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statistical society of australia incorporated

newsletter

31 August 1993 number 64

PRESIDENT'S REPORT

Bob Forrester and Doug Shaw suggested to me that I should write a President's Column for the Newsletter. This seemed like a good idea so this is the first of what I hope will become a regular series.

One of the key issues facing the Society at the moment is our nature as a professional body. Do we have a shared vision for the Society and the profession? Or do we have such a diversity of views that will always prevent us from presenting a coherent picture of statistics and statisticians to decision makers in industry and government, the public, and students?

Accreditation is one of the issues that will test which of these alternatives is true. And the members of the Society will determine the outcome.

At present the messages that I am getting from the membership are mixed. The survey commissioned by the Society showed great enthusiasm for accreditation as well as some profound concerns.

Some general points to make about the survey are:

* it attracted a 64% response rate
* of those who responded, 65% said that they would seek accreditation (with 21% undecided)
* only 2% said they would resign if SSAI were to become a professional accrediting body (with 13% undecided)
* the major benefits of accreditation were seen to be raising the standing of statisticians, emphasising the professional competence of statisticians and assisting potential clients to choose statisticians appropriate for their requirements
* the major disadvantages were seen to be increased costs and increased workloads for those involved in Accreditation Committee work

Both of these last two issues attracted vigorous discussion. The bald percentages hide passionate feelings both for and against.

One comment that illustrates the negative view was (as to advantages!!):

> "None, except in the establishment of an 'elite' group; people trying to 'big-note' themselves with the blessing of a professional body; what snobbery!; increasing pomposity; didn't GB Shaw say that all professions are conspiracies against the public?"

and another:

> "Creates a restricted market, which goes against the current economic philosophy of reducing trade barriers; it is unlikely to improve the quality of statistics, and hardly is consistent with Deming's 'avoid inspection methods'."

These comments are consistent with some equally vigorous debate going on in the ASA at moment via email. The ASA debate also has it's fair share of participants weighing in on the side of accreditation, just as there was strong support for accreditation expressed in the SSAI survey.

These admittedly extreme views highlight some really basic questions for us as a Society. Do we see ourselves as professionals like lawyers, engineers and accountants? And, if we do, are we willing to undertake the effort to achieve, and pay the price for sustaining, this professionalism?

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Accreditation is a hot issue in the international statistical community. It has recently been a major concern of the RSS (which, with the Institute of Statisticians, has developed a form of accreditation which is both elegant and simple), the ASA, the ISI and the NZSA. Clearly any form of accreditation which we might develop in Australia should be compatible with overseas models. Given its simplicity, would it be best to simply adapt the RSS model to local conditions? Should we be attempting to do this jointly with the NZSA?

At the most recent Central Council Meeting, held in May, we identified three major issues to be addressed by subcommittees:

* (the need for) accreditation of courses;
* international comparability;
* the interface between the current membership structure and any proposed new one.

In attempting to establish these sub-committees it has been difficult to find people with the interest/commitment and the time to participate. Everyone it seems is more than fully committed in their day-to-day activities, and this is increasingly a problem for professional societies. It seems to me that the most efficient means of addressing these problems is to follow the course of developing a model for accreditation based on that of the RSS and simply letting our members decide.

I would be very interested in hearing your views on accreditation and professionalism of statisticians. Probably the most effective means of getting in touch with me would be via email (rons@syd.dms.csiro.au) or fax (02 325 3226).

Ron Sandland

CENTRAL COUNCIL

From the Annual General Meetings of Central Council of SSAI and ASPAI

The Annual General Meetings of Central Council of SSAI and ASPAI were held on 7 May at the University of Melbourne at 10.00 am.

Rules

The proposed Rules prepared and circulated by the Secretary were discussed and finalised in preparation for the special resolutions to be put to the SSAI and ASPAI AGM's in the afternoon. The Secretary reported some proposed amendments resulting from legal feedback on the proposed Rules that had been sent to the lawyer as well as circulated to Councillors and Branches. These amendments were necessary to correctly reference legislation, and to meet legal requirements regarding membership qualification and payments to ASPAI. Some minor amendments were also made based on suggestions from the NSW Branch. Branches were requested to check their own constitutions (and practices) for any possible problems in interaction with the new SSAI and ASPAI Rules, and to notify the Secretary of any concerns.

FASSO

Dr Ann Eyland and Dr Sue Wilson had been requested by Council to examine the question of the Society's continuation of membership of FASSO. Their recommendation was that SSAI withdraw from FASSO due to its lack of cohesion and organisation. Council accepted this recommendation expressing its regrets as to the circumstances.

Accreditation

Discussion on accreditation was led by Dr Sandland. Before commencing discussion on accreditation, a vote of thanks was passed to Nan Carter for her work in preparing the excellent report on the accreditation survey. Copies of this report were sent to Councillors or are available on request from Dr Ron Sandland.

In reviewing the survey results, Dr Sandland emphasized the value of the comments as much as the response frequencies, particularly as many comments were conditional on some assumed model by the respondents and thus also gave some indications of members' reactions to types of models, even though no model has as yet been suggested, Dr Sandland also identified major issues in his review, namely: identifying the aims of accreditation; international comparability; interface with current structure; accreditation of courses; funding issues; and external accreditation. Discussion covered many issues, including the use of the RSS model as a starting point; possible simple processes for accrediting courses; separation of accreditation from membership, that is, considering accreditation as a qualification rather than a class of membership; consultation with 'employers'; the possibility of more than one level of accreditation; possible processes for proceeding and for continued communication with the membership on issues and models.

Council decided that the current working party should continue and that Dr Sandland investigate setting up three small sub-committees, each with a specific brief. Council also agreed that, as a separate activity, the Society may wish to explore the possibility and possible mechanisms of developing a strategic plan for the Society. Dr Sandland was asked to investigate this matter for future discussion. Council recorded a vote of thanks to the working party for their work to date.

AMSC and FASTS

Reports from the Australian Mathematical Sciences Council were sent to Branches in February. Professor Brown spoke briefly on these reports and on the recent symposium organised by AMSC which he attended. Information and Newsletters from FASTS are sent to Branches; copies of the most recent FASTS Newsletter were given to Branch representatives at the meeting. Professor Brown reported that he had written to Dr Widdup as well as to Minister Free at the end of last year and that the AMSC had also written to FASTS

emphasizing that the most essential function of a lobby group was to maintain good communication with the government.

Conferences

Professor Brown and Dr Fisher reported on developments in planning for ASC13. Interface and the IMS, in wishing to internationalise their activities, had discussed the possibility of holding conferences in Sydney in conjunction or parallel with an ASC. Dr Fisher and Professor Brown, in consultation with the Executive, had been investigating the proposal to hold ASC13 in Sydney in July 1996 in conjunction/parallel with Interface and IMS conferences. Interface and the IMS have now formally decided on such an arrangement, with their conferences end-to-end and in parallel with ASC13. SSAI, Interface and IMS will share costs (and any excess/liabilites) in the ratio of 5:3:3, but with separate accounts for separate special activities. Dr Fisher reported on investigations into venue, budgets, conference organisers, accommodation and registration. Based on cost and facility comparisons, he recommended the Sheraton a conference venue, and Conference Action Pty Ltd as conference organiser. Council decided that these recommendations be accepted, and that Dr Fisher be director of ASC13 and set up the organising and program committee structures in consultation with the Executive. Any contracts would also be subject to the discretion and approval of the Executive.

Honours Scholarships

The following awards of honours scholarships for 1993 were noted:

The Victorian Branch has awarded two scholarships for 1993, each worth $500 plus student membership to Amanda Kennedy and Russel Thompson of Monash University.

The Queensland Branch has awarded a scholarship of $500 to Michelle Gatton, Griffith University.

The NSW Branch has awarded two scholarships of $1000 each to Colleen Hunt, University of New England, and Tuan Luu, Macquarie University; and a joint scholarship of $500 each to Susan Hoffman, Diane Lightfoot and Lilian Mok, University of Sydney.

Committee for Honorary Life Members and Pitman Medal

Dr Nick Fisher was elected to the vacant position due to the completion of Dr Doug Shaw's term. Other current elected members are Prof J.N. Darroch (retires 1994), Prof W.G. Ewens (retires 1995), and Prof C.C. Heyde (retires 1996).

