THE ISBA BULLETIN

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A MESSAGE FROM THE PRESIDENT

VISUALIZING BAYESIANS

- Michael I. Jordan -
ISBA President, 2011
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Planning for the ISBA World Meeting in 2012 is well underway and the meeting is clearly shaping up to be a major success story. The list of keynote speakers is stellar, as are the list of participants in Invited Sessions, and the list of submissions for Special Topic Sessions. (Indeed, we received many more high-quality Special Topic Session proposals than expected, and, after due deliberation, the program committee has decided to expand the number of tracks to accommodate this flux of high-quality work). All this with the background of Kyoto, one of the world's most beautiful and fascinating cities. This will not be a meeting that you will want to miss.

Of course, some of you will miss the meeting nonetheless. And there are many others who will miss the meeting but who did not know that they missed the meeting; they in some sense will have missed the boat. Whenever I attend a meeting that is as exciting as I envision the Kyoto meeting to be, I always ponder the large numbers of people who weren't touched by the events at the meeting, and I wish that there were some way to bring them in. A football match instantaneously touches hundreds of millions of people around the globe; shouldn't Bayesian inference have a similar impact? Isn't it the case that hundreds of millions of people around the globe will have need for Bayesian inference at some point in their lifetime?

On a not unrelated note, one way of assessing the impact of ISBA on society at large is to type "ISBA" into your favorite search engine. When I do so, at my US-located site, I get the Illinois State Bar Association, followed by the Indiana School Board Association, followed by "our" ISBA. We do beat out the International Society of Business Astrologers, but just barely. Now while I am willing to admit that lawyers from Illinois can be important people, is it really reasonable to imagine that what currently appears on the Illinois State Bar Association website is as important to human life on this planet as Bayesian inference? How do we become more prominent in the world's intellectual life in a way that is commensurate with the fundamental place of inference in so many areas of human endeavor? How do we get our message out beyond the circle of those who already know the message?... *Continued on page 2.*

In this issue

MESSAGE FROM THE PRESIDENT, *Continued from page 1.* ...One point to make in this regard is that information on the Internet is increasingly visual (indeed, the number of bits transmitted on the Internet for video swamps all other media). I need go no further than my own small children to see the compelling nature of visual information compared to other kinds of information.

Now, our visual presence on the Internet is surprisingly uncompelling. This seems to me to be something that can and should be fixed. At the ISBA World Meeting in Kyoto we are taking a step in this direction. We will be videotaping the lectures on the first day of the meeting—the traditional Tutorials have been renamed for this purpose the "ISBA Lectures on Bayesian Foundations." The videos will be made freely available on the ISBA website soon after the meeting.

I quite enjoy summoning up the image of a teenage proto-Bayesian superstar researcher somewhere in the Third World, whose chances of being able to attend the Kyoto meeting are miniscule, eagerly clicking on an ISBA Lectures on Bayesian Foundations video and taking a front-row seat at the conference (after watching the latest Lady Gaga video, of course). I also think that it is essential for the historical record that in one hundred years the great Bayesians of our day can be viewed explaining their ideas in their own words.

Note that I said "freely available." Of course nothing is free, and we are allocating a portion of the conference budget to the videotaping (and editing and hosting). The amount is not large, however, and I hope that future Program Committees will agree that the expense is worth it. Moreover, I envision future ISBA budgets including line items for "video outreach." I hope that people will agree that this is a good use of the funds deriving from your dues.

This initiative need not be restricted to ISBA or to ISBA-sponsored meetings of course. Indeed, I hope that those of you who are involved in organizing other meetings will consider whether you might be able to videotape some of the talks at your meeting. Similarly, seminars given at your university may already be videotaped. (I seem to be signing more and more video release forms these days). ISBA would be happy to link to these independently generated and hosted videos as part of the nascent and hopefully rapidly growing Bayesian video library.

Another parenthetical note about "freely available"—it is certainly also possible to envisage making for-payment videos available on the ISBA website as a way of generating an income stream for ISBA (and use the income in part as a way to make more videos freely available). I envision that the eventual "Bayesian video library" will involve a wide variety of formats.

There are dangers of course. Bayesians are a strikingly handsome subset of statisticians, and with the advent of a video library this little-known secret will be out for all to see. Are our institutions prepared to cope with paparazzi and People Magazine? ▲

A MESSAGE FROM THE EDITOR

- Manuel Mendoza -
mendoza@itam.mx

In this issue of the Bulletin, our Annotated Bibliography Section Editor, Beatrix Jones, presents an interesting article by Radu V. Craiu were the recent literature on Adaptive MCMC is reviewed. Also, Luke Born, Student's Corner Editor, continues the series of articles where his panel of experts answer another question, particularly relevant for the young Bayesians. In addition, the officials of our society provide us with a huge amount of valuable information. We can read the statements of the candidates running for the 2011 ISBA election. The article describing the new features of the ISBA website will surely be very useful. A report on the winners of the 2010 winners of the Savage Award and the Mitchell Prize is also included.

I hope you will find this bulletin interesting and useful. As always, I want to encourage all members of ISBA to contribute to the Bulletin with their suggestions, manuscripts and announcements. Please do not hesitate to contact me or any member of the Editorial Board. ▲

FROM THE EXECUTIVE COMMITTEE

What's New on The ISBA Website

- Merlise Clyde -
ISBA Executive Secretary
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New Member Promotion

Join ISBA now and get an extra year free! New members who join ISBA after September 1 will have their membership extended by an extra year! This also applies for all new section memberships in the Objective Bayes or the Bayesian Nonparametrics sections. Members receive discounts on ISBA sponsored or co-sponsored meetings, IMS membership, the ISBA Bulletin and more! For more info on ISBA benefits visit our membership page. Click here if you are ready to join! Already a member? then please let your colleagues know about the member promotion!

RSS

Ever wonder what that little image at the bottom corner of the ISBA homepage represented? Or on the bottom of each forum webpage? (In some browsers it may be visible in the URL address field.) It is a link to the RSS feed for the page. Click on the image (yes even the one in this bulletin) and it will bring up a "News feed" version of the site or specific page. RSS stands for Really Simple Syndication and it provides an alternative way to subscribe to content that may be changing frequently, such as calendars or forums. You may subscribe to a RSS feed and read the content using a news reader such as Google reader.

Some browsers also allow you to subscribe to an RSS feed by email (e.g. Safari on Mac OSX). We also have the ability to import other news feeds and display them on our site. In the near future we hope to add the RSS feed from Bayesian Analysis, as well as other feeds from other statistical societies.

This provides an alternative way to keep up with news and events on the ISBA website. Check it out!

What's Up with the Website!

The ISBA website has been undergoing a major overhaul as we complete our conversion to using an open-source Content Management System (CMS) called Drupal. In reality, Drupal has been in use to support the member management system (CiviCRM) that has been in place since 2009; this latest series of updates brings the website and membership system together so that there is just one url that Bayesians need to remember: http://bayesian.org! (The membership system address http://membership.bayesian.org is now redirected to the main site). We have taken time to reorganize many sections, so if you cannot find certain content, please let us know. We thank all of you for your patience as we complete the upgrade, but in the end we hope you will enjoy the added benefits!

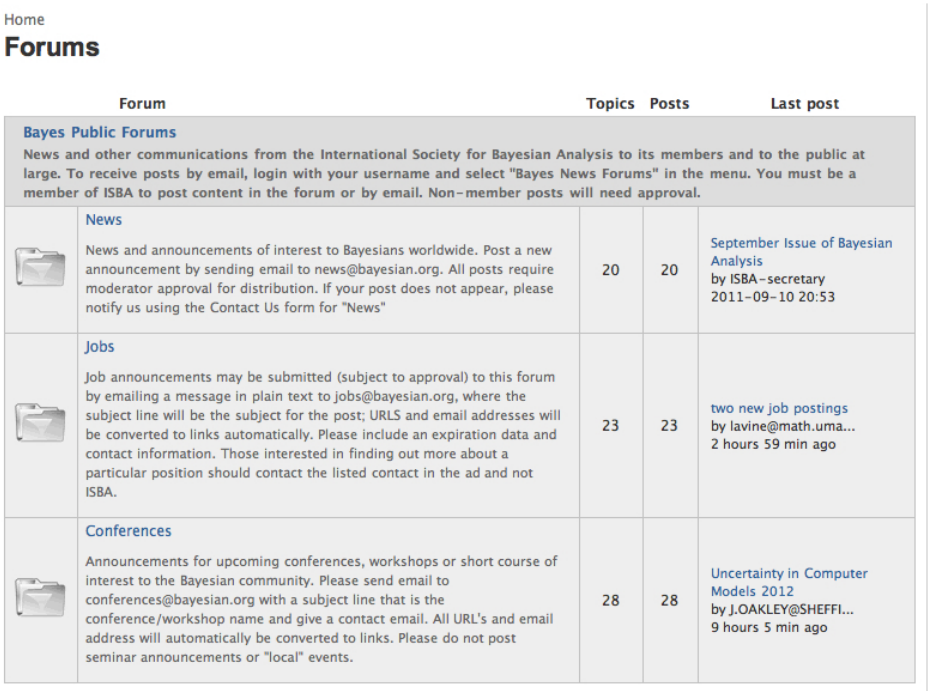
Some of the new features on the site include:

- Event Calendar An event calendar which includes year, month, day, list or item views. The calendar may be downloaded in an ical format for import into other calendars or is available as an RSS feed for a news reader like Google Reader. The calendar includes meetings and announcements for the general public, as well as calendar views tailored to members of ISBA committees (available to committee members if you are logged in). We are hoping to add RSS news feeds from other statistical societies so that we may maintain an up-to-date list of meetings from around the world. New events may also be submitted using our Event submission form and will be added to the calendar (subject to approval). A list of upcoming events and deadlines are listed on the homepage, with links to other views.
- ISBA Forums Public and private forums with email distribution or RSS feeds for News, Conferences, and Jobs, as well as ISBA committees. The public Bayes News Forums reach over 2500 researchers interested in Bayesian Statistics and are open to anyone (all posts are subject to moderator approval to prevent spam and members sha-

ring their vacation plans). See the section later about how to subscribe.

