THE ISBA BULLETIN

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ISBA ELECTIONS

by John Geweke
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The nomination and election procedures are specified in the ISBA constitution and bylaws. Consistent with these procedures, after consultation with the Board, ISBA President Phil Dawid appointed a nominating committee. The chair, ex-officio, was John Geweke, Past-President of ISBA. The other members of the Committee were Caitlin Buck, Merlise Clyde, Petros Dellaportas, Pilar Iglesias, Peter Mueller, Donna Pauler, and Luis Pericchi.

This year, as is the case every year, the membership of ISBA will elect a President-Elect. The person elected this year will serve in that position in 2001, as President in 2002, and as Past President in 2003. The other two elected ISBA officers are the Treasurer and the Executive Secretary, each of whom serves a three-year term. For 2001-2003, the office of Executive Secretary must be filled. Every year, four of the twelve seats on the ISBA Board of Directors become vacant and must be filled. Board members serve three-year terms.

The Constitution provides that the Nominating Committee nominate at least two ISBA members for each vacant position. Consistent with this duty, the Committee has nominated two members for President-Elect, two members for Executive Secretary, and eight members for the Board of Directors. The names of the nominees, and a short statement from each nominee, appear elsewhere in this issue of the Bulletin. The bylaws also provide for nomination by petition of the membership. Petitions require 30 names and must be submitted to the Executive Secretary by October 1.

For the first time this year, ISBA members will have the opportunity to vote on line. Each member who has provided an email address to the Executive Secretary will receive an email message containing (1) instructions for on line voting, including a password, and (2) the text of a paper ballot that can be printed out, filled in, and mailed to the Executive Secretary. ISBA members who have not provided email addresses will receive a paper ballot by regular mail. The ISBA Treasurer, Valen Johnson, keeps the official record of conventional and electronic mail addresses. Changes in either kind of address can be made by email to isba@stat.duke.edu, or by regular mail to Professor Valen Johnson, ISBA Treasurer, Institute of Statistics and Decision Sciences, 223 Old Chem Building, Box 90251, Duke University, Durham, NC 27708-0251, USA.

Ballots must be received by December 15, 2000, to be counted.

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A WORD OF THANKS

by Philip Dawid
ISBA President
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I am sure that all of you who were at the ISBA 2000 meeting in Crete would wish to join me in expressing the Society's fullest appreciation of the generosity of the following organisations, whose financial contributions helped to make the meeting possible:

- Eurostat (co-sponsor)
- National Science Foundation
- ASA Section on Bayesian Statistical Science
- The Professor Leonard J. Savage Memorial Fund, Inc.

A WORD FROM THE EDITOR

by Fabrizio Ruggeri
ISBA Bulletin Editor
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As mentioned in the previous issue of the Bulletin, we are gradually changing the Editorial Board of the Bulletin. The first change will take place with the next issue when Dalene Stangl, Duke University, will replace Jim Albert as Associate Editor of the Bayesian Teaching section. I wish to thank Jim for his efforts in running the section: it was not an easy task!

I am glad to report that a new ISBA chapter has been recently created in Brazil; it joins the existing ones (Chile, India and South Africa). The decision was unanimously taken by 13 Brazilian Bayesians who met during Sinape (Brazilian National Symposium of Probability and Statistics), last July in Caxambu, Brazil. Other Bayesians agreed with the creation of the Chapter. The Chapter has decided to host the "First Latin-American Bayesian Meeting", very probably in January 2002. Please contact Sergio Wechsler at sw@ime.usp.br for more information on the Chapter.

INFORMATION ON CANDIDATES

President Elect

David Draper

➤ *Affiliation and Status*: Currently I am Full Professor of Statistics and Head of the Statistics Group at the University of Bath, UK. From January 2001 I will be Full Professor and founding Chair of a new Department of Applied Mathematics and Statistics at the University of California, Santa Cruz, where I intend to help create a fully-Bayesian statistics group with emphasis on real-world scientific problem-solving.

➤ *Web Page and e-mail Address*: www.bath.ac.uk/∼masdd/; d.draper@maths.bath.ac.uk

➤ *Areas of Interest*: Bayesian parametric and nonparametric inference and prediction, model uncertainty, hierarchical models, Markov chain Monte Carlo methods, foundations of applied statistics, quality assessment in health and education.

➤ *Most Important Journals or Books*: Journal of the Royal Statistical Society, Series B and A; Journal of the American Statistical Association; Statistical Science; Statistics in Medicine; New England Journal of Medicine; Journal of the American Medical Association; Journal of Educational and Behavioral Statistics; Bayesian Statistics 6; and a book on Bayesian hierarchical modeling I will publish, probably with Springer-Verlag, in 2001.

➤ *Honors*: Two Read Papers before the Royal Statistical Society; Excellence in Continuing Education Award from the American Statistical Association for a short course on Bayesian hierarchical modeling at the joint statistical meetings, 1997; Quantrell Award for excellence in undergraduate teaching, University of Chicago, 1984.

➤ *Previous Service to ISBA*: Nominations Committee, 1998.

➤ *Services to other Societies*: Associate Editor, Journal of the American Statistical Association (both Theory and Methods and Applications and Case Studies) and Journal of the Royal Statistical Society, Series B; American Statistical Association award committee, W. J. Youden Prize; Editorial Board, ASA-SIAM Series on Statistics and Applied Probability.

My view of ISBA

The success of the ISBA 2000 World Meeting in Crete in May—with 127 invited talks, 109 posters, and attendance by at least 100 people who were completely or relatively new to Bayes—demonstrates that the Society is growing both in numbers and in respect throughout the statistical world. With the development of Markov chain Monte Carlo methods over the past decade, Bayesians can finally compute in models of realistic complexity, and this has led to an outpouring of collaborations with colleagues in other disciplines, in which Bayesian methods have helped to find satisfying scientific and decision-making solutions. The best way to win new friends is to show them that Bayes can help them do things they now find difficult or impossible, and we can expect our successes in this regard to continue in the decade to come.
Significant challenges remain, of course; three that seem high on the list are as follows.

➤ Mike West pointed out at the ISBA General Meeting in Crete that, as much as our numbers have grown in the past several years, we are still well behind the ASA Section on Bayesian Statistical Science. I would try to help ISBA make a big push forward in *membership*, principally by means of vigorous electronic outreach. The annual joint statistical meetings in America are regularly attended by more than 5,000 people, only hundreds of whom are at present members of ISBA. It is our job to increase the understanding of the rest of those people that Bayes can help them do their jobs better and that membership in ISBA is a good gateway to Bayes. Student outreach is particularly important—these are potential Bayesian colleagues for life—as is strengthening our ties with scientific societies in substantive disciplines (such as medicine and the environmental sciences) where Bayes is already a presence or (more vitally) likely to be helpful but not yet established.

➤ Another form of outreach, more slow-moving but of even greater potential impact, is to re-examine the *teaching* of statistics in universities and primary/secondary schools with respect to Bayesian ideas (in the schools) and methods (at university). Developing materials to teach probability and statistics early and often to students from the ages of 6 to 26 has not traditionally been a particularly glamorous way for statisticians to spend their time. This needs to change if we are to help more people to see the value of our subject in their lives and careers, and there is no reason why subjective probability ideas cannot be introduced alongside frequency notions from an early age. As President Elect I would work to establish a Teaching Committee to identify the current state of play in statistics teaching in schools and universities and take some steps toward developing new Bayesian teaching materials.

➤ In the next several years ISBA will have to decide on whether to publish a Bayesian *journal*. This is a potentially contentious issue, and one where both sides of the debate have clear points of merit: the principal advantage is having something tangible to offer as part of ISBA membership; the main disadvantage is possible marginalization (if such a journal succeeded in drawing the best Bayesian papers out of the best journals, then how are we to demonstrate by example to non-Bayesians how much our methods can offer them?). It is not the job of the President Elect to decide issues like this (thankfully); for what it's worth, with the information I have at present, the disadvantages of creating a new hardcopy Bayesian journal appear to me to outweigh the advantages (but I look forward to hearing, and helping to stimulate, both sides of the discussion). If we decide not to go forward with a hardcopy journal it will be good to supplement the current list of membership benefits with other features, perhaps arrived at after study of how other leading journal-less societies manage their affairs.
If chosen as President Elect I would be honored to have a chance to help in addressing these challenges and the other opportunities that await in ISBA's near future. It is a good moment to be a Bayesian.

President Elect

Rob Kass

➤ *Affiliation*: Carnegie Mellon University.