Regulations

The new Regulations were confirmed as sent to Branches and Councillors on 15 March.

Newsletter membership list

A letter from the Newsletter Editors was tabled, requesting Council input on the question of publishing email addresses, phone and fax numbers. Council recommends publication of this information in our own membership list only. The Branches will be asked to collect this data through the usual membership renewal and application mechanisms. Members are requested to assist in this matter by providing this information to the Branches.

Next Council meeting will be held on Tuesday, 28 September, in Wollongong.

H.L. MacGillivray
Secretary

From the Annual General Meetings of SSAI and ASPAI

The first annual general meetings of members of SSAI and ASPAI were held on 7 May at the University of Melbourne, commencing at 3 pm. As explained in the notes sent to all members on 2 April, the main purpose of these meetings was to pass the special resolution required to accept the new rules of both SSAI and ASPAI, altered in accordance with the new ACT Associations Incorporation Act. The main points of the proposed new Rules had been summarised in the notes to members of 2 April, and the full sets of Rules had been sent to Branches in March for close examination and detailed feedback. A few minor changes to these proposed Rules, resulting from legal feedback and some suggestions from the NSW Branch, were put to the meetings and accepted, and the special resolutions to accept the new Rules were passed unanimously. Subsequent to these meetings, the final versions of the Rules have been submitted to the ACT Registrar's Office. On acceptance of the Rules by this office, full copies of the finalised versions of the Rules will be sent to all Branches and Council members.

The meetings were presented with, and accepted, the Annual Reports and audited Financial Reports (SSAI and ASPAI), and the Editor's Report. Discussion of the SSAI capitation fee for 1994 resulted in a request to Branches to discuss this issue and provide feedback to the next Council meeting in September. The Secretary is currently preparing information and proposals to be sent to Branches to assist this discussion.

As explained in the notes of 2 April, the AGM's were held under the Model Rules which applied during the transition period while our Rules were amended in accordance with the Act; our procedures for election of officers take effect from acceptance of our new Rules. The appointments by Branches of their delegates to Council were confirmed and the following people were elected to office unopposed.

President:	Dr Ron Sandland
Vice-President:	Prof Tim Brown
Treasurer:	Dr Ray Chambers
Secretary:	A/Prof Helen MacGillivray

A vote of thanks was passed with acclamation to the retiring President, Professor Tim Brown, for his dedicated work for the Society since taking office in February, 1991. Professor Brown thanked the Executive and Council for their work and support during his term.

Professor Brown reported on the unanimous disquiet in the Australian Mathematical Sciences Council about both the processes and the results of the National Mathematics

Profiles Project. The petition to Ministers of Education had been signed by over 200 people in just a few days.

In response to a request for information about the current situation with respect to accreditation, Professor Brown reported from the Council meeting, including the procedures for ensuring continuing feedback processes with all members. It was decided to investigate the possibility of a general meeting at the Wollongong conference if progress in the ensuing months so warranted.

The Annual General Meetings of SSAI and ASPAI for 1994 will be held on the Wednesday of the 12th Australian Statistical conference in Melbourne.

H.L. MacGillivray
Secretary

BRANCH REPORTS

New South Wales

The New South Wales branch has met three times since the last report.

Inverse Problems in Statistics

In May, Professor Victor Solo from Macquarie University, spoke on Inverse Problems in Statistics. Inverse Problems are problems of infinite dimensional parameter estimation, sometimes called non-parametric problems, and are of two kinds - well-conditioned or ill conditioned. They occur in Physics, Geophysics, Astronomy, Civil Engineering, Computer Science, Electrical Engineering and have received conscious recognition since the 1950s. Professor Solo gave some examples of such problems in Statistics - estimation of CDFs, cumulative hazard functions, spectral density functions, mixture pdfs, intensity function for a Poisson process, etc. Some are well-conditioned problems - cdf, cumulative hazard function for example; and some are ill conditioned - spectral density function, hazard function, for example. He then discussed how to distinguish between well and ill conditioned problems and outlined how to solve ill conditioned inverse problems using as examples kernel density estimation, errors in variables. In conclusion, Professor Solo claimed that through the methodology outlined, new views have been gained of old solutions, and some unresolved problems have been solved. Statisticians have tools to treat the noisy aspects of various problems, It is a fruitful area of research as there are many practical and theoretical issues to be solved.

Curriculum Corporation's Chance and Data Project

In June, the branch heard from the officer in charge of the Curriculum Corporation's Chance and Data project, Charles Lovitt. This project has produced two volumes for school teachers designed to provide resource materials for teachers of classes from Kindergarten to year 12. The intention was to set out ways in which classroom teachers could go about incorporating work on Chance and Data into lesson plans already being used for teaching mathematics as well as providing new resources designed specifically for teaching Chance and Data. Many of the ideas came from practising teachers. Supporting materials include computer software, databases, videos. The talk required audience involvement. Indeed, by the end of the evening, we all wished that we could have been taught by teachers skilled at teaching Chance and Data concepts and with access to the Curriculum Corporation's materials.

Statistical Methods or Statistical Thinking

The July meeting followed on naturally from the June meeting. Dr Dennis Sinclair, formerly Director of NewStat, University of Newcastle, spoke on the topic Statistical Methods or Statistical Thinking. After outlining the history of the Total Quality Management movement and its success in Japan, he suggested that the attempts to teach TQM to Australian industry were less than spectacular, one reason being that Total Quality Management is much more than statistical methods. It was naive to believe that statistics alone would have a great impact. He suggested that a more fundamental problem was a lack of statistical thinking. Statistical methods without statistical thinking is inevitably detrimental to the organisation. How can decisions be made and policies formulated in a variable environment without some basic understanding of variability? Dr Sinclair observed that statistical thinking does not come naturally, and to compound the problem, we have done an abysmal job at teaching the concepts of statistical thinking in schools and universities.

The teaching of Statistics at school level varies from State to State. In New South Wales, there has been very little emphasis on Chance and Data. With the current revision of the Secondary School syllabuses in this State, there is an opportunity to effect some changes. The NSW Board of Studies has requested input from the branch into the writing of the new syllabuses. The Curriculum Corporation material demonstrated by Charles Lovitt has been produced in response to the much maligned National Mathematics Statement. It is highly imaginative, creative, needs to be advertised amongst teachers and hopefully will be integrated into the curriculum in every State.

Victoria

DNA Fingerprinting in Court

On 27 April, Dr Aidan Sudbury (Monash University) gave a fascinating and highly entertaining talk on the interpretation of evidence based on DNA "fingerprints" in court. Different ethnic groups have different allele frequencies and small frequencies are estimated very inaccurately.

Probabilities of having matching alleles at one or more loci are estimated assuming Hardy-Weinberg equilibrium or linkage equilibrium which are achieved after a period of random mating in a large population. But do we mate randomly enough?

Dr Sudbury and his colleagues have proposed practical criteria for matching pairs of bands on electrophoresis gels based on the distance between individual bands and the offset (band shift) between the pairs of bands.

Bayesian Methods for Sample Size Calculations

Dr Jane Hutton (University of Liverpool) gave an interesting talk on Bayesian methods for sample size calculations on 25 May. She reviewed the medical literature on the subject. Bayesian approaches were useful in medical statistics to take into account the differing views of practitioners in a prior distribution.

An example of a child sexual abuse study was shown. In this study a survey was taken to determine the responses of medical people as to whether a child had been sexually abused, given indicators. The responses showed strong prior beliefs. A Bayesian sample size calculation would take into account the different credible intervals, calculated with extreme priors, for the probability of abuse. The sample size should be large enough to get have reasonable agreement between the intervals calculated with these different priors.

Radial Plots Exposed

On 22 June, Dr Geoff Laslett (DMS, CSIRO, Melbourne) gave a well-paced and often humorous talk on radial plots. After defining a radial plot, Geoff then proceeded to apply the graphical method to a wide range of data types. One of the very useful aspects of these displays is their ability to handle estimates that have differing standard errors. During the talk, the effects of under and over-dispersion were shown. Also examined were the effects on the radial plot when using a prior distribution; the radial plot showed the shrinking effect or the extra precision resulting from using Bayesian plots. The talk concluded with a discussion of how the method compared with Cox's desiderata for data plots.