- Membership Status Can't remember if you paid your dues? Now if you login, and go to any of the membership (and several other sections of the website) all of your memberships and expiration dates will be displayed in the upper right block!
- Bayesian Blogs anyone out there with amusing musings? we need you!
- Fund raising campaigns. Many of the endowments for ISBA prizes are not producing enough income to fund the awards and prizes at their intended levels. We will be launching several initiatives over the next year in a capital campaign to increase these endowments. The funds page now shows how much has been contributed for each campaign, and what remains (so don't just click, please contribute!)
- Elections We have implemented a new voting module that has been in use by the Board for recording votes, and will be used for the general election this October. Electoral lists are determined by current memberships, so make sure that your dues are up to date so that you may participate! (you will only be allowed to view the ballot if you are a current member AND logged in.)
- Book of Procedures This an online handbook that officers and committees may update to fill in all the practical details that are left out of the bylaws and constitution.
- Conference Registration Planning a Bayesian conference? Please consider using the ISBA registration site and see how ISBA can help promote your Bayesian meetings! Test drive the demo registration page to see.
- Coming soon - New Membership sign-up pages! With the addition of ISBA sections, we are revising our membership sign-up pages - coming this fall we will have a new membership page that will allow members to join ISBA, select sections, and make a contribution to support ISBA funds with just one credit card transaction!

Many pages on the website allow members to leave a comment that may be published (after moderator approval). We hope that you will explore the new features on the website and please give us any feed back about features that you would like to see added in the future! To comment, on this article, go to the online version and login to submit a comment!


Home

Forums

Forum	Topics	Posts	Last post
Bayes Public Forums News and other communications from the International Society for Bayesian Analysis to its members and to the public at large. To receive posts by email, login with your username and select "Bayes News Forums" in the menu. You must be a member of ISBA to post content in the forum or by email. Non-member posts will need approval.			
News News and announcements of interest to Bayesians worldwide. Post a new announcement by sending email to news@bayesian.org. All posts require moderator approval for distribution. If your post does not appear, please notify us using the Contact Us form for "News"	20	20	September Issue of Bayesian Analysis by ISBA-secretary 2011-09-10 20:53
Jobs Job announcements may be submitted (subject to approval) to this forum by emailing a message in plain text to jobs@bayesian.org, where the subject line will be the subject for the post; URLS and email addresses will be converted to links automatically. Please include an expiration data and contact information. Those interested in finding out more about a particular position should contact the listed contact in the ad and not ISBA.	23	23	two new job postings by lavine@math.uma... 2 hours 59 min ago
Conferences Announcements for upcoming conferences, workshops or short course of interest to the Bayesian community. Please send email to conferences@bayesian.org with a subject line that is the conference/workshop name and give a contact email. All URL's and email address will automatically be converted to links. Please do not post seminar announcements or "local" events.	28	28	Uncertainty in Computer Models 2012 by J.OAKLEY@SHEFFI... 9 hours 5 min ago

ISBA Forums

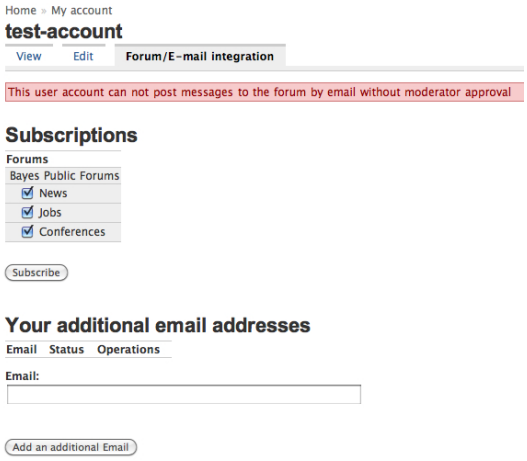
To provide the public with news and events of interest to the Bayesian community, we have created the new "Bayes News Forums" on the ISBA website at `http://bayesian.org/forum`.

There are currently three public forums: News, Jobs, and Conferences, all of which provide a history of past announcements (a benefit of forums), while also providing the ease of email distribution of content. Each forum has its own email address which allows for public submission of news, events, and jobs announcements:

- news@bayesian.org
- conferences@bayesian.org
- jobs@bayesian.org

How to Receive News

- You may view forums at any time from the website. Go to `http://bayesian.org/forum` to see the list as well as posting guidelines, FAQs, etc.
- Use a News Reader to subscribe to each forums news feed. You may use a news reader like Google Reader to subscribe to forum posts and aggregate content from several sites (some provide nice search options or allow email subscriptions - this will depend on your browser)
- You may subscribe by email to any of the above forums to receive new posts by email. All members of the Valencia list and the bayes-news list from CMU had accounts created on the ISBA system to receive posts by email. ISBA members will need to add a forum subscription, if they had not "opted-in" thru the Valencia list or bayes-news. To manage your subscriptions:
  1. Login
  2. Click on My Account at the upper left
  3. Select the Forum/Email Integration Tab
  4. Check or uncheck any boxes to add/drop subscriptions (see image). Then click the "Subscribe" button. You may add or drop subscriptions at any time.



How to Post

The news, conferences, and jobs forums are open to the general public for posting and subscriptions. Anyone may submit a topic by email to one of the above email addresses, but all posts must be approved by a forum moderator before publication. If the forum moderator approves the post, it will be added to the corresponding forum and then sent out by email to all subscribers (over 2500 now). The default is that all replies to a post will be listed as comments on the original post (again subject to moderator approval).

For Private Forums (Executive, Prize Committee, Board, etc.) all posts by email must originate from the email address that is registered to your ISBA account. You may register your other email addresses under the Forum/Email Integration tab (see image), if you plan to submit posts from multiple email accounts.

Posting Guidelines

- Please include an informative subject line – this will be the title in the forum list.
- Please submit plain text; all urls and email address will be converted to links automatically.
- Include a contact person and email (for jobs or conferences)
- Avoid "- -" in text. This is used as a separator between the body of email messages and the signature block, so text below the "- -" is not forwarded (but will appear as a link in the forum).

- Do not include attachments; they will not be linked or forwarded.
- More guidelines are available on the Forum Webpage.

If you would like to see other public forums added (teaching,software, discussion of choice of priors) please let me know! ▲

2011 ISBA ELECTION

Candidate Statements

- Merlise Clyde -
ISBA Executive Secretary
clyde@stat.duke.edu

The 2011 Nomination Committee, chaired by Past-President Peter Müller, has assembled the following slate of candidates for the open positions in the upcoming election. Biographical information and candidate statements appear below, as well as on the ISBA website, which includes additional links. ISBA will open electronic voting via the ISBA website beginning October 15th, with elections closing November 15th. All current members will be emailed instructions for voting prior to the election. This is the first year that the Objective Bayes (OB) and Bayesian Nonparametric (BNP) Sections will hold elections. Please sign up for section membership if you wish to participate in the section elections. See the new member promotion in this issue!

Please note, the following statements are presented in a random order and do not reflect any endorsement by the Nomination Committee.

President 2013, (President-Elect 2012, Past President 2014)

Merlise Clyde (Duke University)

I am honored to stand for election for ISBA president. I am Professor of Statistical Science at Duke University. My research interests include Bayesian model choice, nonparametrics, and experimental design, although new areas emerge from collaborations with other research scientists. I have been involved with ISBA in many capacities: as a long term member; a member of the Board of Directors; a member and chair of the Savage Trust Committee; a member of the Bylaws and Constitution Committee; Associate Editor for Bayesian Analysis,;and most recently as Executive Secretary. I have served as program chair and publication officer for the ASA Section on Bayesian Statistical Science and Secretary/Treasurer for the ASA Computing Section, as well as serving on the IMS Council. I would be delighted to serve as President if elected!