➤ *Current Status*: Professor and Department Head, Department of Statistics, and Faculty Member, Center for the Neural Basis of Cognition.

➤ *Web Page and e-mail Address*: `www.stat.cmu.edu/~kass/`; `kass@stat.cmu.edu`

➤ *Areas of Interest*: Cognitive neuroscience; all aspects of Bayesian inference.

➤ *Most Important Journals and Books*: Annals of Statistics, Biometrics, Biometrika, Journal of the American Statistical Association, Journal of Neurophysiology, Journal of the Royal Statistical Society, Neural Computation, Statistics in Medicine; *Case Studies in Bayesian Statistics*, vols I-V, with Constantine Gatsonis and others; *Geometrical Foundations of Asymptotic Inference*, with Paul Vos.

➤ *Honors*: Elected Fellow of the American Statistical Association and the Institute of Mathematical Statistics.

➤ *Previous Service to ISBA*: First Vice-President, 1994-1996; Board of Directors, 1998-2000.

➤ *Services to other Societies*: American Statistical Association: Associate Editor of JASA, 1986-1992, Chair-Elect, Chair, Past-Chair, Section on Bayesian Statistical Science, 1996-1998; Institute of Mathematical Statistics: Program Secretary, 1990-1991, Executive Editor of Statistical Science, 1992-1994, Chair, Publications Committee, 1996-1997, Council, 1999-2002.

My view of ISBA

When, in a recent lecture, a political scientist described the sharp decline in group activities among U.S. citizens over the past 25 years (I assume similar trends would be evident in many other countries), he intentionally (and thoughtfully) grouped together organizations such as the Elks, a patriotic social club, with those such as the American Political Science Association, citing their steady drop in membership. While this decrease in civic involvement provides a context for reported difficulties in recruiting and retaining members of various professional societies, the speaker's broad categorization served as a reminder that professional societies like ISBA are also, in fundamental ways, social organizations. Meetings and the Bulletin are central and extremely important activities of ISBA, helping encourage in us a sense of common purpose and spirit; we are often envigorated, even inspired by the accomplishments of our international colleagues. But how do we extend these activities in our increasingly electronic and individualized environment? And how can we offer our services to a wider group? In my new-found role as a rare statistician in the large and growing field of brain sciences I have appreciated the value of electronic information, including journals, to those trying to get involved in another area, and I have also recognized the large numbers of skilled data analysts, often serious users of Bayes' Theorem, in other domains. I would like to see ISBA increase its electronic presence, and am currently serving on two committees (web and publication committees) that should help begin the process. We have often talked about reaching out to people in other disciplines. We must also be attentive to the needs of the most junior members of our society. In both cases we should offer support services (tutorials and special discussion sessions) while also making sure to invite such individuals to give talks at our meetings, and we should publish their papers. That is, while we offer them our knowledge, we should show that we want to learn from them, too. Bayesian methods have caught on in a big way. We are at an important point when we should do all we can to foster interaction within, and expand, our intellectual world.

Executive Secretary

Cindy Christiansen

Cindy L. Christiansen (Ph.D. 92, University of Texas at Austin) is Associate Professor of Health Services, Boston University School of Public Health, and Senior Statistician of Veterans Affairs Health Services Research and Development, Center for Health Quality, Outcomes and Economic Research in Bedford Massachusetts (USA).
Her research interests include the development and application of hierarchical, Bayesian, and prediction models for health care and health policy applications. Her work with Bayesian models and methods has appeared in the Journal of the American Statistical Association, the Journal of the National Cancer Institute, the American Journal of Public Health, the Annals of Internal Medicine, and other statistical and health-related journals and books.
She was on the ISBA nominating committee in 1997, on the program committee for the 1995 ISBA meeting in Oaxaca Mexico, and was a committee member of ISBA's Council of Sciences in 1995.

Steven MacEachern

Steven MacEachern is an Associate Professor in the Department of Statistics at The Ohio State University (`www.stat.ohio-state.edu/~snm`). Steve's main areas of interest are nonparametric Bayesian methods, computational methods, Bayesian data analysis, and dynamical systems and chaos. His publications have appeared, among other places, in Biometrika, the Journal of Computational and Graphical Statistics, the American Mathematical Monthly, the Scandinavian Journal of Statistics, the Canadian Journal of Statistics, and the Journal of Statistical Planning and Inference. He has served as Chapter Representative and President of the Columbus chapter of the American Statistical Association.

Board Members

Marilena Barbieri

Marilena Barbieri (Ph.D. '92, Università di Roma) is Associate Professor of Statistics, Università "La Sapienza", Rome, Italy. Her main areas of interest are Bayesian model selection; time series analysis; Bayesian computation. She has published papers on several journals, including Biometrika, IEEE Transactions on Signal Processing, Journal of the Italian Statistical Society. She has written an "Introduction to MCMC methods" for the Monograph Series of the Italian Statistical Society in 1996. She is a Corresponding Editor of the ISBA Bulletin.

Nicky Best

Nicky Best (PhD 1994, Cambridge University) is a lecturer in biostatistics at the Department of Epidemiology and Public Health at Imperial College, UK. Some of her current research interests include spatial modelling of environmental and epidemiological data and other applications of Bayesian hierarchical models in medical research, and she is part of the project team developing and promoting the WinBUGS Bayesian software package. She has published in a variety of journals including the Journal of the American Statistical Association, Journal of the Royal Statistical Societ (Series A, Series B and Series C), and Statistics in Medicine, and has co-edited a book on "Spatial Epidemiology: Methods and Applications", published by OUP in August 2000. She is currently on the committee of the Environmental Statistics Study Group of the Royal Statistical Society, and will take over as joint editor of the Journal of the Royal Statistical Society (Series A) in January 2001.

Eduardo Gutierrez-Peña

Eduardo Gutiérrez-Peña is Researcher at the Department of Probability and Statistics, IIMAS, National University of Mexico. His main areas of interest are: (a) the study of the properties of Bayesian conjugate families for exponential models, and (b) the problem of model selection. He has published work in several journals, including the Journal of the American Statistical Association, Biometrika, Scandinavian Journal of Statistics, Journal of Statistical Planning and Inference, and Test.
(`www.dpye.iimas.unam.mx/eduardo`)

Robert Kohn

Robert received his PhD from the Australian National University and is currently a Professor at the Australian Graduate School of Management, which is a joint school of the University of New South Wales and Sydney University. He currently holds the positions of PhD director and Associate Dean, Research. His main contributions over the last 10 years have been in the development of Bayesian methods in time series analysis and nonparametric regression. He is currently working on applications of these methods in Marketing and Finance. Robert has published extensively in the Statistics literature. For a list of Robert's publications see his web site at `www.agsm.edu.au/~robertk/`. Robert is currently Associate Editor of JASA and the Australian and New Zealand Journal of Statistics.

Tony O'Hagan

I am a Professor of Statistics at the University of Sheffield, UK. I have been actively researching in the methodology of Bayesian Statistics for over 25 years, having been a PhD student of Dennis Lindley in the early 1970s. Since the late 1980s I have also been increasingly involved in developing applications of Bayesian methods. The papers on my web site (`www.shef.ac.uk/~st1ao`) show the wide range of topics that I have been working on.
I have taken an interest in ISBA since it was first proposed, and as it has grown and matured I have been pleased to take a more active role. I am currently Vice Program Chair.

Raquel Prado

Raquel Prado (Ph.D.'98, ISDS, Duke University) is Assistant Professor at Departamento de Cómputo Científico y Estadística and Centro de Estadística y Software Matemático (CESMa), Universidad Simón Bolívar, Caracas, Venezuela. Her main research areas of interest include dynamic models, prior distributions for multiple time series and non-stationary time series modelling, statistical analysis of biomedical signals, wavelets and applied Bayesian statistics. Her papers can be found in Journal of the American Statistical Association, Journal of the Royal Statistical Society Series C, Clinical Neurophysiology and Bayesian Statistics 6. She is currently the Associate Editor for the Section on Bayesian history of the ISBA Bulletin. (`www.cesma.usb.ve/~raquel`)

Herman van Dijk

Herman van Dijk is professor of econometrics and director of the Econometric Institute at Erasmus University. His research interests are Bayesian inference and Decision-making in econometrics; Development of computational techniques using Monte Carlo methods, in particular importance sampling and MCMC; Stochastic trends, cycles and volatilities in (economic) time series; Neural networks; and Income distribution analysis. He was Fulbright Scholar at Harvard University and Visiting professor at Duke University, Cornell University; Stockholm School of Economics; University of New South Wales; CORE, Catholic University of Louvain-la-Neuve. He has published in Econometrica, The Bayesian Statistics Volumes of the Valencia Meetings; Journal of Econometrics; Econometric Theory; The Statistician; Journal of Applied Econometrics; Econometric Reviews, Scandinavian Journal of Economics. For more details see: `www.few.eur.nl/few/research/ei/`

Marina Vannucci

Marina Vannucci (Ph.D. 1996, University of Florence, Italy) is Assistant Professor of Statistics at Texas A&M University. Her current main research interests are wavelet methods, Bayesian variable selection, statistical computing and molecular biology. Recent publications have appeared in Biometrika, Journal of the Royal Statistical Society, Series B, and Bioinformatics. Further information can be found at `http://stat.tamu.edu/people/faculty/mvannucci.html/`.