Workshops

The Victorian branch has also held several very successful workshops on applied statistics. Two workshops on questionnaire development and one on scaling and dimensional analysis have been held recently. In addition, our annual young statisticians conference attracted a lot of interest. Later in the year, we are planning a one-day seminar on statistical computer packages.

Queensland

Queensland Student Education Profiles

Dr Reg Allen, Associate Director (Evaluation, Research and Development) of the Board of Senior Secondary School Studies addressed the May 17 meeting of our branch. His topic was the assumptions involved in the calculation of Queensland Student Education Profiles (OPs - overall positions - and FPs - field positions). A very general formulation of the scaling model for unbalanced incomplete data permits identification and discussion of the particular mathematical assumptions underpinning the process used in Queensland. Some of these assumptions are more easily understood in terms of practical rather than narrowly theoretical considerations. Some assumptions are more justifiable in terms of known properties of the data than their counterparts in other scaling models.

This talk generated a lively discussion about the impact of the "school group", those students who attend the same school, on the OP score of a particular individual. Afterwards, members were invited to dine at a local restaurant.

South Australia

Prognostic index sensitivity for brain tumour patients

While visiting Patty Solomon at the University of Adelaide from the Departments of Statistics and Computational Mathematics and the Public Health, University of Liverpool, Jane Hutton addressed the South Australian branch on 28 April on the topic "Checking the sensitivity of a prognostic index for brain tumour patients". The proportional hazards model is widely used in medicine to analyse survival data. Retrospective data on 564 patients with primary brain tumours was discussed. The neurologists wished to develop a prognostic index which could be used to select patients for a randomised, controlled comparison of early aggressive and conservative treatment. Data-splitting and trimming was used to allow for over-fitting in the original index, and discussion with the clinicians also influenced the choice of the final index. Several recent papers discuss the use of the bootstrap in selecting an appropriate proportional hazards model. This paper considered whether the simple approach of data-splitting and discussion should be replaced by the more computer-intensive jackknife and bootstrap. A small prospective data set was used to evaluate the methods.

IIQP: Example of integration of industry and university in Canada

Chris Bardeggia, a recent Masters graduate from University of Waterloo, Canada visited the University of Adelaide and was involved with the implementation of a quality improvement strategy at the University of Adelaide. During his co-operative education program, Chris has acquired considerable experience in the industrial sector through the IIQP at the University of Waterloo.

On 26 May Chris Bardeggia gave a talk to the branch on the IIQP: an example of the integration of industry and university in Canada. The need for quality improvement in the industrial environment has become more immediate with the increasing demands and education of customers as well as heightened competition. The Institute for Improvement in Quality and Productivity (IIQP) at the University of Waterloo has identified, and is attempting to address, this need. Training courses, consulting sessions, statistical reviews and network meetings have been developed for companies. This was a casual discussion of the framework that currently exists at the IIQP, supplemented with personal examples which illustrated the Canadian industrial environment.

AIDS: Modelling and Predicting

Patty Solomon from the University of Adelaide addressed our June meeting on the topic of modelling and predicting

AIDS. AIDS continues to place enormous demands on health care resources and it is essential for health care planning that estimates are available of current and future numbers of people at different stages of HIV disease. Despite efforts over the past decade to improve both the collection and quality of data on HIV and AIDS, the data are still often incomplete, and there remain vast gaps in our knowledge on important features of the epidemic. Predictions of the epidemic based on the available data are therefore subject to great uncertainty. This uncertainty makes AIDS grimly interesting to statisticians.

Current statistical approaches to estimating and predicting future numbers of people with HIV disease and AIDS deaths were overviewed. The major sources of uncertainty, the different statistical techniques used and the advantages and disadvantages of each were described. Data on HIV and AIDS in Australia were presented in illustration.

Western Australia

At the Annual General Meeting the following office bearers were elected:

President:	John Henstridge
Secretary:	Ian Wright
Treasurer:	Sharon Evans
Vice President:	Robin Milne
Committee:	Matthew Knuiman
	Geoff Riley
	Ross Taplin

The Honours Scholarship was awarded to Mr David Gamble of Murdoch University. Dr Geoff Riley, who chaired the selection committee presented the award, explaining the difficulty of choosing just one winner from the half dozen excellent candidates who had been nominated by their Departments.

Spatial Statistics and the Environment

Following the AGM, Professor Noel Cressie of Iowa State University spoke on Spatial Statistics and the Environment. Noel (who has had a long standing association with Western Australia) provided a practical overview of the statistical methods and information sources applied to the sampling, description, modelling and prediction of environmental phenomena. The talk illustrated the approach taken to various environmental investigations in the United States. The audience was shown how the spatial dependences were modelled, the multivariate statistical methods used while characteristics of the supporting GIS data were described.

Variance Components: every which way

About forty participants joined the one day workshop: "Variance Components: Every Which Way" organised for the WA Branch by Matthew Knuiman and his helpers. The invited speakers, Nan Laird of Harvard University and Murray Aitken, were backed by contributions and demonstrations by local statisticians.

Participants were mystified by the negative variance estimates which certain software produced from some balanced and mildly unbalanced data sets, and all present appreciated the expert contributions to the subsequent discussion from the invited speakers and others. The Branch Committee thanks and congratulates all those involved.

Modelling survival in presence of Multiple Treatment Transfers

Dr Paul Burton of the Western Australian Research Institute for Child Health affiliated with Princess Margaret Hospital provided members with a most interesting talk with less interesting title of "Modelling Survival in Presence of Multiple Treatment Transfers". While the title referred to a technical tool used in one aspect of the analysis of survival data from patients with kidney failure, who were being given various treatments to keep them alive, the talk dealt with a careful attempts to separate treatment differences from a host of demographic, clinical, and geographic factors with which they were confounded under the constraints imposed by medical ethics. The audience was interested to see that the cheapest treatment, previously dismissed as inferior, was actually the best (marginally) when proper allowance was made for the other risk factors.

Split Models - an extension of graphical association

At the May meeting of the society, Dr Soren Hojsgaard from Aalborg University in Denmark spoke on some technical aspects of discrete probability modelling. Soren's talk "Split Models - An Extension of Graphical Association", showed how for certain modelling situations, the split (log-linear) model, with its readily grasped interpretation in terms of conditional independencies, gave a further degree of modelling capability in allowing conditional independencies not just given some variable, but given particular values of those variables. The speaker showed the audience data sets where split models were the most appropriate.

Canberra

Australian Bureau of Statistics — External Perception and Internal Vision

Dr Richard Madden, Deputy Australian Statistician, addressed the Branch at its April meeting. Dr Madden described the organizational structure of the ABS, with its 3500 employees in 8 cities, and how it gathers data on many aspects of Australian life. Its regular major economic indices significantly affect money and stock markets, and directly influence government, business and personal decisions.

Dr Madden spoke of the ABS having to adapt quickly to new social and economic issues, and to embrace new techniques across its many activities. He then addressed some key issues affecting the ABS such as the balance of effort between data collection and dissemination, the balance between confidentiality and data accessibility, the tight budgetary constraints, the hiring out of ABS skills, and how the links between the ABS and the general statistical community need to be strengthened. Dr Madden stressed the importance of listening to clients, commentators and the community to ensure the ABS continues to be objective and relevant in informing the

changing Australian community. A lively discussion followed, particularly in the areas of data dissemination practices and statistical services provided to clients.

Statistiker eller Epidemiolog? A statistician's tale from Sweden

At the May meeting, Robyn Attewell of INSTAT, Canberra, gave a broad ranging talk, well illustrated with slides, about her statistical consulting work in the Department of Occupational and Environmental Health at the University Hospital in Lund, Sweden. Much of the work involved the analysis of industrial cohorts and case control studies. The other important techniques used in her work were ANOVA, regression and t-tests, which accounted for 34% of her analyses.