ISBA will be celebrating its 20th anniversary next year and there lots of accomplishments to celebrate! The number of Bayesian meetings across the world and journal articles in top journals reflects the vibrancy and activity of the Bayesian community. The year 2013 has been declared the International Year of Statistics, but perhaps it should be the "International Year of Bayes" as 2013 marks the 250th anniversary of the reading of Bayes Essay before the Royal Society! We have three Bayesian meetings organized by ISBA chapters and sections in the works for 2013, but this is an excellent opportunity to showcase to the rest of the world (through sessions at other meetings, review articles in non-statistics journals, articles in the popular press, etc) the advances made by Bayesian thinking! (and we get to celebrate again in 2014, on the anniversary of the publication of the paper!). Financially, ISBA is in great shape thanks to former officers and boards of directors and a series of successful meetings, yet there are a number of challenges ahead. If elected, my key priorities would be:

Financial Vitality: With biennial ISBA World meetings, ISBA sections, ISBA chapters, and other co-sponsored meetings, and minimal income from endowments for prizes, we are faced with increased demands on general funds to support young researchers to participate in meetings and to provide awards at the levels intended by the founders. We need to develop budgets that anticipate the range of activities in odd and even years and build up an operational reserve for emergencies and other unplanned expenditures.

The establishment of a standing Finance committee to guide investments and annual fund raising campaigns to increase the levels of current endowments and fund new strategic initiatives are needed steps to ensure the long-term financial viability of ISBA. Membership in ISBA is at an all time high, and we have over 2000 subscribers to the ISBA Forums! However, we need to identify ways to retain current members and attract new members in statistics and other fields, by evaluating the benefits ISBA provides members. As ISBA continues to grow and develop more activities, we will need to add more "permanent back office" support for day-to-day membership and financial matters.

Bayesian Analysis: As our society's flagship publication, we need to examine ways to promote the journal and increase its prestige among other societies, and make BA one of the top statistics journals in the world! Adding the journal to Project Euclid and depositing articles in arXiv are examples of how to increase online visibility so that the journal and articles have greater impact. Working with the current editorial group, next editor, ISBA Board and members, I would explore how we can improve operational aspects of the journal such as handling of submissions; one potential option is to build on our partnership with IMS to provide increased functionality using their Electronic Journal Management System. The process for advertising, submission, tracking, and selection of the best paper presented at an ISBA World meeting for the Lindley Prize is another priority for better integration between BA and ISBA.

Outreach and Education: As a professional statistical society, education (at all levels) and outreach to other fields is an important part of our broader mission. I would like to see ISBA have a stronger role in the organization (or cosponsorship with other institutions and societies) of Summer Schools in Bayesian Statistics, to provide training in basic and advanced Bayesian methods for students/researchers from institutions where there may not be a critical mass of Bayesian statisticians. In the digital age, interactive remote classrooms are a potential avenue for providing broader participation while minimizing travel expenses for participants. Expansion of the ISBA website to provide resources such as videotapes of tutorials, case studies, lectures, screencasts of software demos, a discussion forum for teaching Bayesian statistics are other ways that ISBA may provide outreach to the scientific community.

Many of these issues are shared by our sister societies; increased cooperation and discussion among societies for sharing ideas, calendars, conference co-organization, continuing education, and open access to scholarly work will benefit all of us!. I am excited about the opportunities ahead and hope that we can engage our members to help make ISBA the best statistical society in the world!

Kerrie Mengersen (QUT)

I preface this statement by saying that I have just seen who is also standing for President. You should vote for Merlise! She is one of the world's best researchers in methods and application of Bayesian statistics and has worked tirelessly for ISBA for many years. She would make an excellent President.

As Bayesian statisticians we have one of the best jobs in the world! I am a Research Professor in Statistics at QUT in Australia. I do statistical research, applied statistics and statistical consulting. Since undergraduate days, I have participated actively in statistical societies: I was one of the founders of the Australasian branch of ISBA (ASBA) and have been involved in ASBA activities since its foundation. I am a long-time member of ISBA, SSAI, IBS, RSS, IMS and ASA, current President of the Statistical Society of Australia and past managing editor of our journal (Australian and New Zealand Journal of Statistics) and have served in executive roles for ISBA and SSAI for many years.

We have a great Bayesian research and applications group (BRAG) at QUT; for more details see: http://www.ccdamc.org.au/frmain/brag/.

As the world's pre-eminent Bayesian Statistics Society, what is ISBA? In my view, ISBA aspires to: nurture an active professional community of researchers and practitioners in Bayesian statistics, support relevant high-quality research and innovation in this field, actively participate in modern international scientific challenges, provide leadership in the application of Bayesian statistics, and train current and new professionals and researchers. To achieve this vision, ISBA must deliver value to its members and engage them in its activities, broadly embrace Bayesian statisticians in their various fields and by their various names, and actively promote Bayesian statistics at all levels of our communities.

In accordance with this vision of our Society, I

wish to outline the five main issues that I would address as ISBA President:

1. Promote our Profession. Bayesian statistics encompasses such a broad range of theory, methods, computation and applications. As a Society we can promote our many success stories among scientists, researchers, industry, government, schools and the community. We also have challenges at all of these levels; again, as a Society, we are better placed to address these together.

2. Review and revise the ISBA Strategic Plan and Financial Plan. These provide a blueprint for our Society. All members would be encouraged to participate in the review. Our Society must keep pace with the changing face of Bayesian statistics, while maintaining its integrity and viability.

3. Support and promote the Society's groups. We are fortunate to have active country groups, amazing young statisticians and hard-working committed committees. These are the lifeblood of our Society. In addition, our Bayesian Analysis journal is a great asset to the Society and our profession in general. We need to work with these groups to meet their needs and support their activities and plans.

4. Expand and consolidate linkages between ISBA and other professional societies. There are many Societies that encompass (Bayesian) statisticians and allied professionals as teachers, researchers, practitioners and managers. I believe that ISBA can benefit from greater understanding of, and closer interaction with these groups.

5. Review and revise what we deliver as a Society to our members and how members engage with ISBA.

As with all Societies, ISBA is not made up of 'them', but of 'us' . It does not exist for 'them' ; it exists for 'us' . It will not grow and deliver value to its members and the wider community if we leave it to 'them' ; this is up to 'us' . We need to ensure that the voice of ISBA is heard, and provide ways in which ISBA can flourish through its members. In this way we can all build a strong, large Society of which we are all proud.

Board of Directors 2012-2014 (4 open positions, 8 candidates)

Igor Pruenster (University of Torino)

I am Associate Professor of Statistics at the University of Torino, Italy. My main research interests lie in Bayesian Nonparametrics and I have worked on the analysis of nonparametric priors, asymptotics, mixture models, survival analysis and species sampling problems. My scientific background has been shaped in Italy and has been influenced by the myth of de Finetti: being Bayesian was, then, obvious to me and I am actually still wondering how a statistician can not be Bayesian!

I have been a proud member of ISBA since my graduate studies and I have been pleased to serve ISBA and the broader statistics community as: member of the ISBA Program Council and of the Savage Award Committee, AE of Bayesian Analysis and of the Electronic Journal of Statistics. I also organized the 7th Bayesian Nonparametrics Workshop in Torino and collaborated to the organization of several other conferences and sessions – most notably ISBA 2012 in Kyoto.

ISBA has been playing for many years a key role in promoting Bayesian statistics. If elected, I will do my best to contribute to its continuing service to our community along its traditional lines – with the much appreciated emphasis on junior support both scientifically and financially. Specific issues I consider of particular importance are: (a) Open access to scientific journals and to any research output, if used for academic purposes; in this respect ISBA should try to strengthen its relations with other professional societies who share this goal; (b) Fostering interactions with other disciplines while at the same time preserving our identity defined by the methodological core and the theoretical foundations of Bayesianism.

I would be honoured to serve on the ISBA board.

Maria de Iorio (University College London)

I am currently a Reader in Statistics at University College London and my main research interests are in Biostatistics and Bioinformatics. I have collaborated on many interdisciplinary projects and I have promoted the use of Bayesian methods on different problems, having been involved in many statistical applications ranging

from cancer studies to population genetics, genomics and metabolomics. During my career I have tried to combine applied work with theoretical research. This wide range of research has ensured that I maintain a balanced view of current statistical research methods and practical problems of interest to the wider scientific community.

It has been an honour to be nominated for the ISBA board. I have already served ISBA in the past: as a graduate student I was an Associate editor of the Student section of The ISBA Bulletin. If elected I will keep on promoting the use of the Bayesian paradigm among different sciences and try to also support Bayesian training. Bayesian statistics is becoming more and more known and I would like to support this.

Kate Calder (Ohio State University)

I am Associate Professor of Statistics at the Ohio State University. My research is primarily in the area of Bayesian spatial and spatio-temporal statistics. I work in a variety of areas of application in the environmental, social, and health sciences. I have had the privilege of serving ISBA over the past several years as the editor of the Applications Section of the ISBA Bulletin (2004-2007), as a member of ISBA nominating committee (2008), and as an associate editor of Bayesian Analysis (2009-present). In addition, I am currently an associate editor for three other journals (Annals of Applied Statistics, Biometrics, and Environmetrics) and actively participate in the ASA Sections on Bayesian Statistical Science and Environmental Statistics.

It is an honor to be nominated to be a member of the ISBA Board. If elected, one goal would be to pursue additional sources of funding to increase opportunities for students from across the world to participate in ISBA-sponsored conferences and workshops. In my opinion, such opportunities are essential to fostering the development of the next generation of Bayesian statisticians and securing the continued growth of the ISBA community.