SIMON WILSON

by Michael Wiper
mwiper@est-econ.uc3m.es

Simon Wilson is a lecturer in statistics in Trinity College Dublin. He studied for his doctorate under Nozer Singpurwalla and has continued to work on the use of Bayesian methods in reliability. He has recently had his first book on software reliability published, jointly authored with his ex PhD supervisor.
We e–mailed Simon a number of questions about his career and the Bayesian world in general. Here are his responses.

`1. Why did you decide to become a statistician?`

I had always enjoyed probability and statistics, but had never considered graduate study. On finishing my first degree, I was going to become an actuary. Thankfully, out of the blue I got offered a scholarship to study for a Ph.D., in stochastic models for operations research, at George Washington University in Washington DC. I decided to take it.

`And why Bayesian?`

My supervisor at GW was Nozer Singpurwalla. I think that that is all I need to say!

`2. Statistically speaking, who have had the most important influences on you?`

Nozer has of course influenced me greatly, mainly through showing me that the Bayesian paradigm is the way to think about problems involving uncertainty. John Haslett, the professor of statistics here at Trinity, has also given me invaluable support over the years.
De Finetti's book was also important when I first started to learn about Bayesian ideas. For me, he laid out clearly how one should think about uncertainty.

`3. What are the highlights of your work so far?`

I am quite proud of the book "Statistical Methods in Software Engineering" (Springer, New York, 1999) that I co-authored with Nozer and which was published last year. I think that we managed to convey the message that Bayesian methods are relevant and practical for a whole range of statistical problems in software engineering. I am building up a body of work on statistical methods in fatigue and fracture of materials. This is an area that greatly interests me and where I think there is a lot of good probability modelling and statistics to be done.

`4. And your plans for the future?`

My research has always been application driven, something that I plan to continue. I enjoy taking problems from scientists and engineers and seeing how contemporary statistical methods can be applied. Part of the fun is never knowing which branch of science your next problem is coming from. Also, I have found myself becoming increasingly involved in spatial statistics of late.

`5. You have done a lot of work with engineers etc. Are there any special problems in getting Bayesian ideas over to them? Do you find you have to use different methods with practitioners from different fields?`

Many mechanical engineers have a rather sketchy knowledge of statistical methods, and have not heard of Bayesian statistics. They expect me to give them a point estimate and maybe a confidence interval or do a t-test, and can be skeptical when I give them something completely different! A useful analogy between Bayes theorem and solving deterministic systems of equations, with which engineers work all the time, is to think of the likelihood as the solution to the equations (observable given parameters) and the posterior as the functional inverse of that (parameters given observables). At the end of the day, engineers are very pragmatic and if I can show them that estimates and predictions are reasonable, they often accept them and trust to you that they are the result of a legitimate statistical procedure. Later on you can start to talk about where these results have come from.
I have worked with some electrical engineers on signal processing, and they have used Bayesian methods. They tend to think of things in a different way from most Bayesian statisticians, thinking less about the philosophy and more about the usefulness of the approach.

6. Maybe you could tell us a bit about the Bayesian statistical scene in Ireland?

I would describe it as small but growing, perhaps just enough to form an ISBA chapter! The last 2 appointments in my department have been Bayesians (my former student Cathal Walsh and Brendan Murphy, who finished up at Yale last year). I collaborate with Anthony Quinn and Anil Kokaram in Electrical Engineering at Trinity College, who use Bayesian approaches in signal processing. Elsewhere in Ireland there are a couple of statisticians who use Bayesian methods. That's about it. In a country of 4 million, I suppose that's not too bad.

7. Having studied in the States and visited departments in various parts of Europe, do you find many differences in research, teaching etc.?

Things that I like about Ireland are that the administrative load on lecturers is not too bad. There is no research or teaching assessment exercise, as exists in the UK. In contrast to the US, there is less emphasis on research, although that is changing quickly. I have seen in the last 5 years a great increase in the amount of money for basic research, and that is also putting more emphasis on having good research to advance in the profession. I have worked in basic research laboratories in France in the past year, and I found a lot of excellent research being done in collaboration with French industry, much more than occurs in Ireland. And the US? Basically, a lot more money and therefore opportunity!

8. What do you enjoy most about your work?

I enjoy of course the research challenges, and the travelling and socialising at conferences. Overall, I think that Bayesian statisticians have a good lifestyle!
And least?

Teaching 200 engineers the t-test at 5pm on a Friday afternoon.

9. Do you find that students easily accept Bayesian ideas? Are there any special tricks, examples etc. that make things easier to explain?

So far, I have only taught Bayesian methods to mathematicians. I try to set out Bayesian ideas by taking the laws of probability as axioms. I justify those axioms by using scoring rules or the approach of Cox in his American Journal of Physics paper. They relate to this development from axioms, in contrast to the classical approach. I then use lots of examples, starting with conjugate priors and simple discrete examples. I have an example of a simple "expert system" of a car diagnosis tool, where there are 3 things that can go wrong and 4 symptoms, and we calculate
P(problem | symptom).
And do you have any amusing classroom moments you can tell us about?

I once got a comment on a course evaluation sheet that said "the lecturer looks like Jarvis Cocker" (lead singer of the stupendous 90's/00's English indy band Pulp, famous for attempting to attack Michael Jackson, ed.). I was flattered!

10. What do you predict will be the changes in the next few years of Bayesian statistics?

Since I started as a graduate student 10 years ago, the big advance has been in computational methods. I see that continuing.
In many fields, Bayesian methods are becoming an accepted method to do things, rather than just a curious alternative. That's great but of course there are dangers to our credibility if we don't do things right. The next few years may show us how successfully we can move into the mainstream.

THE SEMINAR IN BAYESIAN INFERENCE IN ECONOMETRICS AND STATISTICS

by Raquel Prado
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***We present a brief review of the history of the SBIES. Most of the material below was taken from the Preface of the book* "Bayesian Analysis in Statistics and Econometrics: Essays in Honor of Arnold Zellner", *Wiley 1996, edited by Donald Berry, Kathryn Chaloner and John Geweke*[1].**

The first meeting of the Seminar in Bayesian Inference and Econometrics (SBIE) took place in Chicago, December 11-12, 1970. Since then and until October 1995, the Seminar - that changed its name to Seminar in Bayesian Inference in Econometrics and Statistics (SBIES) in the 1980s - had convened about twice yearly. After October 1995 the meeting has taken place once yearly. The last SBIES was celebrated at Ohio State University in 1999. Over the years, the Seminar has taken place in various locations in the US and around the world, including the ITAM gala 15th anniversary meeting in Mexico City in 1986 and meetings in Bangalore, India in 1988, Rio de Janeiro, Brazil in 1990, Caracas, Venezuela in 1992 and a Riverboat on the Rhine in 1993, to mention just a few.
Arnold Zellner was the founder and leader of this Seminar. Through its meetings under the sponsorship of the National Bureau of Economic Research (NBER) and the National Science Foundation (NSF), the Seminar provided a forum for the rapid development of Bayesian econometrics and statistics. Attendance at these meeting gatherings, which counted with the participation of statisticians, economists and scientists of various disciplines, ranged from a few dozen to over 100 participants.
From the start of the Seminar there was an emphasis on the work of the new investigators, including those just completing graduate degrees. In 1977 the focus on work at the graduate level was formalized in the institution of an annual Leonard J. Savage Award for an outstanding doctoral dissertation in the area of Bayesian econometrics and statistics. A list of the winners and those who received honorable mention from 1977 to date and details about the award can be found at the ISBA web site (`www.bayesian.org`).
As a result of the work of many individuals participating in the SBIES meetings, five books consisting of original scientific papers on Bayesian methods and applications were produced. Each volume has been dedicated to an outstanding statistician (see References).
The following historical anecdotes about the SBIES meetings were kindly provided by Arnold Zellner:

- *"After the first few meetings of the Seminar, I raised the issue as to whether we needed a constitution or a formal set of operating rules at our usual Saturday business luncheon. Some one immediately moved that this matter never be brought up again, a motion that was seconded and approved unanimously with the explicit understanding that everyone was free to bring up issues at our semiannual meetings for consideration and a vote."*
- *"At another Saturday business luncheon, someone proposed that SBIES sponsor a volume in honor of George Barnard. Immediately, some one said, "We can't do that. He's not a Bayesian." Another person responded, "Barnard is a great guy!" and that settled the matter."*
- *"Just before our meeting in Caracas at the time of a military coup, I e-mailed Luis Pericchi to find out if it was safe to have our meeting as planned. He wrote back, don't worry we shall be meeting in a place surrounded by the army. Fortunately, the meeting took place one day after the military coup was put down and democracy was preserved. We all celebrated this great victory for democracy in Venezuela at several grand parties."*
- *"The ITAM meeting in Mexico City in 1986 was a gala 15th anniversary meeting. Enrique de Alba and his colleagues spread out the red carpet for us. To show our appreciation, members of SBIES voted to present ITAM with a grant from the Savage Memorial Fund to help build its collection of Bayesian works. On a visit to ITAM a few years ago, Enrique proudly showed*

me the impressive Bayesian collection in a special section of ITAM's library."
At a meeting in the early 1990s, the SBIES group voted to explore the possibility of establishing an international Bayesian organization that lead to further steps leading the creation of ISBA in 1992. Members of the SBIES played a key role in the creation of the American Statistical Association's Section on Bayesian Statistical Science in 1992.

References:

Studies in Bayesian Econometrics and Statistics in Honor of Leonard J. Savage (1975). Edited by S. Fienberg and A. Zellner. North-Holland, Amsterdam.

Bayesian Analysis in Econometrics and Statistics: Essays in Honor of Harold Jeffreys (1980). Edited by A. Zellner. North-Holland, Amsterdam.

Bayesian Inference and Decision Techniques: Essays in Honor of Bruno de Finetti (1986). Edited by P. Goel and A. Zellner. North Holland-Amsterdam.

Bayesian and Likelihood Methods in Statistics and Econometrics: Essays in Honor of George A. Barnard (1990). Edited by S. Geisser, J. Hodges, J. Press and A. Zellner. North-Holland: Amsterdam.

Bayesian Analysis in Statistics and Econometrics: Essays in Honor of Arnold Zellner (1996). Edited by D. Berry, K. Chaloner and J. Geweke. Wiley: New York.

BAYESIANS IN ISRAEL

by Udi Makov
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Statistical research in Israel is carried out in seven research universities. Three have separate departments of Statistics (Jerusalem, Tel-Aviv and Haifa). While few individual researchers are truly Bayesian, most of the researchers regard Bayesian Statistics as yet another methodology which can be employed whenever suitable. Indeed, the publication list of Israeli statisticians looks very much like the table of content of any leading statistical journal with a mix of subjects and a certain proportion of papers in which the Bayesian approach is used. These Bayesian papers are in diverse areas, such as econometrics, official statistics, reliability, actuarial science, discrete multivariate analysis, image analysis- to mention only a few.

The roots of the Bayesian work by Israeli researchers can be traced back to the 1960s when Ester Samuel-Cahn (a student of H. Robbins) wrote pioneering papers in the field of empirical Bayes and decision theory. At that time, while Bayesians and non-Bayesians in the UK held at each other's throat, the early Bayesian papers were accepted here as a matter of course. Even in the early days of Bayesian statistics in Israel, there were no heated debates around Bayesian papers read at the annual meetings of the Israeli Association of Statisticians. Few rejected it on philosophical grounds; many voiced objections on grounds of impracticality. This non-hostile attitude gave rise to a slow penetration of Bayesian ideas into industry, resulting in sporadic application of Bayesian ideas in several areas, such as reliability, image analysis, financial markets and more.

The advances in Bayesian statistics in the last decade make it much more appealing to practitioners and researchers alike, and it is therefore expected that Bayesian statistics would enjoy increased popularity here. A major meeting of ISBA in Israel could have a significant impact on the community.

BAYESIAN COMMUNICATION: A REPORT FROM JSM 2000

by Jim Albert
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This year I had the pleasure of organizing and attending a session at the 2000 Joint Statistical Meetings in August on the general topic of "Bayesian Communication". The idea of this session is to discuss ways of introducing Bayesian thinking to students and applied scientists. The three speakers, Hal Stern, Peter Thall, and John Geweke gave talks that addressed this theme from different perspectives.

Hal Stern has experience in Bayesian communication, both as a textbook author and as a consultant at Iowa State. In his paper "The Basics of Talking Bayesian Statistics", Stern first outlined the advantages of Bayesian methods: they make explicit use of probability, they make developing and extending models a natural process, they incorporate prior information, and they have computational benefits. Then Stern discussed two examples in detail where Bayesian methods are very useful. In a variance component problem in the context of animal breeding, the classical approach is difficult to apply. In contrast, a Bayesian model is simple to fit using MCMC methods. Although Bayesian methods requiring more thinking about the model and the "correct" estimator, it provides flexible inference and provides direct answers to the inferential questions of interest. Stern next discussed how Bayesian thinking is hard to explain. The interpretation of probability is hard, especially for people trained in frequency probability – people don't understand what a subjective probability interval is communicating. The role of priors is an important issue. The use of subjective priors is worrisome and noninformative priors are sometimes not well-defined. Also people used to testing hypotheses from a classical perspective have difficulty understanding the different Bayesian approach to testing. Stern concluded by emphasizing the need to demonstrate that benefit of Bayesian procedures by showing that they have good repeated-sampling properties. He believed that the outlook for an increasing use of Bayesian procedures is good.

Peter Thall, in his paper "Bayesian Methods in Early Phase Clinical Trial Design" described the success in applying the Bayesian paradigm in clinical trials. These trials are often very complex, and interim decision-making is an essential component of these designs. Prior information plays a critical role in this setting, and Bayes rule provides a convenient way of sequentially updating beliefs given new data. Also, clinical oncologists think and act like Bayesians. A key aspect is the construction of the prior distribution, and Thall described the use of conjugate priors. Doctors are relatively poor in remembering information, and so data-based priors are typically used. This paper demonstrated that it is often easy to introduce Bayesian thinking to people who are not trained in classical methods.

John Geweke, in his paper "Embedding Bayesian Tools in Commercial Software" (joint with William McCausland), described the use of the BACC (Bayesian Communication Software) in communicating Bayesian inference. Bayesians typically fit models by performing high-dimensional simulation algorithms, called by Geweke as "posterior simulators". In the mathematical software system MATLAB, Geweke describes the output of a particular MCMC algorithm in terms of a "posterior simulation matrix" which can be given to the reader who is interested in fitting the model. The reader may want to perturb the model by choosing a different prior or omitting observations. Alternatively, the reader might want to perform a different inference or prediction than what was presented in the original study. All of these new analyses can be easily performed from the posterior simulation matrix. This BACC software system has the potential of communicating a complete Bayesian analysis to a wide audience with different interests with regards to modeling and decision-making.

In the discussion of this session, John Deely stated that he believed that one of the key advantages of the Bayesian viewpoint was that all uncertainty should be described probabilistically. He thought that it was especially important to keep the Bayesian model

simple; otherwise people will doubt the validity of the Bayesian inferential conclusions. Also, we should be careful about the jargon we use – different terms used for the same thing will only confuse our non-Bayesian audience. Generally, the session was well-attended and got positive feedback. It's clear from these presentations that our Bayesian communication skills have to continually improve at teaching and consulting levels to facilitate the increasing application of Bayesian thinking.

MATLAB CODE FOR BAYESIAN VARIABLE SELECTION

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This software provides a set of Matlab functions that perform Bayesian variable selection in a multivariate regression setting. There are different sets of functions currently available, implementing different approaches and models for the variable selection problem: *bvgs.tar, bvsme.tar, bvssa.tar* (written by Marina Vannucci) and *bvsgs_i.tar, bvsgs_g.tar, bvsgs_gi.tar* (written by Veronique Delouille and Marina Vannucci).