One of the important research interests of her clients was blood lead levels. Robyn and her colleagues found that the lead level in children was not related to how far the subjects lived from the main factory emitting lead, but was related to whether or not the parents smoked. It seemed that children whose parents smoke may be more susceptible to respiratory problems, and therefore not expel lead so well. Blood lead levels were found to be decreasing over time, along with the decreasing lead levels in petrol.

Other major research areas were mercury levels in dental personnel, musculoskeletal disorders associated with repetitive industrial work, and analysis of toluene, lead and mercury levels in blood and urine of retired industrial workers.

Difficult statistical problems from consulting

At the June meeting Dr Chris Field of Dalhousie University, Halifax, Canada, also spoke of his consulting experience, but from a very different angle. Dr Field told us of some of the more difficult consulting problems that he and his colleagues have been faced with at Dalhousie. Based on this, he identified some important classes of problems which statistical consultants in the University setting will be facing over the next few years, and gave his views on the types of research problems that statisticians should be solving and the kind of training that we should be providing to students.

INDUSTRIAL STATISTICS NEWS

Change of Section Chair

Due to his very busy work schedule, Dr John Field from DMS Adelaide recently decided to seek a replacement to take over his role as Industrial Statistics Section Chair. With Central Council help, I was approached, and after a time to clarify what this might involve, accepted the responsibility.

This ends a period of over five years' work by John, much of it behind the scenes, to further the cause of industrial statistics in Australia (e.g. representing the SSA on Standards Committee QR/4). On behalf of section members, I wish to offer a sincere vote of thanks to John for his long period of service.

My work in Alcoa of Australia's WA Operations gives me a practitioner's perspective which I believe will be useful in my new role. However, I expect to find considerable diversity of background, employment focus and opinion among section members, and regard it as essential to canvass a broad range of views when planning future activities. In fact, one of my main reasons for taking on the chairmanship is the opportunity it provides to build a network of contacts and friends in industrial statistics. My contact details are Alcoa of Australia Limited, PO Box 252, APPLECROSS WA 6153; phone: 09 316 5262; fax: 09 316 5169.

Industrial Statistics Forum at Statistics '93

An Industrial Statistics Section planning forum will be held during the lunch break on Thursday, September 30 at the forthcoming Statistics '93 Conference. Chandra Gulati, and the other conference organisers, have kindly agreed to book a room at Wollongong for this purpose.

My plan in calling this meeting is to collect members' wishes and suggestions re section activities. Agenda items I have in mind are:

* Industrial statistics themes and/or invited speakers and/or workshops to propose to the committee organising 12ASC at Monash in 1994.
* Other ideas for organising visits and workshops.
* Ideas for maintaining a regular industrial statistics section in the SSA Newsletter.
* SSA representation on Standards Committee QR/4 and the associated privileges and responsibilities.

September 30 is one of the days allocated to the Quality Section of Statistics '93. As such, I hope that there will be a good attendance by members interested in industrial statistics. See you there!

Geoff Riley

NEWS ABOUT MEMBERS

Members will be pleased to learn that **Dennis Trewin**, who recently left our shores to take up the position of Deputy Government Statistician in New Zealand, was recently elected President-elect of the International Association of Survey Statisticians.

Professor Noel Cressie was awarded the title Distinguished Professor in Liberal Arts and Sciences by Iowa State University on 6 May 1993.

OBITUARY

Steven Lipton 1928 - 1993

Only a few short months after a positive cancer diagnosis, Steve Lipton passed away on February 21, 1993. Steve is survived by his second wife Pamela and her three daughters and it is tragic that life ended so close to a retirement to be spent with them.

Steve was born in England on 7 December 1928. He graduated from the University of Liverpool with an MSc and became an assistant lecturer on their staff during 1953-4. He then went to Rothamsted, where he worked with Frank Yates and Desmond Patterson until 1959 when he was persuaded to come to the University of New South Wales as a senior lecturer in Statistics within the School of Mathematics. He was promoted to associate professor during 1965 before taking study leave in 1966-7, spending most of that leave at Rothamsted. On return from study leave in 1967 he took the foundation chair of Statistics at the University of Queensland and remained there until he retired in 1991. While at the University of Queensland, Steve was president of the professorial board during 1978-9 (deputy president 1976-7) and head of the Department of Mathematics 1980-4. Steve was responsible for the building up of honours courses in Statistics and enhancing post-graduate studies. He was also instrumental in the formation of the Queensland branch of the Statistical Society of Australia as well as encouraging the growth of the Biometric Society.

When Steve first came to Sydney he became a resident tutor and ultimately deputy master of the newly built Basser College - at that time the only resident college of the University of New South Wales. I met Steve in 1960 when I became resident in that college and was, perhaps, his first research student. Subsequently he supervised Geoff Dolby, Margaret Khan and Gail Williams for MSc degrees and Brian Adkins, Geoff Dolby, Helen MacGillivray and Geoff Mclachlan for PhD degrees.

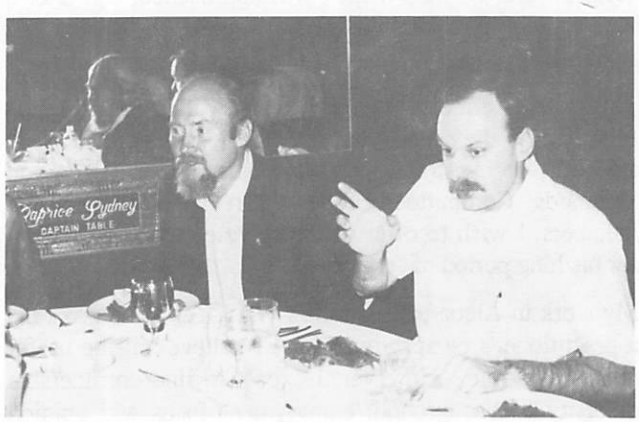
Steve was a valued friend to all who knew him. I enjoyed his company when we were both resident at Basser College, after his marriage to Yvonne in 1963 and after her death in the early 80s. He had a good sense of humour and a fine sensitivity to the dignity of the individual. The stability of his personality encouraged the best from those around him. It has been an honour to write these few inadequate words in his memory.

C.A. McGilchrist

INTERNATIONAL CONFERENCE ON ENVIRONMENTAL BIOMETRICS

Environmental biometry is the application of statistical methods in environmental studies of biological and ecological systems. Such application is growing, as scientists recognise the challenge and need to collect, analyse, and interpret data on environmental impacts to biological organisms. To facilitate improved scientific coverage of these applications, a conference was convened at the Women's College, University of Sydney, on 14-15 December 1992. Presentations by statisticians and scientists included invited, contributed, and poster papers, collected into sessions on Environmental Monitoring, Assessment, and Prediction of Change; Environmental Sampling; Analysis of Environmental Data; and Statistics in Environmental Health. Our aim was to stimulate and encourage further cross-disciplinary interactions among scientists and statisticians studying the environment, hopefully resulting in additional research and understanding of environmental processes and how they impact on biological systems.

Over 130 participants, from all Australian States and Territories, NZ, USA, Taiwan, Italy and Canada, were welcomed to the Women's College by its Principal, Ann Eyland. Dr Eyland called upon her great experience as a practising statistician and her ongoing interests in environmetrics, to urge further study and investigation into the many exciting scientific and statistical problems engendered by environmental research. She also echoed and applauded the conference's underlying theme of collaboration and interaction between environmental scientists and biometricians so that both fields may prosper and grow.



Meatier solutions: John Evans pondering the jack-knife and fork method with Walter Piegorsch demonstrating the method of steepest descent

Seven invited papers were given, have been refereed and will appear in *Environmentrics* later this year. We briefly review these along with the 28 contributed platform and poster presentations. Issues covered were ecological monitoring and studies of environmental impact, monitoring air and water quality, assessing effects of pollutants on animal and plant populations, and environmental health assessment. Limited copies of Conference Proceedings can be cheaply purchased from John Evans (PO Box 73, West Ryde NSW 2114).

Environmental Monitoring

Two full sessions were devoted to this topic, both of which were led by invited talks. The first was the keynote

address by A.H. El-Shaarawi on monitoring, assessment and prediction of change; the second was a paper on matching sampling designs and significance tests in environmental studies by J.C. Evans and B.G. Coote.