Jerry Reiter (Duke University)

I am honored to be a candidate for the board of directors of ISBA. Currently, I am the Mrs. Alexander Hehmeyer Associate Professor of Statistical Science at Duke University in Durham, NC, USA. My main research interests center on bringing Bayesian and modern computational approaches to bear on problems in official statistics. In particular, I work extensively on methods for protecting data subjects' confidentiality and for handling missing/faulty values in public use datasets. Given the complexity of these problems, Bayesian modeling clearly offers the best, and arguably the only, path to broadly-applicable and reliable solutions. I also very much enjoy and value teaching students at all levels about Bayesian inference. For example, I teach an "Intro to Bayes" course for graduate and advanced undergraduate students, and introductory undergraduate statistics courses in which I always include Bayesian inference. I am the secretary/treasurer elect for the SBSS of the ASA, the chair of the ASA Privacy and Confidentiality Committee, and an associate editor for four journals including JASA. If elected to the ISBA board, I would look for opportunities to help ISBA best serve its members, and I would work to promote ISBA and Bayesian thinking among official statisticians and educators.

Zoubin Ghahramani (Cambridge University)

I've been an active Bayesian statistician for over a decade, working at the boundaries between statistics, machine learning, engineering and other fields. I am passionate about the future of Bayesian statistics, and would be delighted to serve on the ISBA board. My research has focused on nonparametric Bayesian methods in machine learning, approximate inference, graphical models, and applications of Bayesian statistics to areas such as bioinformatics, information retrieval, econometrics, and neuroscience.

I'm currently Professor of Information Engineering at the University of Cambridge, UK, and also Associate Research Professor of Machine Learning at Carnegie Mellon University, USA. I've served on the editorial boards of several leading journals in the field, including Journal of Machine Learning Research, Annals of Statistics, and Bayesian Analysis. I was recently Associate Editor in Chief of IEEE Transactions on Pattern Analysis and Machine Intelligence, one of the IEEE's highest impact journals. I served on the Board of the International Machine Learning Society (2006-2011), and was Program Chair (2007) and General Chair (2011) of the International Conference on Machine Learning, and Program Chair (2005) of the AI and Statistics Conference.

We are in a very exciting decade for Bayesi-

an statistics. The field is growing tremendously, and many of the new practitioners and contributors are from outside mainstream statistics. ISBA should continue to be a central resource for Bayesian Statisticians but can also be a focal point for these other communities. I hope to bring to the ISBA board my experience working in a number of diverse roles in academia, in several countries, and in non-statistics fields. I also hope to contribute with my dedication to furthering education and research in Bayesian statistics.

Robert Gramacy (University of Chicago)

I am an assistant professor of Econometrics and Statistics, and Kemper Foundation Faculty Scholar, at the University of Chicago, Booth School of Business. I am a computational statistician who values implementation and methodology equally. Bayesian statistical inference is well aligned with my skill set, and with how I think about the scientific enterprise. One of my career goals is to enrich the set of open-source (R) tools for Bayesian inference that are both readily deployable by non-expert practitioners, and simultaneously extendable and customizable by expert statisticians and computer scientists. My main research interests lie in the sequential design and optimization of computer experiments, although I also have worked on problems of covariance estimation in finance, ecological and epidemiological modeling and intervention, and on public policy. My first service to the Bayesian statistical community was as a web designer/maintainer for the International workshop on Bayesian data analysis, held at UCSC in 2003. Subsequently, I was the associate editor of the Student Corner section of the ISBA bulletin from 2005-2006. I am currently an associate editor for Bayesian Analysis and Technometrics.

ISBA and its members have been very generous to me. For instance, I was delighted to have received a Savage award for my PhD thesis in 2006. I am keen to give back to the community and, in particular, help other young Bayesians find their way. This is an exciting time to be a Bayesian - our family is growing at a breakneck pace - and I am looking forward to the opportunity to help guide us through the next phase as a member of the ISBA board. I hope that as we grow we can retain some of the warmth and sense of intimacy that greeted me when I attended my first ISBA world meeting in Chile in 2004.

Paul Fearnhead (University of Lancaster)

I am Professor of Statistics at Lancaster University. My research interests cover both computational statistical methods and their application. Of particular interest are new methods that enable inference for complex stochastic models. I have worked on developing sequential Monte Carlo and ABC methods; computational methods for changepoint models and diffusions; and numerous applications in population genetics and bioinformatics. I have been associate editor of JRSS series B, Biostatistics and Statistics and Computing, and I am currently involved with the Royal Statistical Society in the UK. I would be honoured to serve on the ISBA board.

Wes Johnson (University of California Irvine)

I am a professor of statistics at the University of California, Irvine. My main recent research focus has been on Bayesian parametric, semiparametric and non-parametric methods for general regression problems, survival analysis, and for longitudinal and diagnostic outcome data. I spend a fair amount of time learning how to take real prior information and induce it onto the parameters of complex models. I have long collaborated with a number of veterinary epidemiologists and have given several workshops that present Bayesian methods that are designed to suit their needs.

I was the local arrangements coordinator for ISBA1, have served one previous term on the ISBA board, served as Chair of the Savage Trust Committee, was a member of the Savage Award Committee, and was an AE for BA for several years. I am currently Chair of SBSS, was previously its program chair. I was also recently program chair for WNAR and was formerly its president, and have served as AE for several other journals.

I recently chaired the SBSS mixer at the JSM-Miami. I would like to report that it was exceptionally well attended and vibrant meaning people were having a good time. I plan to do my best to foster Bayesian Statistics and enthusiasm for it in every way that I can, including as a member of the ISBA board, if elected.

BNP Chair 2013 (Chair Elect 2012)

Steve MacEachern (Ohio State University)

I am Professor of Statistics at The Ohio State University. My research interests are wide-ranging, and I've thought hard about and worked on a number of problems, from application to theory, often with a strong computational element, and from both classical and Bayesian perspectives. But the area I hold nearest and dearest to my heart is Bayesian nonparametrics, in its many varied forms. The nonparametric Bayesian community stands out as the best I've seen – positive and supportive of one another, very open to others joining the community, and working on great forward-looking problems. I believe that these are key reasons why the area has attracted an outsized share of the brightest young researchers, and has produced tremendous techniques that are having such a great impact throughout Bayesian statistics and well beyond. I'll do my best to keep the spirit of the community alive and to promote activities both fully under ISBA's umbrella and jointly with other groups.

I have previously served the Bayesian community as a board member and member of the ISBA Nominating Committee, as Program Chair and chair of the Committee to Nominate Fellows of the ASA's Bayesian section, as a member of the Savage Award Committee, and as an AE for Bayesian Analysis since the journal's inception. More broadly, I have been Program Chair for the ASA sections on Nonparametrics and on Graphics, have been/am an AE for a few other journals, and have helped to organize conferences, most notably as Program Chair for the 2012 JSM.

David Dunson (Duke University)

I am a Professor in the Department of Statistical Science at Duke University. My research focuses broadly on Bayesian methodology, with a particularly emphasis on nonparametric Bayesian approaches motivated by high-dimensional and complex data arising in applications ranging from genetics to machine learning. I am excited about the possibility of chairing the Nonparametrics section of ISBA. My philosophy is that Bayesian nonparametric models, which are defined to have large support, are always preferable to parametric models, which violate the widely accepted rule that all parametric models are wrong. However, one should also be pragmatic and motivated by real world applications. The most exciting developments in Bayesian nonparametrics involve new models and computational algorithms that make a practical difference in applications. However, it is important to not simply define a model and turn a computational crank but to carefully study the properties of the model and computational algorithms that are utilized. In recent years, there has been an increasingly rich and exciting literature providing theoretical foundations to complement the exciting modeling and computational innovations. The machine learning community has been critical in spurring on the rapid pace of development, leading to increasing impact in broad application areas. I have a somewhat unique perspective in being a nonparametric Bayesian statistician, with a recent strong interest in theory (e.g., convergence rates), while also being an active member of the machine learning community; I routinely publish in both leading stats journals (Biometrika, JASA, etc) and machine learning proceedings (ICML, NIPS) and have been actively involved in both stats and machine learning program committees. As chair of the Nonparametrics section of ISBA, I will draw on this broad perspective to encourage participation of both communities in the section and associated workshops, while also organizing workshops at convenient times and locations. We would all benefit by more collaboration and interplay between the theory and applications communities.

BNP Program Chair 2012-2013

Abel Rodriguez (University of California Santa Cruz)

I am very honored by this nomination. The field of nonparametric Bayesian methods has expanded dramatically in the last ten years, and I have been lucky enough to be part of that expansion. As the Program Chair for the BNP section I mean to channel the energy of our community to help increase our presence on international conferences and workshops. For example, the Section could sponsor invited and contributed sessions for the biannual ISBA meeting. I also believe that the BNP community needs to build closer links with the community working on traditional nonparametric methods.

I am currently an Associate Professor at the University of California, Santa Cruz. Besides nonparametric Bayesian methods, my research interests include graphical models and network analysis, as well as applications in finance, public health, and computational biology. I am currently an Associate Editor with the Annals of App-

lied Statistics, have served in the travel award committee of the Section of Bayesian Statistical Sciences of the American Statistical Association, and recently managed the NSF-funded travel support award for the 8th BNP meeting in Veracruz. I also have experience organizing scientific meetings; last year I organized a CBMS-NSF conference on nonparametric Bayesian methods at the UC Santa Cruz campus, and next year I will be organizing the next SBIES meeting and a second CBMS-NSF meeting on Model Uncertainty and Multiplicity.