Consider the multivariate regression model with p regressors, q responses and n observations, where p can largely exceed n. Bayesian variable selection approaches use a latent vector with p binary entries to identify the different submodels. The marginal posterior distribution of the binary vector is derived and, in high dimensions, Markov chain Monte Carlo algorithms are used to sample from this posterior distribution. Also, prediction can be done by computing a weighted average of the predictive distribution for the different submodels, or at least for a restricted set of them in the case of high dimensions, i.e. for large p. The weights of the average are determined as the posterior probabilities of the single models.

Functions in *bvsgs.tar* perform Bayesian variable selection as described in Brown, Vannucci, Fearn (1998a), using conjugate priors on the parameters of the regression model and independent Bernoulli priors on the p entries of the selecting binary vector. The posterior distribution is explored via a Gibbs sampler that moves from a model to another by generating componentwise from the full conditional distributions. The input of the main function *bvsgs_sp.m* requires the data and all the hyperparameter specifications, it asks for possible permutations of the data and for the initial Gibbs parameters (initial number of variables included, number of iterations). As output, it returns the list of all visited models and their relative posterior probabilities, the normalized ordered relative probabilities of distinct visited models and the marginal probabilities of inclusion of the single variables. Distinct visited models and their corresponding posterior probabilities can then serve as input to the function *pbvs_sp.m* that performs Bayesian model averaging prediction on a set of future data using a specified number of the most probable visited models.

Functions in *bvsme.tar* still use conjugate priors on the parameters of the regression model but with a g-prior for the regression coefficients and a more flexible Beta-Binomial prior on the selecting binary vector. Also, the posterior distribution is searched via a Metropolis algorithm that moves through a sequence of models generating a new candidate by randomly modifying the current model via deletion, addition and swapping moves. This set of functions was used to produce the results of Brown, Vannucci, Fearn (1998b). The input of the main function *bvsme_gp.m* requires the data and the hyperparameter specifications, it asks for possible permutations of the data and for the Metropolis parameters (initial number of variables included, probabilities of deletion/addition and swap moves, total number of iterations) and returns a similar output to that of the function *bvsgs_sp.m*.

Both models implemented in *bvsgs.tar* and *bvsme.tar* require the user to pre-process the data by centering the training data and subtracting the training means from the future data.

Functions in *bvsgs_i.tar*, *bvsgs_g.tar* and *bvsgs_gi.tar* implement Bayesian variable selection using Gibbs sampler in a multivariate regression with related predictors and with a prior on the latent binary vector suitably modified to allow different combinations of predictor terms. Specifically, *bvsgs_i.tar* allows for main effects and two-way interaction and quadratic terms, *bvsgs_g.tar* for main effects and "grouped" variables (sets of variables to be included or excluded as a group), and *bvsgs_gi.tar* for main effects and both interactions and grouped variables. The code automatically generates interaction terms for independent and grouped variables and centers responses and explanatory variables. The prior on the latent binary vector allows for two different forms of inclusion of interaction terms, one if both variables of the interaction are also included, the other, if at least one of the two variables is included. Functions in *bvssa.tar* implement an alternative approach to the variable selection problem that uses Bayesian decision theory as described in Brown, Fearn, Vannucci (1999), attaching costs to the inclusion of the single variables. A non-conjugate proper prior distribution is used for the regression parameters and a measure of predictive performance is computed for the different models. A simulated annealing algorithm is used to optimise the expected utility in the case of many regressors. The input of the main function *bvs_sa.m* requires the data and parameter specifications, it asks for the annealing parameters (initial temperature, updating temperature parameter, probabilities of moves and stopping parameter) and returns the list of visited models and their prediction costs. The model with minimum cost can then be used to do least squares and Bayes predictions via *pbvs_sa.m*.

All sets of functions here described have been used in calibration problems for the prediction of the chemical composition of a sample from its near-infrared spectrum comprising as many as 700 frequencies. Training samples available usually had few observations. In applications, the number of explanatory variables has been as high as 350, though *bvsme.tar*, with the g-prior and a Metropolis search, may handle a total up to 700. A fast updating algorithm is currently under study that will lead to revised code capable of handling much larger datasets. Code and related documentation can be downloaded from `http://stat.tamu.edu/~mvannucci/webpages/codes.html` and should be distributed for non-commercial purposes only. All the code requires Matlab 5 by MathWorks.

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All authors of statistics papers and speakers giving conference presentations with substantial Bayesian content should consider submitting an abstract of the paper or talk to the ISBA/SBSS Bayesian Abstract Archive. Links to e-prints are encouraged. To submit an abstract, or to search existing abstracts by author, title, or keywords, follow the instructions at the abstract's web site,

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Bayesian Forecasting of New Product Performance

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Application of Bayesian methods may help provide the whole picture!

When a firm introduces a new product (or service), it has at its disposal, several pieces of information available to it. These include the nature and characteristics of the new product, the performance of similar products previously released, etc. The question the firm faces is: how can it effectively utilize the different information sources that are available to generate reliable new product performance forecasts? Further, how can it account for varying information availability at different stages of the new product launch and generate forecasts at each stage? The purpose of this research is to address these questions in two different contexts. The first pertains to the sequential launches of motion pictures in international markets. The second, which is still work in progress deals with technology products.

Companies operating in the motion picture industry require forecasts at different stages of the movie launch process to aid decision making and the information sets available to generate such forecasts vary at different stages. Initially, in the market evaluation stage, movie studios have yet to pick a particular movie and have not decided which markets to enter. The only information available at this stage is the performance of previous movie releases in different markets. We refer to such data on previous releases as the historical database. The historical database can be used to generate initial base forecasts. After production of a specific movie, decision- makers need sales forecasts in order to make market entry and mix decisions. Because the attributes of the new movie, such as genre, presence/absence of major stars become known at this stage, they can be combined with the historical database to generate an updated forecast. Immediately prior to domestic launch of a new movie, the studios have determined the marketing mix for the domestic market. Thus, data on marketing mix variables such as the number of screens in the domestic market can be incorporated to generate a pre-launch forecast for the domestic market. These forecasts are inputs for marketing mix decisions for the entire life cycle of the movie. Post-domestic release, forecasts of movie performance in international markets are required to finalize decisions such as distribution strategy and release schedule in these markets. At this stage, decision-makers have an information set that consists of the historical database, movie attributes, and performance of the new movie in the domestic market. Just prior to the international launch, the studios have finalized the marketing mix variables for international markets for the initial week and forecasts need to be based on this additional information. Despite the importance of forecasts at these different stages, the industry struggles to understand and predict sales of new movies in domestic and overseas markets.

We develop a Bayesian modeling framework that predicts first week viewership for new movies in both domestic and several international markets. We focus on the first week because industry players involved in international markets (studios, distributors and exhibitors) are most interested in these predictions. We draw on existing literature on forecasting performance of new movies to formulate our model. Specifically, we model the number of viewers of a movie in a given week using a Poisson count data model. The number of screens, distribution strategy, movie attributes such as genre and presence/absence of stars are among the factors modeled to influence viewership. We employ a hierarchical Bayes formulation of the Poisson model that allows the determinants of viewership to vary across countries. We adopt the Bayesian approach for two reasons. First, it provides a convenient framework to model varying assumption of information availability.

Specifically, it allows us to make forecasts by combining different sources of information such as domestic and international market-specific data. Second, this methodology provides us with the entire distribution of the new movies performance forecast. Such a predictive distribution is more informative than a point estimate and provides a measure of the uncertainty in the forecasts.
We propose a Bayesian prediction procedure that provides viewership forecasts at different stages of the new movie release process. The methodology provides forecasts under a number of information availability scenarios. Thus, forecasts can be obtained with just information from a historical database containing data on previous new product launches in several international markets. As more information becomes available, the forecasting methodology allows us to combine historical information with data on the performance of the new product in the domestic market and thereby make forecasts with less uncertainty and greater accuracy.
Our results indicate that for all the countries in the data set the number of screens on which a movie is released is the most important influence on viewership. Further, we find that local distribution improves movie sales internationally in contrast to the domestic market. We also find evidence of similar genre preferences in geographically disparate countries. We find that the proposed model provides accurate forecasts at the movie-country level. Further, the model outperforms all the extant models in the marketing literature that could potentially be used for making these forecasts. A comparison of root mean square and mean absolute errors for movies in a hold out sample shows that the model that combines information available from the different sources generates the lowest errors. A Bayesian predictive model selection criterion corroborates the superior performance of this model. We demonstrate that the Bayesian model can be combined with industry rules of thumb to generate cumulative box office forecasts.
In summary, this research demonstrates a Bayesian modeling framework that allows the use of different information sources to make new product forecasts in domestic and international markets. Our results underscore the theme that each movie is unique as is each country, and that viewership results from an interaction between product and market. Hence, the motion picture industry should use both product-specific as well as market-specific information to make new movie performance forecasts.
The research pertaining to technology products such as digital cameras, camcorders, etc. is cast in a similar vein. The major complications caused by such products are twofold. First, product attributes are evolving constantly and must themselves be forecast before trying to forecast the performance of a product. The second is that given the newness of the category, consumer preferences are still evolving. This necessitates dynamic models for forecasting the sales of such products.
Readers interested in the research on movies are directed to the paper published in *Marketing Science* (1999), volume 18, issue 2, pages 115 to 136.