Both G. De'ath and B.D. Mapstone noted the problems data analysts encounter when employing standard significance testing methodologies in monitoring studies. De'ath suggested that one must define one's monitoring standards in terms of how much, rather than whether, the systems have changed. De'ath noted that this can involve complex, hierarchical statistical models, prior information, and perhaps Bayesian methodologies. Mapstone argued a similar point, noting that important social and environmental decisions are associated with monitoring studies; their impact is far greater than that typically subsumed in the usual (frequentist) two-hypothesis decision framework. He questioned the propriety of strict "yes-no" decisions based on classical α-level significance testing when the impact from such decisions is so important. Instead one could establish a desired level of α/β and consider the consequences of *both* Type I and Type II errors.

As noted by I. Shannon, sampling and monitoring conditions (such as meteorological and atmospheric conditions, waste water production levels, etc.) can change from site to site or even within a site. The statistical design and analysis must be flexible enough to adapt to such variability. Hence, Shannon suggested use of less model-dependent methods, such as non-parametric regression (Eubank, 1988) or other distribution-free or model-free approaches. M. Swincer related a multivariate study of spatial variation of drinking water quality in a Sydney reservoir. No statistical differences among sampled sites, or clusters of sites, were observed. Swincer noted, however, that further temporal sampling and analysis of the reservoir was necessary to corroborate these findings. Implicit in her call was the need to remain flexible in the statistical monitoring and analysis (echoing Shannon's comments), since reservoir conditions exhibited great plasticity. R.L. Correll discussed similar concerns when monitoring and studying pulp mills and their potential toxic effect on surrounding ecosystems. Assessing the risks of a mill's effluent discharge is a difficult task, since many sources of variation exist in a given system's or species' response to toxic insults. Further, an ecosystem harbours many interdependent systems, so that truly independent statistical observations may be difficult to obtain. Correll proposed a novel way of viewing problematic ecotoxicological data of this sort, incorporating relative risk indices to estimate environmental impact. D.R. Fox discussed the properties of an adaptive estimator for radiation dosimetry using order statistics of a Poisson process. His presentation provided an excellent example of flexible statistical methods for dealing with the greater complexity and variability of monitoring problems in environmental studies.

Environmental Sampling

Statistical issues in environmental sampling garnered almost as much conference attention as those in environmental monitoring, and, clearly, the two topics are closely interrelated. Two full sessions were devoted to environmental sampling. An invited paper on "Observational economy of ranked set sampling: Comparison with the regression estimator" by G.P. Patil led the presentations and set the tone.

Much consideration was directed at so-called BACI (**B**efore and **A**fter, **C**ontrol vs. **I**mpact sites) designs. The BACI design ostensibly is employed in a situation where an environmental impact is studied at a contaminated site and concurrently at a "control" site, to better gauge the extent of the environmental damage. E.A. Roberts discussed the uses (and misuses) of BACI designs as applied to the study of sewage outfall on Sydney beaches. Various forms of analysis of covariance were employed to assess the improvement in beach water quality resulting from a change-over to deepwater outfalls. A similar application was noted by A.G. Church, which assessed whether impact mitigation had reduced contamination in small, contained marine ecosystems such as bays or inlets. Church noted that mitigation monitoring is more difficult than classical control-versus-impact problems, and a specialised form of BACI multiple-site sampling design was recommended.

A form of BACI sampling was also advocated by A.O. Nicholls in a study that included sampling at both control and fragmented (impacted) habitat sites in a forested region. Habitat fragmentation disturbed and reduced species diversity, although the high within-species variation made strong statistical inferences difficult with insufficient replication. G. Riley noted a similar problem - complex sources of variability - in his description of a reforestation project. The goal was to develop, evaluate, and eventually optimise a sampling scheme for measuring seedling density after reforesting a commercially mined area. To adjust for the many sources of spatial variability (e.g. perpendicular to mining rip lines), a multiple quadrat scheme along 'zig-zag' transects was employed. The scheme was seen to possess an important flexibility that allowed for minor adjustments.

C.A. Preston described a case study of point-source pollution in a Sydney river wherein large spatial and temporal variation was exhibited. Mixed model analysis of variance was employed to enable proper interpretation of the data. B.R. Hodgson noted that spatial and temporal (serial) correlations can wreak havoc on standard analysis of variance-type methods. Hodgson presented computer simulations showing that such correlations, when not adjusted, dramatically increase the underlying Type I error of the statistical test.

It should, of course, be obvious that unusual or complicated variance patterns are common when studying highly complex ecological systems. This was the theme argued by A.J. Underwood in his presentation. He noted that single control sites or point sampling sources will often fail to capture the full extent of a system's variability, and such simplistic designs should be discarded in favour of carefully-constructed monitoring and sampling designs. A good illustration of this philosophy was given by M. Scammell, in his presentation of a multiple component assay designed to measure pollutant damage to oysters. Scammell was able to combine techniques from statistical

sampling design and modern biotechnology in developing the assay. Analysis of the data required a complex nested analysis of variance, but this led to increased sensitivity in assessing the toxic potential of various pollutant sources.

G. Judd described the sampling of drinking water zones for compliance with established standards over a variety of endpoints, i.e. pH, faecal coliforms, colour, etc. By taking a multivariate approach, he was able to determine sampling strata and thus reduce the number of zones needed for sampling. Cost reduction, along with equal or even improved statistical precision and accuracy, is an obvious consequence of this redesign. J. Donnelly was able to achieve the same goal using linear regression splines in his study of river surface water quality. By constructing a piecewise linear response model to describe the sewage-pollution indicator variables, as a function of distance from a common source or outlet, an algorithm for selecting future sampling sites was developed.

Analysis of Environmental Data

The two sessions on environmetric analysis included two important invited presentations, one on relating sets of variables, by R. Green, and the other on trend analysis, by S.R. Esterby.

Among the contributed papers on analysis of environmental data, regression methods were a popular central theme. M.R. Donald presented a regression analysis of heavy metal concentrations in sewage, where the outcomes often were censored due to measurement device limitations. The censored regression approach modified sets of orthogonal contrasts that compared various sewage treatment methods for their removal of metals from the sewage. The losses in orthogonality due to the censoring were seen to be slight. Prediction from a regression model is a common goal, and A.O. Nicholls presented a regression application to predict species distributions from selected environmental variables. As the survey data on speciation took a binary form, logistic regression was used to model the species distribution.

The possible impediments to predictive quality that environmental studies engender was illustrated best by J. Filar, in his presentation on models for atmospheric greenhouse gas accumulation. Filar highlighted the critical need to incorporate the stochastic nature of all inputs to environmental systems when predicting an outcome. If the only predictor variable is time, then a time series analysis may be appropriate, and C. Badcock described an example of such for monitoring beach pollution. In her study, temporal correlations invalidated the use of standard linear model approaches for describing the dynamic relationships between faecal coliforms in the beach water and rainfall and faecal coliforms in storm water drains into the beach area. A Box-Jenkins transfer model was used to describe these relationships.

When the prediction is directed at imputing missing values, e.g. in meteorological studies of suspended particulates on global climate change, P.E. Cheng recommended a non-parametric functional-smoothing regression analysis. R. Goudey presented allied methods for studying and temporal trends in chlorophyll concentrations in Port Phillip Bay. Smoothing approaches, including spatial kriging (Cressie, 1991), were employed to interpolate surface water chlorophyll concentrations. From these results, cluster analysis identified zones of differing chlorophyll concentrations around the bay.

The application of cluster analysis played an important role in another study, presented by R. Nahhas, who described a case study on the influence of various types of runoff on water quality of different types of aquatic ecosystems. These ecosystems exhibited differences in sewage-pollution response, i.e. creeks appeared different from beaches, while stormwater drains appeared different from bays, etc. These results should lead environmental scientists to study more carefully the factors that appear to influence the different forms of ecosystem.

G. Robinson described a slightly different approach for quantifying nutrient or pollutant concentrations in aquatic ecosystems. In particular, if the system is a river or stream, a pollutant's concentration multiplied by its flow is defined as its load, which is affected by various hydrologic factors. Robinson proposed the use of a form of quantile plot (Fisher, 1983) that led to an estimate of total streamflow loading. These methods were shown to provide fairly consistent load quantifications under a variety of sampling regimes.

