggui	Dubin, Joel A.
Wang, Jing	Huang Yufei
Zhu, Zhengyuan	Ding, Ye
Tan, Zhiqiang	Qin, Zhaohui

MEMBERS' ACTIVITIES

Danyu Lin has moved from University of Washington Seattle to University of North Carolina Chapel Hill as Dennis Gillings Distinguished Professor.

Xiao-Li Meng has moved from University of Chicago to Harvard University as a full professor.

Professor George Tiao is the winner of the 2001 Shiskin's Award.

Jun Liu has moved from Stanford University to Harvard University as a full professor.

Wing Wong has moved from UCLA to Harvard University as a full professor.

Zhiling Ying has moved from Rutgers University to Columbia University as a full professor.

International Chinese Statistical Association Profit & Loss January through June 2001

	<u>Jan - Jun 01</u>
Ordinary Income/Expense	
Income	
Membership Dues	9,070.00
Total Income	<u>9,070.00</u>
Expense	
Computer Hardware/Software	
Laptop PC	1,798.78
Other Hardware/Software	812.00
Total Computer Hardware/Software	<u>2,610.78</u>
Contributions	
ASA	500.00
Total Contributions	<u>500.00</u>
ICSA at ASA meeting	
Banquet	200.00
Total ICSA at ASA meeting	<u>200.00</u>
Licenses and Permits	20.00
Postage and Delivery	
Book/Journal Donation	1,288.66
Bulletin	1,908.80
Other	545.55
Postage and Delivery - Other	56.75
Total Postage and Delivery	<u>3,799.76</u>
Printing and Reproduction	
Jan. Bulletin	3,921.00
Total Printing and Reproduction	<u>3,921.00</u>
Supplies	
Office	589.50
Other	467.30
Total Supplies	<u>1,056.80</u>
Travel & Ent	
Travel	331.84
Total Travel & Ent	<u>331.84</u>
Total Expense	<u>12,440.18</u>
Net Ordinary Income	-3,370.18

Please make checks payable to I.C.S.A.
Mail this form and a check to: I.C.S.A.

c/o Yi Tsong, Ph.D.
13215 lazy Glen Lane
Herndon, VA 22071
U.S.A.
(tsong@fda.cder.gov)



INTERNATIONAL CHINESE STATISTICAL ASSOCIATION

Information Sheet (2001)

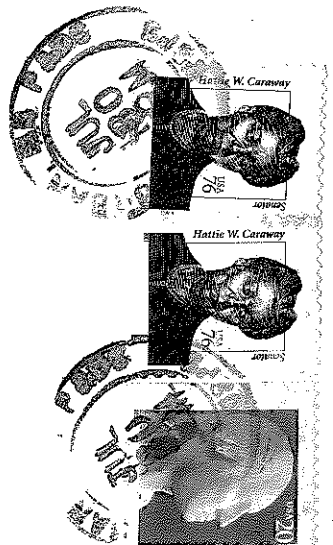
Date _____

RECENT NEWS: (publications, research or teaching activities, job transfer, awards or honors received, etc.)

SUGGESTIONS :

I. C. S. A.
13215 Lazy Glen Lane
Herndon, VA 22071
U.S.A.

JIA-YEONG TSAY (P)
Organon Inc., 375 Mt. Pleasant Avenue
WEST ORANGE NJ 07052
United States Minor Outlying Islands



FILED 10/11/76