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BAYESIAN "BETTING" WORLDWIDE

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Applying Bayesian dynamic global asset allocation strategies to outperform financial benchmarks under risk control.

The title above was intended for an article (Putnam and Quintana, 1993). The paper appeared with a different name due to concerns from the upper management regarding possible client reaction. Yet, arguably, I have been engaged for many years in "Bayesian 'betting' worldwide."

Investment management is naturally suited for the application of the Bayesian paradigm: First, the modern foundation of subjective probability based on betting schemes can be traced all the way back to the definition of "The *probability of any event* is..." given, albeit apologetically, by the Reverend Bayes, 1763. Second, the cynical sometimes assert that the greatest casinos of the world are the financial markets. Ironically, from a formal technical perspective, this view has certain merit since the difference between investing, speculating and gambling boils down to shades of variation in the objectives (e.g., the fear and greed tradeoff attitude and the time horizon).

Surely avoiding a Dutch book (being a sure loser) must be a minimal policy objective requirement making investment management, in principle, a Bayesian endeavor. Furthermore, the five investment management functions (setting investment policy; performing security analysis; constructing a portfolio; revising a portfolio; and evaluating the performance of the portfolio) by Sharpe, *et al.* (1999) seem to call for a Bayesian analysis. Arguably, there is no other field of application, with the exception of war, where the flow of consequences (when making sequential decisions under uncertainty) can be so drastically apparent. What follows is a personal account of a ten-year experience using Bayesian weapons in the global financial markets warzone.

My first assignment for a money management firm (Chase Investors) was to build a risk management system for constructing currency portfolios with high expected return and low volatility (standard deviation). My entrance ticket to Wall Street was a paper (Quintana and West, 1987) on a dynamic variance-covariance model, based on information discounting, applied to international exchange rates. The financial strategy was to outperform a cash deposit by investing the capital directly in cash and generate excess returns via an overlay portfolio of forward currency contracts (the future cash flow of a forward is equivalent to borrowing money in one currency and lending it in another). In the midst of the ERM (Exchange Rate Mechanism) the expected forward cash flow was assumed to be the corresponding interest rate differential. This was, admittedly, a naïve model assumption, but it was a very effective one as well. The associated risk model component was essentially the one described in the aforementioned paper. This strategy was implemented during 1990-1991.

After I moved to the Global Risk Management sector of The Chase Manhattan Bank, the strategy was expanded to include future contracts on stock indices and government bonds. In addition, the expected return component of the model formulation of the three asset classes was enhanced to include several explanatory variables with dynamic sensitivities. This strategy was implemented during 1992-1994.

The next major improvement was the introduction of a data pooling (shrinkage) structure into the expected excess return component of the model *à la* Zellner, *et al.* (1991). The financial strategy was trivially generalized to outperform other benchmarks (e.g., the S&P 500 index) simply by investing the capital in the benchmark rather than in a cash deposit. Several investment programs following this strategy were implemented at Bankers Trust Company during 1995-1997.

The structure of the risk component of the model was enriched with the inclusion of a global risk parameter to model global financial shocks spreading within and across asset classes. The current generation of these dynamic multiple-factor models has been running by the GDAA (Global Dynamic Asset Allocation) group at CDC Investments, New York, since 1997 driving the core asset allocation of separately managed futures accounts, offshore funds, mutual funds, and proprietary trading.

The performance of the corresponding investment programs, running at different institutions over a ten-year period, as a whole have met their objectives to outperform benchmarks under risk control. Remarkably, the strategy has survived, with relatively minor scratches, many financial shocks induced by the Persian Gulf crisis in 1990-91; the collapse of the ERM in 1992; the Fed tightening in 1994; the Asian crisis in 97-98; the related Russian debt and LTCM (Long Term Capital Management) meltdown also in 1998; and the subsequent puzzling behavior of global financial markets that persuaded hedge fund legends such as George Soros and Julian Robertson to reduce significantly their activity.

A multivariate generalization of Shephard (1994) formulation allows for a full-blown Bayesian stochastic variance-covariance system equation for the multivariate risk model component. This form, according to our internal research, is fully equivalent to the version based on the information discounting artifice and overcomes the limitations of Uhlig's (1994) approach. The dynamic investment strategy, as a whole, follows the general Bayesian scheme, a dynamic programming version of the expected utility maximization paradigm, outlined by Markowitz (1987). Not only is the process Bayesian, but there is an unyielding effort made to assimilate the latest Bayesian technology.

In conclusion, although betting might not be a good thing, Bayesian "betting" has been efficiently driving the asset allocation of hundreds of millions of dollars worldwide for over a decade.

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FINANCE

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In this issue we focus on Bayesian applications in the area of Finance. We have attempted to cover many of the important references. Our apologies for any inadvertent omissions.

• C. R. HARVEY AND G. ZHOU(1990). **Bayesian inference in asset pricing tests**. *Journal of Financial Economics*, no. 26, 221-254.
The paper derives the posterior odds ratio for testing the Sharpe-Lintner CAPM model (i.e. if the intercept is zero). The test is applied for 12 industry portfolios with monthly data from 1927-1987. Also the simultaneous Bayesian credibility regions for the intercepts are presented. For the Cauchy and the normal prior posterior probabilities are calculated that the CRSP value weighted index is mean-variance efficient. Depending on the prior the probability lies between 1% and 27%.

• L. PASTOR(2000). **Portfolio Selection and Asset Pricing Models.** *Journal of Finance*, vol. 55, 179-223.
This paper analyses the home bias in connection with value and size effects for the NYSE stock index from January 1970 to December 1972. The Bayesian approach assigns a prior for the hypothesis that the US market is globally efficient. For different prior standard deviations the optimal portfolio weights in foreign stocks in a two-asset portfolio (with the US) is calculated: Strong priors lead to smoother weight s over time.

• N. G. POLSON AND B. V. TEW(2000). **Bayesian portfolio construction: An Empirical Analysis of the S&P 500 index 1970-1996.** *Journal of Business & Economic Statistics*, vol. 18, no. 2, 164-173.
This paper applies a factor hierarchical regression model for the problem of portfolio selection. The efficient mean-variance portfolio is calculated using the predictive variance -covariance matrices. A Gibbs sampling algorithm is suggested for computing the covariance matrix with different historical time series lengths. The Bayesian portfolio outperforms the S&P500 index on average by 1.8% points.

• A. P. FROST AND E. J. SAVARINO(1986). **An Empirical Bayes Approach to Efficient Portfolio Selection.** *Journal of Financial and Quantitative Analysis*, no. 21, 293-305.
This paper applies Empirical Bayes methods for portfolio selection.

• M. POJARLIEV AND W. POLASEK(2000). **Bayesian Portfolio Analysis.** Technical Report, University of Basel, (www.unibas.ch/iso).
The paper describes univariate ARCH and multivariate VAR-GARCH 'in mean' processes to estimate the returns of a portfolio. The posterior distribution of the weights of the mean-variance portfolio is derived for a continental model involving the MSCI indices of North America, Europe and Pacific. As a benchmark the MSCI world index is used and it is shown that the Bayes portfolio is up to 3.5% points higher, depending on the time range. Monthly time series between February 1990 and September 1999 are used.

• F. R. STAMBAUGH(1997). **Analyzing investments whose histories differ in length.** *Journal of Financial Economics*, no. 45, 285-331.
This paper compares portfolio selection from a Bayesian and a classical point of view for time series which differ in length. It derives the Bayesian predictive density for the one-step ahead returns and the first and second moment of that distribution. It also describes the Anderson (1957) method for computing the maximum likelihood estimates of a multivariate normal distribution with 'multiple starting dates'. The paper compares the results for the Standard & Poor's composite index, the Morgan Stanley Capital International's index (EAFE) and the International Finance Corporation's composite index for emerging markets (EMERGE). The result show that 'failure to account for estimation risk results in substantially higher volatility'.