Michele Guindani (University of Texas MD Andersen Cancer Center)

I am currently an Assistant Professor at the Department of Biostatistics at the MD Anderson Cancer Center, where I joined in August 2010 after spending 3 years as Assistant Professor at University of New Mexico. I received my Ph.D. from Bocconi University, Milan, Italy. During my Ph.D., postdoc and after, I have been blessed by the mentorship and collaboration of great people, who have made me a fervent and dedicated "homo Bayesianis Nonparametriensis". My current interests rest in the use of Bayesian Nonparametric methods for a wide set of problems, including the analysis of genomic, clinical and spatially referenced data, as well as multicomparison discovery procedures. I thank the section committee for nominating me for this position. If elected, I hope to fulfill the expectations and continue the great work that Ramses Mena, the previous program chair, has carried on. The recent BNP workshop in Veracruz has proved that our field is wild and lively, with so many theoretical developments, so many applied contributions, and definitely so much responsibility for a program chair!

BNP TREASURER (2012-2013)

Maria Kalli (University of Kent)

I have been a lecturer in statistics at the Centre of Health Services Studies at the University of Kent since January 2008. I gained my PhD in statistics in November 2008, and my thesis work was based on Bayesian nonparametric methods applied to Financial Econometrics. I continue research in these two areas as well as Bayesian variable selection, stochastic processes, MCMC with applications to macroeconomics. Prior to my academic career I was an associate at the Equity Derivatives division at Goldman Sachs (London) and a manager in the business services division of KPMG Peat Marwick. I hold an MBA in financial engineering from the Stern School of Business at NYU and I am qualified as a Chartered Accountant. I have been treasurer of youth division of the Cyprus section of the Rotary club. Since then I have acted as treasure of the Cyprus Rotary club from 2000-2004. I am currently the treasurer of the Cyprus MBA association.

Thanasis Kottas (University of California Santa Cruz)

It is an honor to be nominated as an officer for the young ISBA section on Bayesian nonparametrics. I am currently an Associate Professor in the Department of Applied Mathematics and Statistics at the University of California, Santa Cruz. My research focuses on Bayesian nonparametric methods for regression problems, modeling for point processes, and survival analysis, with particular emphasis on applications. I have been the instructor of regular and short courses on applied Bayesian nonparametrics, and served on the organizing committee of two conferences on nonparametric Bayesian methods. I am currently an Associate Editor for Bayesian Analysis and an Action Editor for the Journal of Machine Learning Research. These are exciting times for Bayesian nonparametrics, and if elected, I hope to promote the current level of enthusiasm for the field.

OB Chair 2012-2013

Ed George (University of Pennsylvania)

I would be very pleased to have the opportunity to serve as Chair of the Objective Bayes Section of ISBA. To meet the dramatic escalation of the demand for Bayesian solutions to real problems, I feel it essential that ISBA promote the development of Bayesian methodology that can be effective with limited, or even no, subjective input. I completely support the mission of the Objective Bayes Section to encourage this development through workshop and conference organization. I am currently Professor and Chairman of the Department of Statistics at the University of Pennsylvania. Over the years, I have served ISBA as President, as Chair of the Program Council, and as a member of the Board of Directors and numerous other conference and prize committees.

Luis Pericchi (University of Puerto Rico)

I was very pleased to have been suggested as a candidate for coordinating the O'Bayes section. OBayes meetings and section are very dear to me.

In my experience on scientific conferences of all kinds, some of the deepest discussions, and most useful and practical ones, has taken place in OBayes Meetings. OBayes not only enlarges the applicability of the Bayesian Approach, but also it is a wonderful venue to interact, and convince!, open minded statisticians of all schools of thought. It is the Objective Bayesian arena, on which a "compromise" among statistical schools is taking place, for a better statistical practice and philosophy.

I was also pleased to know the other candidate is my friend Ed George, a colleague that I admire. Either way this election goes, Ed and I will work together I am sure.

I have served in ISBA Board of Directors and as a Program Chair.

OB Secretary 2012-2013

Marilena Barbieri (U Roma 3)

I am professor at Universita' Roma Tre (Italy). My research interests include interactions between Bayesian and frequentist methods; prior elicitation; model choice and test, mainly using an Objective Bayesian approach. I would be glad to help to promote research in Objective Bayesian inference.

I have served ISBA on two nominating committees, the last one in 2009, and as a member of the Board from 2006 to 2008. I have also been a member of the Savage Awards 2010 committee and of the organizing committee of the 2007 International Workshop on Objective Bayes Methodology in Rome. I would be very honoured to serve as Secretary of the Section on Objective Bayes.

Jaeyong Lee (Seoul National University)

It is my honor to be nominated as the secretary of Objective Bayes section. I am professor of the department of statistics at Seoul National University in South Korea, and will be the chair of the department from September of 2011. My research focus has been theoretical properties and posterior computation of Bayesian nonparametric models. Recently, I am also interested in high-dimensional Bayesian modeling. I am currently an associate editor of Bayesian Analysis and Journal of Biopharmaceutical Statistics. I was a member of nomination committee for ISBA in 2010. I am a member of program committee for ISBA 2012 meeting and the current secretary of Objective Bayes section. I will be honored to serve as the secretary of Objective Bayes section. ▲

PILAR IGLESIAS FUND

FUND RAISING CAMPAIGN

- Fabrizio Ruggeri -
ISBA President-elect
fabrizio@mi.imati.cnr.it

The ISBA Executive Committee has decided to launch a new fund raising initiative for the Pilar Iglesias Fund, which allows young researchers from developing countries to attend ISBA World meetings. We would like to raise US 10,000 to increase the endowment of the Fund and bring more young people to ISBA 2012 in Kyoto (and to the next ISBA meetings), in the same spirit which animated Pilar Iglesias who worked hard, as Chair of the ISBA 2004 Organizing Committee, to have as many young researchers and students as possible at the meeting in Chile. For her friends and the people who knew her, Pilar was a model to be admired for her passion and outstanding qualities, as a researcher and as an educator. ISBA would like to guarantee the Fund for years to come, so we invite all of you to contribute to it by clicking on https://bayesian.org/civicrm/contribute/transact?reset=1&id=8. ▲

ISBA AWARDS

SAVAGE AWARD AND MITCHELL PRIZE

- Merlise Clyde -
ISBA Executive Secretary
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The 2010 Savage Award and 2010 Mitchell Prize were presented at the Section on Bayesian Statistical Science Business Meeting and Mixer at this years' Joint Statistics Meetings in Miami, Florida. So in case you missed that event here are the 2010 winners!

Congratulations go to **Ian Vernon, Michael Goldstein** and **Richard Bower** for winning the Mitchell Prize for their article *Galaxy Formation: A Bayesian Uncertainty Analysis* which appeared in Bayesian Analysis 5: 619-670 with discussion.

The Winners of the 2010 Savage Award in Theory & Methods are: **Julien Cornebise**, *Adaptive Sequential Monte Carlo Methods*. Université Pierre et Marie Curie - Paris 6, France; Eric Moulines, advisor. **Daniel Williamson** (Honorable Mention), *Policy making using computer simulators for complex physical systems; Bayesian decision support for the development of adaptive strategies* Durham University, UK; Michael Goldstein, advisor.

The Winners of the 2010 Savage Award for Applied Methodology are: **Ricardo Lemos**, *Hierarchical Bayesian Methods for the Marine Sciences: Analyses of Climate Variability and Fish Abundance*. University of Lisbon, Portugal; Henrique Cabral and Ramiro Neves, advisors. **Robin Ryder** (Honorable Mention), *Phylogenetic Models of Language Diversification*. University of Oxford, UK. Geoff Nicholls, advisor.

Congratulations to all! and of course many thanks to the Mitchell Prize, Savage Award, and ISBA Prize committees for all of their hard work. The 2011 Awards & Prizes will be announced at the 2012 ISBA World Meeting in Kyoto. Stay tuned! ▲

BAYESIAN ANALYSIS - A MESSAGE FROM THE EDITOR

UPDATE FROM BA

- Herbie Lee -
Editor-in-Chief
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The September issue of Bayesian Analysis is our first special issue, featuring selected contributed papers presented at the 2010 World Meeting of the International Society for Bayesian Analysis at Benidorm, Spain. Some of the papers focus on a favorite Bayesian topic, priors. Others deal with inference or goodness-of-fit. The final two papers provide methodology for case studies in paleoclimatology and astronomy. All of the ISBA 2010 manuscripts were vetted through the standard review procedures for Bayesian Analysis, and these are the ones selected for publication. ▲

ISBA - SECTIONS

OBJECTIVE BAYESIAN SECTION

- Jim Berger -
Chair
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OBayes 2013: Celebrating 250 Years will be held December 15-19, 2013 at Duke University, Durham North Carolina USA, sponsored, in part, by the Department of Statistical Science at Duke.