Statistics in Environmental Health

Application of statistical approaches to data on the biomedical effects of environmental stimuli constitutes a growing branch of environmentrics, and the conference devoted a session to this topic. Two invited papers were given on such applications using laboratory animal data, namely "Assessing impacts of environmental stimuli via animal and microbial laboratory studies" by W.W. Piegorsch and "Assessing environmental risks to reproduction and development" by L. Ryan. Contributed papers on statistics in environmental health also touched upon examination of human response to environmental stimuli, i.e environmental epidemiology (Goldsmith, 1986). G. Berry began by describing a study of asbestos exposure in Australian miners and its relationship with subsequent onset of mesothelioma. His non-linear analysis showed that both increasing exposure to asbestos and time since first exposure were associated with increasing cancer risk in miners. L. Sitwat Khawar described similar interests in a study of heavy metal exposure near a New Guinean mine. She highlighted a biopsy of metal concentrations in scalp hair as a dosimeter of individual exposure that was particularly useful for assessing mineral iron exposures in populations living near mining areas. However, as person-to-person variability was high, only very strong differences among population groups were detectable.

Environmental epidemiologic studies also were presented that considered potential human illness derived form water-born exogens. J.F. Harrington described a cohort study of recreational users of an Australian river in which exposure to faecal bacteria was examined as a risk factor for disease onset. Analysis of the cohort data showed that various forms of respiratory and gastrological infections were more common in river users than in external controls, with approximately a four-fold increase in odds of

succumbing to disease. The data clearly indicated that technological measures to remove bacteria and other exogens from waste-water prior to river delivery are essential for maintaining public health. Similar results were presented by C. Kirton in a retrospective study of whether selected swimming locations at Sydney beaches yielded high odds of infection or disease to their recreational users. Specialised forms of risk indices were developed to assess this issue. The data suggested that certain beaches could lead to higher-than-average risk of illness to swimmers.

Other Presentations

Computer software exhibitions highlighting packages and programs useful in environmetric applications were given by C. Fry and J. Filar. Also, a delightful banquet speech was given by O. Mayo of CSIRO. Dr Mayo is a leading expert in biometrical applications in animal breeding and genetics, and fortuitously also lived with R.A. Fisher in the last few years of Fisher's life in Adelaide. His views on modern environmental problems and how statistics can serve to improve our understanding of them were complemented by his unique perspectives on what Fisher's standpoints (both encouraging and discouraging) might have been regarding these issues!

Sponsors

Finally, we thank the conference sponsors, namely SSA (NSW), the Sydney Water Board, the Biometric Society (WNAR), ASA (Section on Statistics & the Environment) and the International Environmetric Society, without whose support the conference would not have taken place.

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John C. Evans
Water Board, Sydney

Walter W. Piegorsch
University of South Carolina

MISCELLANEOUS

E-mail Addresses

I was disappointed by the very meagre list of e-mail addresses provided in the Membership Address List sent out with the last Newsletter. Our New Zealand colleagues have a fairly complete list of e-mail addresses of NZSA members regularly inserted with their Newsletter, and I believe that we should be able to do the same.

In the apparent absence of any official move to compile such a list, I volunteer to do so. If you have an e-mail address which you would like to make known to colleagues, please send me (by e-mail, of course) your name and your e-mail address, and I will add it to the list I am compiling. I will provide the list to the Newsletter editors for insertion with the next Newsletter, and will also try to have it set up in a file which you can access by anonymous ftp. Details will be provided in the next Newsletter. My e-mail address is kgr@uow.edu.au

Ken Russell

The Journal of Statistics Education

The Journal of Statistics Education (JSE) is a new electronic journal on postsecondary statistics education. JSE will publish high quality articles on a variety of topics related to the teaching of statistics; for instance, results of controlled experiments on pedagogical methods, case studies and anecdotal reports, review and opinion articles, discussion of the impact of new technologies and new methods of assessment on statistics education. The journal will also publish reviews of software, books, and teaching materials; reviews should be descriptions of an instructor's experiences actually using a particular book or piece of software with students. Articles that make innovative use of the electronic medium are encouraged. Articles submitted to the journal will be reviewed by three referees. Submission of manuscripts via e-mail is preferred, but materials on diskette or paper can be accommodated. The electronic format of the journal requires that articles follow certain formatting conventions; consult the Guidelines for Authors before submitting materials to JSE. Guidelines for Authors may be obtained by sending e-mail to:
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The JSE Information Service is active now. For further information access Statlib (see The IMS Bulletin (1993): 22, 6-7). The above was extracted from there.

The JSE is supported by the Statistics Department, North Carolina State University.

RANDOM NUMBER GENERATION; A STUDENT'S REPORT

During his visit to Brisbane in April/May, Professor Tony Lawrance gave a series of four lectures on random number generators oriented to honours and postgraduate students as well as interested staff. The lectures were "attached" to my fourth year honours subject, Actuarial Statistics, and one assessment task was to write an account of Professor Lawrance's lectures, for an informed readership, but as if they were writing for a statistical society newsletter. Thus the students also borrowed and read a number of SSAI Newsletters. The lectures were technically (that is, mathematically) oriented, and hence the students involved, Julie Ferrier, John Hay, Toni McNee and Glen Skiller, found the task challenging but interesting. Glen Skiller's account is printed below.

Helen MacGillivray

Random Number Generators

Professor Tony Lawrance from the University of Birmingham, England, conducted two 2-hour lectures on random number generators at QUT for honours students in mathematics as part of the subject Actuarial Statistics. Interested lecturers and PhD students also attended. The first lecture covered the uses of uniform random numbers and the basics of congruential random number generators. The second lecture covered the lattice properties of these generators as well as examples of generators that are actually used.

Computer simulations require the generation of random numbers, usually from a uniform distribution. As a computer cannot produce true random numbers, it must use some deterministic method to produce psuedo-random numbers. These numbers must display the properties of true independent and identically distributed uniform random numbers and must be unpredictable if the method of generation is unknown.

A congruential random number generator has the form $x_i = (ax_{i-1}+b) \bmod(M)$, $i=1,2,...$ where a and M are positive integers and b and the seed x_o are nonnegative integers (usually $b=0$ or 1) with $b<M$. If $b>0$ then the generator is said to be a mixed generator while if $b=0$, it is said to be a multiplicative generator. If N is the period of the generated sequence, the output from a good generator are the integers $0,1,...,M-1$ $(N=M)$ or $1,2,...,M-1$ $(N=M-1)$. Some generators may give different subsets of these values for different seeds.

The plot of successive pairs (x_{i-1}, x_i) gives a good indication of the randomness of a generator. A good generator would have points that are fairly evenly spaced, mimicking the statistical independence of random numbers. A 3D plot of (x_{i-2}, x_{i-1}, x_i) is also useful for the same reason.

For mixed congruential generators, $x_i = ax_{i-1} + b - k_iM$ where k_i is the integer part of $(ax_{i-1}+b)/M$. Thus, they generate straight lines with slope a and intercepts $b-k_iM$. k_i takes on values $0, 1, ..., a-1$, so there are a equally spaced lines. A large value of a is therefore desirable.

The mixed generator has full period M iff the greatest common divisor of b and M is 1, $a \bmod(p)=1$ for each prime factor p of M, and $a \bmod(4)=1$ if 4 divides M. The class of generators with $M=2^k$ $(k\geq 2)$, $a=4c+1$ (integer c) and b odd satisfy these conditions. $M=2^k$ is often used because this is a convenient form for use on binary computers (no division is required for the modulus operation). Another requirement of a good mixed generator is that M must not be prime, which is satisfied when $M=2^k$. Obviously, a large value of M is desired for a large period.