• R.S. TSAY(2000). **Extreme value analysis of financial data**, Technical Report, Univ. of Chicago.
This paper considers the Generalized Extreme Value distribution and the Generalized Pareto distribution

(GDD) and investigates the occurrence times and excesses over high threshold values in financial time series. The Gibbs sampler is proposed to estimate the excesses which are assumed to be GPD distributed. Model checking is done by Q-Q plots. Applied to the S&P 500 Index from 1962 to 1997 the author finds volatility clustering for certain years and increased volatility for daily returns in October, November and December. Also the US interest rate is found to have a profound impact on the stock market.

• W. POLASEK AND L. REN(2000). **Volatility analysis during the Asia crisis: A multivariate GARCH-M model for stock returns in the US, Germany and Japan.** To appear in *Applied stochastic models for business and industry (ASMBI).* The paper examines the daily stock returns in a 3-dimensional country model for effects of the Asia crisis in 1997. By calculating the marginal likelihoods in a MCMC run, a Bayes test finds that October 24, 1997 is the most likely day where a break in the dynamic structure of the VAR-GARCH-in-mean model could have happened. It is shown that the break has changed the dynamic interaction and transmission pattern of the multivariate volatility model.

•LI, K. (1999). **Exchange Rate Target Zone Models: A Bayesian Evaluation.** *Journal of Applied Econometrics*, 14, 461-490.
By employing the Metropolis-within-Gibbs methodology with data augmentation, this paper develops a Bayesian approach to estimating exchange rate target zone models and rational expectations models in general. It also introduces a simultaneous-equation target zone model that incorporates stochastic realignment risk. Under the system of equations framework, both the magnitude and the likelihood of an adjustment in the central parity as well as the correlated error structure of the system are examined. The probabilistic structure introduced is flexible enough to generate realistic relationships among exchange rate, macro fundamentals and central parity realignment. The simultaneous-equation target zone model is compared with four alternative target zone models. Using FF/DM and IL/DM exchange rate data, the model comparison results are overwhelmingly in favor of the target zone model with constant realignment risk. The predictive performance of various target zone models is mixed. In general, the target zone models are not able to outperform the random walk model of exchange rate in terms of first moment prediction, which is in agreement with the general findings in the literature. It is concluded that once allowing for stochastic realignment risk in the target zone models, neither the FF/DM rate nor the IL/DM rate exhibits nonlinearity any more.
In the following we list references to few more articles of interest.

• J. PHILIPPE (1991). **Bayesian and CAPM estimators of the means: Implications for portfolio selection.** *Journal of Banking and Finance* 15, 717-727.

• S. KANDEL, R. MCCULLOCH, AND R.F. STAMBAUGH (1995). **Bayesian Inference and Portfolio Efficiency.** *Review of Financial Studies*, 8, 1-53.

• J. GEWEKE, AND G. ZHOU, (1996). **Measuring the Pricing Error of the Arbitrage Pricing Theory.** *Review of Financial Studies*, 9, 557-587.

• K. LI (1999). **Testing Symmetry and Proportionality in PPP: A Panel Data Approach.** *Journal of Business and Economic Statistics*, 17, 409-418.

• L. PASTOR AND R. F. STAMBAUGH (1999). **Costs of Equity Capital and Model Mispricing.** *Journal of Finance*, 54, 67-121.

• R. F. STAMBAUGH (1999). **Predictive Regressions.** *Journal of Financial Economics*, 54, 375-421.

• L. PASTOR, AND R. F. STAMBAUGH (2000). **Comparing asset pricing models: An investment perspective.** To appear in *Journal of Finance.*
Thanks to Wolfgang Polasek for his help with part of the references.

New Contributions

by Maria De Iorio
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We present an experience on job-searching and another Ph.D dissertation.

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Thoughts on the Job Market

I would like to expand on several aspects of Jaeyong Lee's excellent advice in the June 2000 Bulletin. Like him, I also focused on the academic research job market, although many of my comments are applicable to all types of job searches. Here I will focus primarily on my experiences with interviews.

The most important thing to remember about searching for a job is that it takes a lot of time. In the fall semester, you need to apply for jobs. In the spring semester, assuming all goes well, you will have interviews. Pretty much all of the time spent on interviews (including the traveling and possible extra Saturdays) is time that you don't have to work on your thesis, so plan ahead!

In terms of planning ahead, try to keep your late January, February, and early March schedules as open as possible, to give you maximum flexibility in scheduling interviews. Departments will have many constraints of their own. For example, they may have a fixed slot for seminars on a particular day of the week, and so they may only want to interview one candidate per week.

A typical interview has two main components: meeting with the faculty individually, and the talk. First let me discuss the meetings. While not physically strenuous, meeting with people for an entire day is rather mentally and emotionally strenuous, so do not be surprised if you are exhausted at the end of the day. It seems like common sense, but a good night's sleep is very helpful.

The individual meetings are a way for both you and the department to gauge how well you would interact socially and academically if you were to be hired. You want to make sure that you come across as friendly and intelligent, but not arrogant or boastful. Do your best to work your achievements into conversation in a graceful way, or as extended responses to questions. As Jaeyong Lee pointed out, common questions include those about your research and your teaching. You may also be asked about your philosophy (why are you Bayesian?), your areas of interest in other fields for future collaboration, and any unusual items on your CV. Of course, you could be asked about anything, and you will just have to think on your feet. Be prepared to be asked the same question by many different people, and patiently give them each a full answer. Also be prepared for them to ask you if you have any questions. You should come with several questions planned ahead of time, and spread them out throughout the day (although some questions will be more appropriate for particular people, such as a department head, or someone in a particular field). A good way to keep a conversation going with someone is to talk about their research. If you have done your homework, you will have looked at the faculty web pages, or glanced at some articles by several of the faculty, and you can ask them to tell you more about a particular part of their research. Sometimes this is not always possible (I had one "surprise" interview at a school not too far away, where the best date to schedule the interview turned out to be in a day and a half, since I could drive there in two hours, so I didn't really have much time to prepare for this interview), and it is usually possible to get someone to talk about their research without sounding too ignorant (for example, you can ask about some of their outside collaborations, or try to pick up on a topic that comes up in an earlier part of the conversation).

In most cases, your talk will be at the end of the day, but sometimes the talk will be earlier, in which case they may ask you about details of your talk when they meet with you. The talk is an important part of the interview. Make sure you have practiced your talk a lot. Keep in mind that the talk should be an advertisement for your thesis (or recent work), and that proofs should normally be left out (if your advertisement goes well, they will want to read

your thesis later, and can get the proofs then). A good level is to aim your talk to be mostly understandable by an advanced graduate student. The most important thing is that the faculty in your audience understand your talk. If you try to be too impressive by covering complex details, you may lose your audience, and they won't be impressed at all. Make sure you sound enthusiastic about your work. You may be nervous, or your personality may not be emotive, but you need to sound interested in what you are talking about (but don't overdo it, of course). Practice the timing of your talk, so that it is not too long or too short. Most job talks are scheduled for one hour, although you should confirm this as it does sometimes vary. In this case, you want to aim for about 55 minutes, leaving some time for questions. When in doubt, a little shorter is usually better than longer. Have an idea of what can be cut near the end in case you run short on time. The talk dynamic may differ as some departments save questions until the end, and some may ask constantly throughout the talk (I had not known about this ahead of time, and at one talk, I had so many questions that I was only about half way through at the 55-minute mark). Try not to get flustered when things go wrong, because sometimes it will just happen – during one of my talks, someone in the audience decided the coffee maker was too noisy and so turned off the power strip, the same power strip that the overhead projector I was using was plugged into. After your talk, or at the end of the day, some subset of the faculty will normally take you to dinner at a nice restaurant. Practice your table manners, if necessary! You may also have to practice your conversational skills, discussing things other than statistics. However, I found that often the faculty would spend much of the time talking to each other, which made the dinner much easier, since I wasn't the focus and didn't have to continually think of intelligent things to say. Finally, the interview gives you a chance to get the general flavor of a department. While you are visiting, you should think about whether you would fit in if you were hired. Do people tend to work individually or collaborate? What is the dynamic with the graduate students? How happy would you be coming to work here every day? And, of course, this is your chance to check out the city or town in which you might be living for many years to come. Best of luck on your job search!