The original paper by Bayes was published in 1763; thus objective Bayesian analysis will have been in existence for 250 years by the time of the conference. This will also be slightly over 200 years after the publication of Laplace's seminal book *Theorie Analytique des Probabilites* (1812), which formed the foundation of objective Bayesian analysis for over 100 years. This will be the tenth meeting on objective Bayes methodology, following earlier meetings held at held in West Lafayette, IN, USA, 1996; Valencia, Spain, 1998; Ixtapa, Mexico, 2000; Granada, Spain, 2002; Aussois, France, 2003; Branson, MO, USA, 2005; Roma, Italy, 2007; Philadelphia, PA, USA, 2009; and Shanghai, China, 2011. The principal objectives of O-Bayes2013 are to commemorate the history of objective Bayesian analysis, facilitate the exchange of recent research developments in objective Bayes methodology, provide opportunities for new researchers, and establish new collaborations and partnerships that will channel efforts into pending problems and open new directions for further study.Details will be forthcoming at a later date, but please add the dates to your calendar! ▲

NONPARAMETRIC BAYES SECTION

- Ramses Mena & Stephen G. Walker -
Program Chair & Chair
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As has been mentioned in a previous issue of this bulletin, the 8th Workshop on Bayesian Nonparametrics (8thBNP) held in Veracruz (Mexico) was a resounding success with excellent feedback from many participants. The weather held up, though was threatened by storms, and the attendance broke new records. The future indeed looks bright for Bayesian nonparametrics. Continuing with the initiative set at the Isaac Newton Institute for Mathematical Sciences in 2007, the meeting was followed by dedicated research program week, where 22 high profile researchers were able to interact and exchange ideas in cutting edge topics. We are now looking forward to the 9thBNP in the Netherlands. We also hope the BNP section of ISBA will support more events of this type, and we invite you all to join, with an annual membership of only 5 dollars! A bargain! And not to forget the forthcoming ISBA elections (polls open Oct-15), which include sections officers, we encourage you to vote. ▲

ANNOTATED BIBLIOGRAPHY

IDLE HANDS FOR MONTE CARLO RESIDENTS

Radu V. Craiu
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When travelling through Transylvania's villages, as I did this summer, one feels a certain pang of nostalgia for those simpler times in which one could build by hand an entire way of life. However, once we reach the realm of the Markov chain Monte Carlo universe, the opposite desire prevails: we would *really* like to have the computer take over the daunting task of finding good simulation parameters. Nevertheless, such surrender must be done carefully as pitfalls await the unsuspecting users, be they theorists or practicians. And one should keep in mind that while adaptation of a sound MCMC algorithm can save time and trouble, it is also true that automation applied to an inefficient algorithm will likely magnify the inefficiency.

Please note that this annotated bibliography mostly covers the period from 2008 until now as I have tried to minimize the overlap with the previous review of Andrieu (2008). In addition, I have not included here the rich literature on adaptive importance sampling (see Cornuet et al, 2011, for example) and stochastic approximation Monte Carlo sampling (see Liang, 2009 and references therein).

Adaptive MCMC

- Atchadè YF, Fort G, Moulines E, Priouret P (2009) Adaptive Markov chain Monte Carlo: Theory and Methods. *Technical Report, University of Michigan*. A review paper in which the authors make the distinction between *internal adaptation* which relies on the past history of the chain and *external adaptation* which relies on auxiliary processes, be they adaptive or not, that are run in parallel with the chain of interest. This creates a natural connection with the world of interacting MCMC.

- Atchadè YF, Fort G (2010) Limit Theorems for some adaptive MCMC algorithms with subgeometric kernels. *Bernoulli*, **16**: 116–154. The authors investigate adaptive MCMC algorithms derived using transition kernels that are not geometrically ergodic. They introduce conditions that guarantee the ergodicity of the chain and prove a strong law of large numbers in this setting. An application for their results is the Adaptive Metropolis (AM) algorithm of Haario et al. (2001) when the target distribution is sub-exponential in the tails.

- Atchadè YF, Fort G (2011) Limit theorems for some adaptive MCMC algorithms with subgeometric kernels: PART II. *Preprint*. The paper contains a proof of a central limit theorem in the case of AMCMC driven by sub-geometrically ergodic transition kernels. The results are applied to a number of existing chains used in the literature.

- Atchadè YF (2010) A cautionary tale on the efficiency of some adaptive Monte Carlo schemes. *The Annals of Applied Probability*, **20**: 841-868. An adaptive algorithm does not necessarily inherit the same good convergence properties that characterize the limiting transition kernel. The article shows that this is the case, in terms of asymptotic variance, for the equi-energy sampler.

- Atchadè YF (2011) Kernel estimators of asymptotic variance for adaptive Markov chain Monte Carlo. *The Annals of Statistics*, **39**: 990-1011. Studies the asymptotic properties of kernel estimators of asymptotic variances for some adaptive MCMC algorithms.

- Bai Y, Roberts GO, Rosenthal JS (2011) On the containment condition for adaptive Markov chain Monte Carlo algorithms. *Advances and Applications in Statistics*, **21**: 1-54. The ergodicity of adaptive MCMC has been framed by Roberts and Rosenthal (2007) in terms of two general conditions: Diminishing Adaptation (DA) and the Containment Condition (CC). The latter is arguably the most difficult one to prove in general adaptive samplers. The authors propose various sufficient conditions for CC

and connect the convergence rates of algorithms with the tail properties of the target distribution. Examples are given to show that Diminishing Adaptation does not ensure ergodicity.

- Bai Y (2009) Convergence of adaptive Markov chain Monte Carlo algorithms. *PhD Dissertation, University of Toronto*. Shows that neither Diminishing Adaptation nor Containment are necessary for ergodicity. Discusses additional conditions that make Containment necessary and find sufficient conditions that ensure Containment.

- Bai Y, Craiu RV, Di Narzo AF (2011) Divide and Conquer: A mixture-based approach to regional adaptation for MCMC. *J. Comput. Graph. Statist.*, **20**:63–79. When the target distribution can be reasonably approximated by a mixture of Gaussians, the authors propose to use an adaptive regional RWM algorithm. The approximating mixture parameters are estimated with an online EM algorithm and the sample space is adaptively partitioned so that in each subregion exactly one component of the mixture is used as the proposal distribution. It extends the work in Craiu et al. (2009) as the regions are evolving along with the mixture parameters.

- Craiu RV, Rosenthal JS, Yang C (2009) Learn from the neighbor: Parallel-Chain Adaptive and Regional MCMC. *Journal of the American Statistical Association*, **104**:1454-1466. The use of AMCMC for sampling from multimodal distributions can be tricky if the chain gets stuck and thus learns/adapts only using draws from a subregion of the sample space. The authors propose using parallel adaptive chains and a tempering-based strategy for learning good starting values of the adaption parameters. In the case of multimodal targets it is possible that across regions of the sample space one should use different transition kernels. Given a partition of the sample space that approximately reflects the location of the modes, the authors develop an adaptive algorithm which uses a different mixture of Gaussians as the proposal distribution in each region. The parameters of the mixture are adapted as the simulation proceeds. Although ideas are illustrated using the random walk Metropolis (RWM), they applicable to many other MCMC algorithms.

- Ji C, Schmidler SC (2011) Adaptive Markov chain Monte Carlo for Bayesian variable selection *J. Comput. Graph. Statist.*, to appear. Develops AMCMC algorithms for Bayesian variable selection problems in regression models where the mixture posterior distributions have point mass components corresponding to posterior inclusion probabilities .

- Fort G, Moulines E, Priouret P (2010) Convergence of adaptive MCMC algorithms: ergodicity and law pf large numbers. *Preprint*. Develops a general theory for handling both internal and external adaptive MCMC schemes (see Atchadè et al., 2009), e.g. the equi-energy sampler or the AM algorithm.

- Fort G, Moulines E, Priouret P, Vandekerkhove P (2011) A central limit theorem for adaptive and interacting Markov chains. *Preprint*. Establish central limit theorems for additive functionals of unbounded functions in the case of general simulation schemes that include both adaptive and interacting MCMC algorithms.

- Garthwaite PH, Fan Y, Sisson SA (2010) Adaptive optimal scaling of Metropolis-Hastings algorithms using the Robbins-Monro process. *Preprint* The authors propose an estimator for the steplength constant used in the Robbins-Monro stochastic search algorithm. The method is applied to RWM and RWM-within-Gibbs samplers.

- Laine M, Tamminen J (2008) Aerosol model selection and uncertainty modelling by adaptive MCMC technique. *Atmospheric Chemistry and Physics Discussions*, **8**:10791-10816. Develops an adaptive reversible jump MCMC algorithm to determine the aerosol model for the data observed.

- Latuszyński K, Roberts GO, Rosenthal JS (2010) Adaptive Gibbs samplers and related MCMC methods. *Annals of Applied Probability*, to appear. Propose adaptive Gibbs sampling algorithms and give theoretical results to prove their validity. The authors also propose an adaptive Metropolis-within-Gibbs algorithm in which the coor-

dinate selection probabilities and the proposal distributions used in the Metropolis steps are updated on the fly.