The maximum period for multiplicative generators is $M-1$ since x_i can't be 0. For such a generator to have period $M-1$, M must be prime. In particular, if M is prime, the period divides $M-1$ and is only equal to this value if a is a primitive root of $M-1$, i.e. $a\neq 0$ and $a^{(M-1)/p}\neq 1 \bmod M$ for each prime factor p of $M-1$. If $M=2^k$ $(k\geq 4)$ then the maximum possible period is $M/4$ which can only be attained if $a \bmod(8)=3$ or 5. If $a \bmod(8)=5$ in this case then $(x_i-b)/4$, $b=x_o \bmod(4)$ is the output sequence from the mixed generator $x_i=(ax_{i-1}+b(a-1)/4) \bmod(M/4)$.

As mentioned before, a plot of (x_{i-1}, x_i) can be used to judge different random number generators. The points on the plot fall on the intersections of two sets of parallel lines i.e. the plot has a lattice structure. The uniformity of the plot can be assessed by examining this lattice structure. If l_1 and l_2 are the lengths of the sides of the lattice cells with $l_2\geq l_1$ and w is the angle between the sides, then perfect uniformity occurs when $w=90°$ and $l_1=l_2$ i.e. the lattice cells are square. Another requirement of a 'good' lattice structure is that the (x_{i-1}, x_i) pairs should not fall on a small number of parallel lines. If ν_2 denotes the minimum number of parallel lines covering the (x_{i-1}, x_i) pairs, then for lattices that are nearly square, $\nu_2 \cong N/l_2$ and area $= N^2 \cong N \times$ area of cell $= Nl_1l_2 \sin W$. Thus $\nu_2 \cong l_1 \sin W$. It should be noted that for a given set of points, there may be more than one possible lattice structure and there are ways of finding the 'best' structure. These were discussed in the lecture but details are not given here.

A joining of the pairs (x_0, x_1), (x_1, x_2), ..., called a directed scatter plot, can be used to show whether the generator gradually fills up the square in a seemingly random way. If no structure is evident then the pairs behave pseudo-independently and sub-sequences of the sequence will display uniform statistical properties.

The above points about the (x_{i-1},x_i) pairs can be generalised to higher dimensions; 3 dimensions is usually sufficient.

Professor Lawrance concluded by giving 'real life' examples of random number generators; both good and bad, from some commonly used computers. The lectures were presented in an easily understood way and were very informative, particularly for anyone who has wondered how computers generate random numbers, or who needs to generate random numbers for themselves.

Glen Skiller

AUSTRALASIAN CONFERENCES

CONFERENCE SUMMARY

XIIIth Scientific Meeting of the International Epidemiological Association, 26-29 September 1993, Sydney.
Information: Conference Secretariat, c/o Mrs Jennifer Maher, PO Box 746, Turramurra NSW 2074; tel. (02) 449 1525; fax. (02) 488 7496.

STATCOMP93, 27 September - 1 October 1993, University of Wollongong.
Information: Statistics '93 Conference Secretary, Mathematics Department, University of Wollongong, Northfields Avenue, WOLLONGONG NSW 2522; fax. (042) 21-4845; email: statconf@uow.edu.au. (Further details in Newsletters 62, 63 and this issue.)

Young Statisticians' Professional Development Workshop, 29 September - 1 October 1993, Brassey Hotel, Barton, Canberra.
Information: Ann Cowling, ABARE, PO Box 1563, Canberra ACT 2601; tel: (06) 272 2191; fax: (06) 272 2001; email: annc@abare.gov.au. (Further details in Newsletters 62 and 63.)

Workshop on Statistical Variable Selection, 2-4 December 1993, La Trobe University, Melbourne.
Information: Paul Kabaila, Department of Statistics, La Trobe University, Bundoora, Victoria 3083; email: stapvk@lure.latrobe.edu.au. (Further details in this issue.)

Second International Conference on Financial Econometrics, 13-14 December 1993, Queenstown, New Zealand
Information: David Giles, Economics, University of Canterbury, Christchurch, New Zealand.

Statistics in Ecology and Environmental Monitoring, 13-17 December 1993, University of Otago, Dunedin, New Zealand
Information: Centre for Applications of Statistics and Mathematics, University of Otago, PO Box 56, Dunedin, New Zealand, tel: +64 3 479 7774, fax: +64 3 479 8427, email: CASM@math.otago.ac.nz. (Further details in Newsletters 62 and 63.)

Biological Community Structure and the Effects of Pollution, 7-11 February 1994, AWT-Science & Environment, Water Board, Sydney.
Information: Dr Raghid Nahhas, PO Box 73, West Ryde NSW 2114, tel. (02) 334 0945, Fax: (02) 334 0840. (Further details in this issue.)

Twelfth Australian Statistical Society Conference, 1994, Monash University, Victoria.
Information: R.C. Griffiths, Mathematics Department, Monash University, Clayton VIC 3168, email: apm466b@vaxc.cc.monash.edu.au. (Further details in Newsletters 62 and 63.)

More news about STATCOMP93, 27 September - 1 October 1993

The Conference known as Statistics '93 will take place in Wollongong from 27th September to 1st October, 1993. Wollongong (pronounced Wool-on-gong) is located on the east coast, some 80 km south of Sydney. It is the largest city of the Illawarra region, and greater Wollongong has a population of approximately 200,000. The principal industries are steel-making and tourism. There is a frequent and comfortable train service between Sydney and Wollongong; motorists may take advantage of the tollway.

The statistical attractions of the Conference include a conference with three themes: Quality, Statistical Computing, and Statistical Education. The Statistical Computing and Statistical Education Strands will finish at lunch time on Wednesday, September 29. The Quality section will be held on Thursday and Friday. The featured speakers in the StatComp section are Trevor Hastie (AT&T) and Nev. Davies (The U.K. Statistics Consortium). Hastie will be giving two one-hour talks and contributing to a session on current developments in S and S-Plus. The Statcomp section's programme is close to being finalised; details are set out below. For up-to-date details on the current programme, contact the conference organisers at either the postal or e-mail addresses below.

There will be a Book/Software display during the conference. Publishers expected to sponsor and take part in the Book Display include DA Information Services, John Wiley, McGraw Hill, Macmillan, Oxford University Press, Prentice-Hall and Thomas Nelson. Software sponsors intending to show software include CEANET (GLIM and GENSTAT), CSIRO dms (SPlus), SIR (MINITAB), and SAS. A cocktail party sponsored by BBN Software will be held on Tuesday evening in the Book/Software display area.

There are other attractions in Wollongong. The weather will be warm, without being very hot. The University campus is attractive, and convenient to the city. There are miles of beautiful beaches, an adjacent escarpment with pleasant walks and views, and Sydney is easily accessible for those who hanker to visit the big city. The Conference tours on the Wednesday afternoon allow registrants and partners to visit the scenic or industrial attractions of the region.

The current programme for Statcomp is:

Monday, 27 September

8.30	Registration
9.30	Nev Davies
10.30	Tea
11.00	Experimental Design (Eccleston, John, Russell)
1.00	Lunch
2.00	Current Developments in S and SPlus (Hastie, Davis, Venables)
3.30 Tea	
4.00 - 5.30	Contributed Papers

Tuesday, 28 September

9.00	Murray Aitkin
9.45	Ari Verbyla

10.30	Tea
11.00	Trevor Hastie (I)
12.00	Contributed Papers
1.00	Lunch
2.00	Medical Imaging (Hutton, Anderssen/Gates, Ma, Mike Brown)
4.00	Tea
4.30	Contributed Papers
5.30	Cocktail Party (sponsored by BBN Software)

Wednesday, 29 September

9.00	Government Statistical Computing - ABS and ABARE (Rogers, Williams, Lindsey)
10.30	Tea
11.00	Contributed Papers (Matt Wand, Simon Sheather)
12.00	Trevor Hastie (II)
1.00	Lunch, followed by afternoon tours.

The Quality Strand will begin on Thursday, September 30. Associate Professor Peter Lee, Department of Chemical Engineering, University of Queensland, will give an invited talk entitled "Statistics in Process Analysis and Control". Other speakers giving talks in this strand include Dr. Darron Passlow (BBN Software), Dr. Geoff Riley (ALCOA) and Dr. Ross Sparks (CSIRO dms).