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Bayesian Methods for Nonlinear Classification and Regression
Advisors:
Dr. David G.T. Denison
and Dr. Bani K. Mallick

We introduce novel Bayesian procedures for the nonlinear classification and regression of univariate and multivariate response data. We present two new Bayesian methods and develop computationally efficient procedures for use in generalized basis function modelling which include wavelets, regression splines and artificial neural networks.
A distinctive feature in all of our methods is that we treat the dimension of the model as unknown *a priori*. This induces a model averaging approach to prediction and we show that the Bayesian models automatically adapt their complexity to fit the problem at hand. We make extensive use of Markov chain Monte Carlo simulation to approximate the non-standard distributions arising from this approach. We demonstrate how "perfect simulation" using coupled Markov chains from the past can be used to draw independent and identically distributed samples from the posterior model space of orthogonal basis function models such as wavelets, Fourier bases and Demmler-Reinsch splines.
We then present two new nonlinear methods that exploit the Bayesian model averaging paradigm. First, we introduce a multivariate polynomial spline that provide a Bayesian version of local polynomial modelling. Second, we consider a Bayesian partition model that decomposes the covariate space into a random number of disjoint regions within which the data is modelled as exchangeable from some simple distribution.
Examples are used throughout to illustrate the methods. Particular attention is paid to non-Gaussian data, including Poisson, binary and polychotomous regression, in univariate and multivariate settings.

NEWS FROM THE WORLD

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✻ *denotes an ISBA activity*

➤ Events

MSRI Workshop on Nonlinear Estimation and Classification. *March 19-29, 2001, Berkeley, CA*. (Partially edited from the workshop announcement). Researchers in many disciplines face the formidable task of analyzing massive amounts of high-dimensional and highly-structured data. As a result, fundamental statistical research is being undertaken in a variety of different fields. Driven by the complexity of these new problems, highly adaptive, non-linear procedures are now essential components of modern "data analysis", a term that we liberally interpret to include speech and pattern recognition, classification, data compression and signal processing. The development of new, flexible methods combines advances from many sources, including approximation theory, numerical analysis, machine learning, signal processing and statistics. The workshop intends to bring together eminent experts from these fields and also to introduce the research topics to graduate students by providing travel support and by requiring the last speaker of each session to give an overview of the field. Abstracts are due by October 27, 2000. Web page: `cm.bell-labs.com/who/cocteau/nec/`.

✻ **ISBA Regional Meeting at Laguna Beach**. *April 5-8, 2001, Laguna Beach, California*. A preliminary announcement was published in the previous ISBA Bulletin. Further details can be found at `www.socsci.uci.edu/bayesian`. About half of the programmed eight plenary sessions will focus on Bayesian applications in the behavioural and social sciences and the remaining half on Bayesian methodology. The organizers welcome suggestions for plenary session speakers: please submit your papers by December 31, 2000.

Third Amsterdam Conference on Multilevel Analysis. *April 9-10, 2001, Amsterdam*. This is a preliminary announcement. Multilevel analysis is also known as multilevel modelling, hierarchical data analysis, and random coefficient modelling. The conference will be about statistical theory and multilevel software, methodology, and innovative applications. Multilevel analysis is applied in disciplines such as education research, epidemiology, geography and sociology. Submit your abstract (ASCII files) until January 15, 2001, by email to `multi.level@ppsw.rug.nl` (organizers: Jop Hook and Tom Snijders). Further information will be diffused through the discussion list "multilevel" at Mailbase (`www.mailbase.ac.uk`).

ISAS 2001. *March 19-23, 2001, La Habana, Cuba*. The theme of the International Symposium on Adaptive Systems is "Evolutionary Computation and Probabilistic Graphical Models". Submit your papers by December 8, 2000. `(isas2001.tripod.com/symp)`.

✻ **Second Workshop on Bayesian Inference in Stochastic Processes**. *May 31-June 2, 2001, Varenna, Italy*. Deadline for contributed papers: December, 15th, 2000. `www.iami.mi.cnr.it/conferences/varenna.html`

AMSDA 2001. *June 12-15, 2001, Compiègne, France*. The 10th International Symposium on Applied Stochastic models and Data Analysis will focus on new trends in theory, applications and software. Particular interest will be given to interesting applications in engineering, productions and services (maintenance, reliability, planning and control, quality, finance, insurance, management and administration, inventory and logistics, marketing, environment, human resources). Papers deadline: January 12, 2001. `(www.hds.utc.fr/asmda2001)`.

ISIPTA '01. *June 29-26, 2001, Cornell University, Ithaca, NY*. The steering committee of ISIPTA has decided to create a biennial series of symposia on imprecise probabilities and their applications; ISIPTA '01 is the second of these. For an introduction to imprecise probabilities see the web site `ippserv.rug.ac.be`.

Contribute a session to the Joint Statistical Meetings. *August 5-9, 2001, Atlanta.* Read more on the SBSS site: `www.stat.ucla.edu/~jsanchez/sbssnews/sbssnews.html`

Euroworkshop on statistical modelling.
The EU will finance a series of three workshops on the following topics in statistical modelling: mixed models, nonparametric models, and model diagnostics. Further details at `www.stat.uni-muenchen.de/euroworkshop`.

➤ Awards and Prizes

✻ The 1999 Savage Award.
The 1999 Savage Awards were unveiled at the JSM in Indianapolis. These awards are sponsored by the Board of the Leonard J. Savage Memorial Trust Fund, the NBER-NSF Seminar on Bayesian Inference in Econometric and Statistics, ISBA, and the ASA Section on Bayesian Statistical Science (SBSS). They recognize outstanding theoretical and applied contributions in Bayesian Econometrics and Statistics. There is also an honorable mention for an outstanding dissertation in these areas. For the 1999 awards, the finalists (from an initial set of 13 contenders) were

* Garrick Wallstrom, University of Minnesota, "Consistency and Strong Inconsistency of Formal Posteriors", under the supervision of Joe Eaton;

* Clare Marshall, Cambridge University, "Bayesian Statistical Methods for Institutional Comparisons", under the supervision of David Spiegelhalter;

* Andrew Mugglin, University of Minnesota, "Fully Model Based Approaches for Spatially Misaligned Data", under the supervision of Brad Carlin;

* John Liechty, Cambridge University, "MCMC Methods for Switching Diffusion Models", under the supervision of Gareth Roberts;

* Raquel Prado, Duke University, "Latent Structure in Non-stationary Time Series", under the supervision of Mike West.

Garrick is currently visiting Carnegie Mellon, Clare is at Cambridge, Andrew is visiting Ohio State, John is at Penn State and Raquel at Simon Bolivar.
The finalists summarized their dissertations at a special SBSS session at the Indianapolis JSM, organized and chaired by Ehsan Soofi, Chair of the Savage Award Evaluation Committee. Siddhartha Chib, a member of the evaluation committee, gave a discussion of the presentations. In his words, these were "high-quality and highly-impressive theses covering a broad spectrum of topics... The theses demonstrate the vitality of modern Bayesian work".
In addition to Ehsan Soofi (the Chair) and Siddhartha Chib, other members of the Evaluation Committee were Wesley Johnson, Mike Evans, Tom Leonard and Nick Polson.
Ehsan Soofi presented the awards at a very well attended SBSS business/social session and mixer. The winner of the Theory and Methods Savage Award was Garrick Wallstrom. In his discussion, Chib synthesized this thesis as a "theoretical contribution concerned with improper priors and the occurrence and non-occurrence of strong inconsistency. The thesis provides a solid treatment of this problem, precise definitions, and extends the analysis to the question of predictive inconsistency". Wallstrom received a $750 check and a commemorative plaque.
The winner of the Applied Methodology Savage Award was Clare Marshal. She receives a check for $750 and a commemorative plaque. No discussion of her thesis was presented at the JSM as she was unable to attend the meeting.
The "honorable mention" award went to Andrew Mugglin. Andrew received a $100 check and a commemorative plaque. As summarized by Siddhartha Chib, "Mugglin's thesis deals with an interesting and important problem in Spatial Statistics - the analysis of misaligned data with covariate information. The thesis proposes several classes of hierarchical Bayes models with careful attention to diagnostics and implementation".
Ehsan Soofi stepped down as chair of the Savage Award Evaluation Committee, a position he has held since 1992. It was during his tenure that the Savage Award Session was launched. Soofi says that one of the most rewarding aspects of this very busy job is to see the joy of the finalists when they reach the Savage Award Section.
Further details of the Savage Award can be found at `www.stat.ucla.edu/~jsanchez/sbssnews/awards/savage/savage.html`. Watch that site for information about thesis submission and deadlines for the year 2000 competition, which will shortly be posted there. (*Thanks to Juana Sanchez*).

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