- Loredo TJ, Berger JO, Chernoff DF, Clyde MA, Liu B (2011) Bayesian Methods for Analysis and Adaptive Scheduling of Exoplanet Observations. *Preprint*. Collaborative effort between astronomers and statisticians to develop Bayesian data analysis tools for planet detection, planetary orbit estimation, and adaptive scheduling of observations. The algorithm designed to sample from the posterior distribution used AMCMC principles.

- Richardson S, Bottolo L, Rosenthal JS (2011) Bayesian models for sparse regression analysis of high dimensional data. *Proceedings of Valencia IX Bayesian Meeting.* Applies adaptive MCMC to Bayesian inference for sparse regression models.

- Schmidler SC, Woodard, DB (2011) Lower bounds on the convergence rates of adaptive MCMC methods. *Preprint*. Develops lower bounds for the mixing time of some well-known adaptive MCMC algorithms including the AM of Haario et al. (2001), the equi-energy sampler of Kou et al. (2006) and the inter-chain adaptation strategy of Craiu et al (2009). This leads to an interesting discussion regarding the gains of adapting and suggests promising directions for additional speed-ups.

- Saksman E, Vihola M (2010) On the ergodicity of the adaptive Metropolis algorithm on unbounded domains. *The Annals of Applied Probability*, **20**:2178-2203. Describes sufficient conditions under which the AM algorithm preserves ergodicity without assuming boundedness of the target's support. The approach avoids the use of reprojections (see Andrieu and Moulines, 2006).

- Salakhutdinov R (2010) Learning deep Boltzmann machines using adaptive MCMC. *Proceedings of the 27th International conference on machine learning*. Proposes an adaptive simulated tempering algorithm to explore the multimodal energy landscape of the distribution defined by the Deep Boltzmann Machine.

- Vihola M (2010) Robust Adaptive Metropolis algorithm with coerced acceptance rate. *Preprint*. Proposes an adaptive approach designed for multivariate RWM in which the shape of the covariance matrix is adapted while the mean acceptance rate is maintained at a pre-determined level. The method proposed avoids using the sample covariance matrix and is thus more robust.

- Vihola M (2009) On the Stability and Ergodicity of Adaptive Scaling Metropolis Algorithms. *Preprint*. Proves that the ergodicity of the algorithms proposed by Haario et al. (2001) and Vihola (2010) can be proven without restricting the scale parameter to a compact interval.

- Vihola M (2011) GRAPHAM: Graphical models with adaptive random walk Metropolis algorithms. *Preprint*. The paper accompanies an open-source implementation in C of a number of adaptive algorithms including the AM or AM-within-Gibbs.

- Vihola M (2011) Can the adaptive Metropolis algorithm collapse without the covariance lower bound? *Electronic Journal of Probability*, **16**:45-75. Discusses variants of the AM algorithm where the eigenvalues of the covariance matrix used in the RWM proposal are not explicitly bound away from zero. Also proves a law of large numbers for super-exponentially decaying distributions with regular contours.

- Vrugt A, ter Braak CJF, Diks CGH, Robinson BA, Hyman JM, Higdon D (2009) Accelerating Markov Chain Monte Carlo Simulation by Differential Evolution with Self-Adaptive Randomized Subspace Sampling. *International Journal of Nonlinear Sciences & Numerical Simulation*, **10**:273-290. Uses a self-adaptive Differential Evolution learning strategy within a population-based evolutionary framework. The authors propose running multiple different chains simultaneously for global exploration, and automatically tuning the scale and orientation of the proposal distribution in randomized subspaces during the search.

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- Kou S, Qing Z, and Wong W (2006) Equienergy sampler with applications in statistical inference and statistical mechanics. *Ann. Statist.* **34**:1581–1619.
- Liang F (2009) On the use of stochastic approximation Monte Carlo for Monte Carlo integration. *Statistics and Probability Letters*, **79**:581-587.
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STUDENTS' CORNER

Q & A

Luke Bornn
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In this issue's Students' Corner, we continue our Q & A with a panel of leading Bayesian statisticians. Following the Q & A, find the dissertation abstract of recent Duke University graduates Matthew Heaton, Vinicius Mayrink, Chiranjit Mukherjee, and Hongxia Yang. If you are newly graduated and would like to publish your thesis abstract, don't hesitate to contact me.

What is the biggest and most surprising change in the field of Statistics that you have witnessed, and what do you think will be the next one?

Paul Gustafson
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In my own case I came of age during 'the big change' in Bayesian statistics. In 1991 I completed an M.Sc. thesis full of Bayesian inferences computed via Laplace approximation. In 1994 I completed a Ph.D. thesis in which all the computing was done via MCMC. This revolution in Bayesian computation has been well commented on. I also think it is fairly characterized as part of the larger revolution in statistics as a whole becoming far more interdisciplinary, with the boundary between methodological developments and applications now fruitfully blurred.

What changes might be coming next? Well, both technology and the size and complexity of datasets keep on racing upward. The landscape changes quickly, and my crystal ball is cloudy on where this all might lead. In my own sphere, I am excited to encounter at least some health researchers who can get excited about methodological developments and 'full' modeling of uncertainty, even if their confidence intervals ... whoops, I mean credible intervals of course ... might then be wider at the end of the day. A change I hope for and predict is that science will increasingly strive for quantitative analysis that accounts for all the uncertainties at play, even if that rather often translates to an admission that we don't know very much. Pushes in this direction are already underway. For instance, the need to mitigate high false discovery rates in genome-wide association studies is catching on beyond just the statistical community. As we all preach to those around us, in statistical modeling, as in life, being forthright about what we don't know is of paramount importance. In clichéd terms, honesty is the best policy! And while I don't subscribe to the cliché about ignorance being bliss, I think we all agree that figuring out the extent of our ignorance after having observed the data is indeed blissful.

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When we first read this question, the first thing that came to our mind was, of course, the advent of Markov chain Monte Carlo (MCMC) technologies for posterior simulation. However, on a second thought, we realized that we have only partially witnessed this influential event, since its appearance in statistical application started in the early 1990's. We would say that the most surprising change that we have actually witnessed has been the development of free, and in most of the cases, open source statistical softwares. These developments, along with the vertiginous advances in computing power, have certainly changed the way we conduct statistical practice and research to this day; this has allowed the general public to have open access to the most recent methodological statistical developments and the practical use of MCMC methodologies, as well as other statistical techniques. We would all probably agree that the most prominent examples of this are BUGS and R. BUGS and specific R packages have greatly facilitated Bayesian analysis in a wide variety of application areas.

Regarding the prediction of the future, here is one subject we think will be very important: verifiability of results should become the standard. Actually, this is not entirely an utopia, as some funding agencies and journals are showing some signs in this direction, such as requesting authors to submit their code along with instructions to reproduce the printed results. Wouldn't it be nice if we could have code to implement a large suite of methods to compare against our own? If this indeed becomes the norm, then we would be witnessing a new big change in Statistics, with substantive impact in the way our discipline evolves. And perhaps we should be promoting this ourselves more aggressively than is currently done.

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The answer to the second part is easy: I do not know and even if I knew I would be writing papers about it rather than spilling the beans... The answer to the first part is anything but easy. At the most literal level, taking "witnessed" at face value, I have witnessed the "birth" of Markov chain Monte Carlo methods at the conference organised in Sherbrooke by Jean-Francois Angers in June 1989... (This was already reported in our Short history of MCMC with George Casella.) I clearly remember Adrian showing the audience a slide with about ten lines of Fortran code that corresponded to the Gibbs sampler for a Bayesian analysis of a mixed effect linear model (later to be analysed in JASA). This was so shockingly simple... It certainly was the talk that had the most impact on my whole career, even though (a) I would have certainly learned about MCMC quickly enough had I missed the Sherbrooke conference and (b) there were other talks in my academic life that also induced that "wow" moment, for sure. At a less literal level, the biggest chance if not the most surprising is that the field has become huge, multifaceted, and ubiquitous. When I started studying statistics, it was certainly far from being the sexiest possible field! (At least in the general public) And the job offers were not as numerous and diverse as they are today. (The same is true for Bayesian statistics, of course. Even though it has sounded sexy from the start!)

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This is indeed difficult to answer precisely. My best reply for the first part is that I have been and continue to be pleasantly surprised by the recent and rapid progress in Bayesian nonparametrics. The series of conferences, most recently in Mexico this year, have been well attended. The book which arose out of the Isaac Newton meeting in Cambridge in 2007 has done well. I only hope that this progress will continue in to both the near and distant future.

And for future surprises? I hope it is one which involves the relaxing of Bayes. If one accepts that Bayes is about learning (and learning about what first needs to be put on the table) then there are usually many ways to learn about the same thing. Identify what one is interested in learning about, and for which there is prior information; find a best way to learn about this object (i.e. update the prior information with further information); this may not be precisely Bayes.

Dissertation Abstracts

Kernel Averaged Predictors for Space and Space-Time Processes

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In many spatio-temporal applications a vector of covariates is measured alongside a spatio-temporal response. In such cases, the purpose of the statistical model is to quantify the change, in expectation or otherwise, in the response due to a change in the predictors while adequately accounting for the spatio-temporal structure of the response, the predictors, or both. The most common approach for building such a model is to confine the relationship between the response and the predictors to a single spatio-temporal coordinate. For spatio-temporal problems, however, the relationship between the response and predictors may not be so confined. For example, spatial models are often used to quantify the effect of pollution exposure on mortality. Yet, an unknown lag exists between time of exposure to pollutants and mortality. Furthermore, due to mobility and atmospheric movement, a spatial lag between pollution concentration and mortality may also exist (e.g. subjects may live in the suburbs where pollution levels are low but work in the city where pollution levels are high).