To obtain more information about the conference, send ordinary mail to Statistics '93, Department of Applied Statistics, University of Wollongong, Northfields Avenue, Wollongong NSW 2522, Australia or e-mail to statconf@uow.edu.au

To obtain registration and accommodation information, you may also be able to use anonymous ftp from your computer. Type ftp falin.cs.uow.edu.au and then use anonymous as both your name and password. To get to the appropriate directory, type cd /pub/Stat93 The command ls (ell-ess) will list the available files, which may be downloaded to your computer by typing get followed by the name of the file. Use quit to leave ftp.

Workshop on Statistical Variable Selection, 2-4 December 1993

This is the first announcement of a two and a half day Workshop on Statistical Variable Selection (including data based choice of dimensionality of model) to be held at La Trobe University, Melbourne on the 2, 3 and morning of 4 December 1993. The purpose of the workshop is to provide a comparative study of the different approaches to statistical variable selection (SVS). The plan for the workshop is as follows:

Thursday, 2 December

Morning	(a)	Implications of classical inference (ie Fisher-Neyman-Pearson inference) for SVS.
	(b)	Contributed theoretical papers.
Afternoon	(a)	Minimum description length principle.
	(b)	Contributed theoretical papers.
Evening		Workshop dinner.

Friday, 3 December

Morning	(a)	Bayesian approaches to SVS.
	(b)	Contributed theoretical papers.
Afternoon	(a)	"Information-theoretic" criteria.
	(b)	Contributed theoretical papers.

Saturday, 4 December

Morning Contributed applied papers.

The following have accepted invitations to speak at the workshop:

- Prof. E.J. Hannan (ANU),
- Dr L. Kavalieris (currently visiting ANU),
- Prof. M.L. King (Monash),
- Dr A.J. Miller (CSIRO),
- Dr J. Rissanen (IBM Almaden, California),
- Dr C. Scipione (Monash).

The special guest speaker is Dr J. Rissanen who was recently awarded the IEEE Richard W. Hamming Medal. He is the author of *Stochastic Complexity in Statistical Inquiry: Series in Computer Science* - Vol. 15 World Scientific (1989).

For further information, please contact:

Dr Paul Kabaila
Department of Statistics
La Trobe University
Bundoora VIC 3083
email: stapvk@lure.latrobe.edu.au

Biological Community Structure and the Effects of Pollution
7 - 9 February 1994 (Course)
10 - 11 February 1994 (Workshop)

Venue and organising body:

AWT-Science & Environment, Water Board Sydney 51 Hermitage Road, WEST RYDE NSW 2114.

The three-day Course will focus on the use of the numerical structure of communities and multivariate analyses to detect change at the community level. Lecture and practical sessions will emphasise procedures for performing analyses using a number of packages including PRIMER and PATN.

The Workshop following the Course will include papers and discussions on biological community structure and the detection of pollution effects. There will be presentations on recent developments in multivariate analysis, application of community structure analysis to environmental problems, discussion on experimental design including taxonomic resolution and comparisons of univariate and multivariate techniques to detect environmental change.

The Workshop is open to all persons whether or not they participate in the Course.

Professor John Gray and Dr Lee Belbin will be two of the keynote speakers at the Workshop. Other prominent Australian researchers in the field will be invited to participate. Participants are encouraged to submit an issue for discussion. Poster papers highlighting particular problems are also welcome.

For further information contact:

Dr Raghid Nahhas
AWT-Science & Environment
PO Box 73
WEST RYDE NSW 2114
Tel: (02) 334 0945
Fax: (02) 334 0840

Final date for registration and payment of fees
30 September 1993

OVERSEAS CONFERENCES

49th Biennial Session of the International Statistical Institute, 25 August-3 September 1993, Firenze, Italy.
Information: ISI Permanent Office, 428 Prinses Beatrixlaan, PO Box 950, 2270 AZ Voorburg, The Netherlands.

IFCS '93 - 4th Conference of the International Federation of Classification Societies, 31 August-4 September 1993, Paris, France.
Information: INRIA Secretariat, INRIA - Rocquencourt, Bureau des Colleques, Domaine de Voluceau-BP 105, 78153 LE Chesnay, Cedex-France.

11th International Conference on the New Quality Philosophy in Statistical Research and Statistical Education, 1-3 September 1993, Firenze, Italy.
Information: Prof. V. Shvyrkov, IS-SSE, 536 Oasis Dr., Santa Rosa, CA 95407, USA.

International Meeting on Statistical Methods in Biopharmacy, 6-7 September 1993, Paris, France.
Information: D. Serrurier, Laboratoires CIBA-GEIGY, 2 & 4 rue Lionel Terray, 92506 Rueil Malmaison Cedex, France.

SPRUCE II (Statistics in Public Resources, Utilities, and in Care of the Environment), Rothamsted Experimental Station, 13-15 September 1993.
The Conference theme will be "Statistics of Water" covering the crucial areas of quality and pollution; water as energy; water supply, management, irrigation and drainage; rainfall and climate; sea-levels and coastal protection; and hydrological modelling.
Information: Vic Barnett, SPRUCE Chairman, or Roger Payne, Local Organiser, both at Department of Statistics, Rothamsted Experimental Station, Harpenden, Herts., AL4 2JQ, UK, tel. +44 582 763133, ext. 2376, fax +44 582 467116, email SPRUCE@UK.AC.AFRC.RESA.

14th Meeting of International Society for Clinical Biostatistics, 21-24 September 1993, Cambridge, United Kingdom.
Information: Meeting Secretariat, ISCB14, 42 Devonshire Road, Cambridge, CB1 2B1, United Kingdom.

Second Annual Meeting of the International Genetic Epidemiology Society, 10-11 October 1993, New Orleans, LA, USA.
Information: Louisiana State University Medical Centre Foundation, Division of Professional Education, 433 Bolivar Street, New Orleans, LA 70112, USA.

International Seminar on Skilled and Highly Skilled Migration, 28-29 October 1993, Lattina (near Rome), Italy.
Information: Prof. Enrico Todisco, Universita di Roma "La Sapienza" Faculta di Economia e Commercio, Dip. Studi Geoeconomoco, Statistici, Storici, Via del Castro Laurenziano 9, 00161 Roma, Italy.

Second ICSA Conference in Statistical Research & Applications and the 1993 Taipei International Statistical Symposium, 17-19 December 1993, Taipei, Taiwan.
Information: Smiley W. Cheng, Department of Statistics, University of Manitoba, Canada R3T 2N2.

International Conference on Statistics and the Quality of Life: A Third World Perspective, 9-12 January 1994, Luxor, Egypt.
Information: P.K. Sen, Department of Biostatistics, University of North Carolina, Chapel Hill, NC 27599, USA.

Third International Conference on Lattice Path Combinatorics and Applications, 12-14 January 1994, Delhi, India.
Information: Kanwar Sen, Head of the Department of Statistics, University of Delhi, Delhi-110007, India.

48th Annual Quality Congress (AQC), 24-26 May 1994, Las Vegas, NV, USA.
Information: ASQC Conferences and Exhibits Department, PO Box 3005, Milwaukee, WI 53201-3005, USA.

Fifth Valencia International Meeting on Bayesian Statistics, 5-10 June 1994, Alicante, Spain.
Information: Prof. Jose M. Bernardo, Centro de Documentacion y Analysis, Presidencia de la Generalidad, Cabelleros 9, 46001 - Valencia, Spain.

Fourth International Conference on Teaching Statistics, 25-30 July 1994, Marrakesh, Morocco.
Information: Mr EL GHAZALI Abdelaziz, Chairman of the Local Organizing Committee, I.N.S.E.A., PO Box 6217, Rabat-Instituts, Rabat, Morocco.

17th International Biometric Conference (IBC94), 8-12 August 1994, Hamilton, Ontario, Canada.
Information: IBC94 Local Organizing Committee, Department of Mathematics and Statistics, McMaster University, Hamilton, Ontario, Canada L8S 4K1.

Frontiers of Statistical Ecology and Ecological Statistics, 20-26 August 1994, Manchester, United Kingdom.
Information: G.P. Pail, Center for Statistical Ecology and Environmental Statistics, Department of Statistics, Pennsylvania State University, University Park, PA 16802, USA, Tel: 1 814 865-9442, fax: 1 814 863-7114, email GPP@PSUVM.bitnet.

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