The contribution of this thesis is to propose a hierarchical modeling framework which captures complex spatio-temporal relationships between responses and covariates. Specifically, the models proposed here use kernels to capture spatial and/or temporal lagged effects. Several forms of kernels are proposed with varying degrees of complexity. In each case, however, the kernels are assumed to be parametric with parameters that are easily interpretable and estimable from the data. Full distributional results are given for the Gaussian setting along with consequences of model misspecification. The methods are shown to be effective in understanding the complex relationship between responses and covariates through various simulated examples and analyses of physical data sets.

Factor Models to Describe Linear and Non-linear Structure in High Dimensional Gene Expression Data

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An important problem in the analysis of gene expression data is the identification of groups of features that are coherently expressed. For example, one often wishes to know whether a group of genes, clustered because of correlation in one data set, is still highly co-expressed in another data set. For some microarray platforms there are many, relatively short, probes for each gene of interest. In this case, it is possible that a given probe is not measuring its targeted transcript, but rather a different gene with a similar region (called cross-hybridization). Similarly, the incorrect mapping of short nucleotide sequences to a target gene is a common issue related to the young technology producing RNA-Seq data. The expression pattern across samples is a valuable source of information, which can be used to address distinct problems through the application of factor models. Our first study is focused on the identification of the presence/absence status of a gene in a sample. We compare our factor model to "state of the art" detection methods; the results suggest superior performance of the factor analysis for detecting transcripts. In the second study, we apply factor models to investigate gene modules (groups of coherently expressed genes). Variation in the number of copies of regions of the genome is a well known and important feature of most cancers. Copy number alteration is detected for a group of genes in breast cancer; our goal is to examine this abnormality in the same chromosomal region for other types of tumors (Ovarian, Lung and Brain). In the third application, the expression pattern related to RNA-Seq count data is evaluated through a factor model based on the Poisson distribution. Here, the presence/absence of coherent patterns is closely associated with the number of incorrect read mappings. The final study of this dissertation is dedicated to the analysis of multi-factor models with linear and non-linear structure of interactions between latent factors. The interaction terms can have important implications in the mo-

del; they represent relationships between genes which cannot be captured in an ordinary analysis.

Bayesian Modelling and Computation in Dynamic and Spatial Systems

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Applied studies in multiple areas involving spatial and dynamic systems increasingly challenge our modelling and computational abilities as data volumes increase, and as spatial and temporal scales move to increasingly high-resolutions with parallel increase in complexity of dependency patterns. Motivated by two challenging problems of this sort, study of cellular dynamics in bacterial communication and global Carbon monoxide emissions prediction based on high-resolution global satellite imagery, this dissertation focuses on building sparse models and computational methods for data-dense dynamic, spatial and spatio-dynamic systems.

The first part of the thesis develops a novel particle filtering algorithm for very long state-space models with sparse observations arising in studies of dynamic cellular networks. The need for increasing sample size with increasing dimension is met with parallel developments in informed resample-move strategies and distributed implementation. Fundamental innovations in the particle filtering literature are identified and used for designing an efficient particle filter.

The second part of the thesis focuses on sparse spatial modelling of high-resolution lattice data. Gaussian Markov random field models, defined through spatial autoregressions, are adopted for their computational properties. Their potential is evidenced in an applied example in atmospheric chemistry where the focus is on inversion of satellite data combined with computer model predictions to infer ground-level CO emissions from multiple candidate sources on a global scale. Further, extending the framework of simultaneous autoregressive models, a novel hierarchical autoregressive model is developed for non-homogeneous spatial random-fields.

The final part of the thesis develops a novel space-time model for data on a rectangular lattice. The dynamic spatial factor model framework is extended with matrix normal spatial factor loadings. A new class of Gaussian Markov random field models for random matrices, defined with low-dimensional row and column conditional independence graphs, is used to model sparse spatial factor loadings. Further dimensionality reduction is achieved through the dynamic factor model framework, which makes this class of models extremely attractive for systematically evolving non-homogeneous, high-resolution space-time data on rectangular lattices. Flexible choices for prior distributions and posterior computations are presented and illustrated with a synthetic data example.

Nonparametric Bayes Models for High-Dimensional and Sparse Data

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Current research has evolved at a dramatic rate in the past decade, with improvements in technology leading to a fundamental shift in the way in which data are collected and analyzed. It has become routine to collect large amounts of information and it has become necessary to consider new statistical paradigms that perform well in characterizing complex data from a broad variety of problems. We develop novel nonparametric Bayes models for high-dimensional and sparse data in this dissertation. Bayesian nonparametric methods are useful for modeling data without having to define the complexity of the entire model a priori, but rather allowing for this complexity determined by the data. The flexibility of Bayesian nonparametric priors arises from the prior.s definition over an infinite dimensional parameter space. Therefore, there are theoretically an infinite number of latent components and an infinite number of latent factors. Nevertheless, draws from each respective prior will produce only a small number of components or factors that appear in a given data set. As mentioned, the number of these components and factors, and their corresponding parameter values, are left for the data to decide. This dissertation is divided into four parts, which motivate novel Bayesian nonparametric methods and clearly illustrate their

utilities:

In Chapter 1, we review the Dirichlet process (DP) in detail. There are many other ways of nonparametric modeling, but with the availability of efficient computation and complete set up of theories, the DP is most popular and has been developed and studied extensively. We will also review the most recent development of the DP in this chapter.

In Chapter 2, We propose the multiple Bayesian elastic net (abbreviated as MBEN), a new regularization and variable selection method. High dimensional and highly correlated data are commonplace. In such situations, maximum likelihood procedures typically fail.their estimates are unstable, and have large variance. To address this problem, a number of shrinkage methods have been proposed, including ridge regression, the lasso and the elastic net; these methods encourage coefficients to be near zero (in fact, the lasso and the elastic net perform variable selection by forcing some regression coefficients to equal zero). In this paper we describe a semiparametric approach that allows shrinkage to multiple locations, where the location and scale parameters are assigned Dirichlet process hyperpriors. The MBEN prior encourages variables to cluster, so that strongly correlated predictors tend to be in or out of the model together. We apply the MBEN prior to a multi-task learning (MTL) problem, using text data from the Wikipedia. An efficient MCMC algorithm and an automated Monte Carlo EM algorithm enable fast computation in high dimensions. The methods are applied to Wikipedia data using shared words to predict article links.

Chapter 3: Latent class models (LCMs) are used increasingly for addressing abroad variety of problems, including sparse modeling of multivariate and longitudinal data, model-based clustering, and flexible inferences on predictor effects. Typical frequentist LCMs require estimation of a single finite number of classes, which does not increase with the sample size, and have a well-known sensitivity to parametric assumptions on the distributions within a class. Bayesian nonparametric methods have been developed to allow an infinite number of classes in the general population, with the number represented in a sample increasing with sample size. In this article, we propose a new nonparametric Bayes model that allows predictors to flexibly impact the allocation to latent classes, while limiting sensitivity to parametric assumptions by allowing class-specific distributions to be unknown subject to a stochastic ordering constraint. An efficient MCMC algorithm is developed for posterior computation. The methods are validated using simulation studies and applied to the problem of ranking medical procedures in terms of the distribution of patient morbidity.

Chapter 4: In studies involving multi-level data structures, problems of data sparsity are often encountered and it becomes necessary to borrow information to improve inferences and predictions. This article is motivated by studies collecting data on different outcomes following congenital heart surgery. If there were sufficient numbers of patients receiving each type of procedure, one could potentially fit procedure-specific multivariate random effects model to relate the outcomes of surgery to patient predictors while allowing variability among hospitals. However, as there are approximately 150 procedures with many procedures conducted on few patients, it is important to borrow information. Allowing variability among hospitals, procedures and outcome types in the regression coefficients relating patient factors to outcomes, we obtain a three-way tensor of regression coefficient vectors. To borrow information in estimating these coefficients, we propose a Bayesian multiway tensor co-clustering model. In particular, the model works by reducing the dimension of the table through separately clustering hospitals, procedures and outcome types. This soft probabilistic clustering proceeds via nonparametric Bayesian latent class models, which favor clustering of dimensions that have similar values for feature vectors. Efficient MCMC and fast approximation approaches are proposed for posterior computation. The methods are illustrated using simulated data, and applied to heart surgery outcome data from a Duke study. ▲

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ADRIAN F.M. SMITH Conference

VIDEOS AND PHOTOS

- Paul Damien -
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As you might remember, last June, a Conference in honour of Professor Adrian F.M. Smith took place in Creete, Greece. A report of the results as well as of the warm and friendly atmosphere of the event appeared in the June issue of this bulletin. Now, on behalf of the Organizing Committee, I am glad to announce that the a gallery of photos and videos of this conference can now be viewed at http://afmsmith.com/index2_files/Page675.htm ▲
