



Professor E.J. Hannan – (29.1.1921 – 7.1.1994) Some Recollections

When I came to the Department of Statistics at the School of General Studies, Australian National University (ANU), in February 1965 as Temporary Senior Tutor, I was a young man of 23, newly married and embarking on a PhD. Ted, who was Head, was on leave, but within this teaching department I nevertheless quickly became acquainted with him through the fond stories about his warmth and excitability. One of them related to his first small book which had recently appeared. There were apparently some errors in it: a common enough occurrence, but a source of great distress to him, which he had communicated to all his colleagues, roomwise, up and down the department passage, as was his custom.

One of our first talks together took place when I was 24 and he 44 (for some reason the ages stay in my mind). What I remember from it was that he treated me then, as ever after, as an equal. This was, I think, primarily an aspect of his egalitarianism, which his closest friend of many years, Joe Gani, has stressed elsewhere. Perhaps the fact that I was not his student contributed.

There were several interests that Ted and I shared. Firstly there was a love of English literature and poetry. Over the years there were many walks at lunchtime round the ANU campus, talking about the work of people like Orwell and Koestler and the poetry of W.B. Yeats (the great Anglo-Irish poet), G.M. Hopkins (a source of particular interest because he was a Jesuit), Thomas Hardy, Shakespeare, and later, A.E.

Housman. Even after I left Canberra for Sydney in 1979, whenever I returned to visit, about twice a year, one of the first questions he would ask was what I had read recently, and I would try to bring him something he may not already have seen (not an easy task). I do not remember his opinion of the literary style of Evelyn Waugh (a favourite of mine, then, as Italo Svevo was Ted's), but remember clearly his remarkable knowledge of the personal aberrations of authors such as Waugh, and Lytton Strachey, which he expressed through very funny vignettes. Just before the last time that I was to see him I had written from Sydney that I'd read Stefan Zweig's *The World of Yesterday*. He wrote back to say he had at one time read much of Zweig, including *Song of Bernadette* and *The Forty Days of Musa Dagh*. When we met he showed his usual excitability at the grave error of having confused Zweig with Franz Werfel.

We shared, too, a similarity of identity, through ancestry in people historically oppressed, in his case the Irish, in mine the Ukrainian: and a common religion, Catholicism. The way these two

influences shape intellectual and spiritual development was clear in Ted's choice of reading matter, and in this he contributed to my own.

From the years before Ted moved to Pat Moran's department at ANU in 1971, some things stand out in memory very clearly. Mrs Joyce Radley, a secretary newly arrived from England in about 1966, had to learn mathematical typing (on the old IBM golf-ball machine) by typing the manuscript of Ted's large and technically intricate second book. How both Ted and Joyce got through that was a source of wonder. When Ted wanted to talk about a mathematical problem, he would burst into offices (frequently in sequence down the passage), and talk non-stop and write for about a half-hour on the office board. At the end he would announce how good it had been for him to clarify his thoughts, and leave, his listener having contributed only, at best, non-committal noises. At one time, some referee had had the temerity to reject one of Ted's papers for *Biometrika*. He came, in great anger after receiving the report, to all our offices, gave us the paper, and instructed us to read it for clarity

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and correctness. Ted was a great mathematician, but not always a clear writer, and this was a daunting task, particularly for people who knew little of the far reaches of time series. Fortunately a member of Pat Moran's department detected a minor flaw, which calmed Ted down, and we were able to abandon the task while Ted improved the paper which was then published in another journal.

In my own professional career, I owe him much. I went through a period of some years when I didn't want either to give, or listen to, research talks, finding them for the most part incomprehensible and depressing; but he gently enlightened me as to how one should regard such seminars and conferences. These truths I now pass on to my own students at a much earlier time in their careers.

In the northern Autumn of 1988 Ted was visiting at the University of North Carolina at Chapel Hill with his wife Irene, and I was on sabbatical at the University of Virginia, in Charlottesville with my wife, Ludmilla. Loren Pitt, whose house we were renting, brought the Hannans to stay with us for a few days. The pin-oaks had dropped their leaves in great numbers, and the four of us spent time raking them up, chatting in relaxed fashion, and throwing acorns for Tally, one of the Pitts' cats, to chase. A happy time for us all in a landscape of splendid colours.

One cannot let recollections of Ted pass without citing some lines from his favourite poet, William Butler Yeats. One poem of which he was fond for its insight, rather than the usual lyrical beauty of Yeats' language, was "The Scholars":

*"All shuffle there; all cough in ink;
All wear the carpet with their shoes;
All think what other people think:
All know the man their neighbour knows."*

I was privileged to be connected with the last days of Ted's life, and with his last creative work. Before my usual January visit to Canberra, I asked one of my graduate students, working in time series

analysis, whether he had some general questions on which Ted might be able to cast some light in the course of conversation. My student gave me several questions; and I mentioned them to Ted when we spent the morning of January 6, 1994 together in his office. He started going through them on the board, but then said he'd send the information later. He said he'd been thinking again about an idea of Norbert Wiener that he had only partly grasped, and touched on in his own major book: to the effect that all real-world processes are the result of a filter applied to noise.

Lunch on that day was a particularly happy affair: Ted, Joe Gani, Chris Heyde and myself in the dining hall, with Ted in sparkling form and jokes bouncing from each one of us to all the others. I had my camera with me, and a waitress took a photo of the four of us, the last photo of Ted. I was told after the funeral that he had come home from the office at the end of the day on January 7th, and announced with satisfaction to Irene that he had written out the answers to the problems I'd given him, and had the papers in his briefcase. He died a few hours later. He always said he'd had a fortunate life; and indeed it was given to him, as it is given to few, to:

*"... pluck till time and times are done
The silver apples of the moon,
The golden apples of the sun."*

I had noticed on that last morning together on his desk a yellow quartz paperweight which I had given him in 1972, because he would pick it up and play with it whenever he had come into my office for several years before. Irene was kind enough to give it back to me after the funeral, and it now sits on my desk as another reminder of him. In time, I will pass it on again, as a link in a chain with Ted, a warm, enthusiastic human being, and one of the giants, with A.E. Cornish, H.O. Lancaster, P.A.P. Moran and E.J.G. Pitman, among Australian theoretical statisticians.

Eugene Seneta

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VICTORIA

Statisticians have a difficult position in today's workplace

Jenny Kelly, President of the NSW branch, spoke at the July meeting under the title 'Statisticians have a difficult position in today's workplace'. This talk was essentially that given to the NSW branch in March and which was reported in the May newsletter under the title of 'Marketing Statistics'.

Stuart Veitch has already admirably summarized Jenny's talk, so here it seems preferable to emphasise Jenny's conclusions about what can be done to raise the profile of the statistical profession in order to meet the challenges of the consulting market.

Jenny proposed both collective and individual action. Collectively we need to focus on the type of statistical education that is appropriate for general users so that they are proficient as far as they go but also know their limitations and when to seek professional statistical advice. This seems to imply that practitioners and not just educators must address the issue of what constitutes good, up-to-date statistical education from school through university, and that statisticians must take control of the statistical curriculum.

The Statistical Society itself could also broaden its role to include service provision and promotion of the profession, in particular of accredited statisticians. It could also extend its further education role for its members, promote greater networking and provide referrals to specialists in obscure or difficult fields.

Individuals can complement the above by actively supporting the Society through participation and generating useful activities such as workshops and special interest groups.

In both of these areas Jenny is challenging the Society, through its

members, to become more visible, more relevant, more valued and more involved in statistical issues throughout the community. This challenge needs to be debated more seriously at all levels of the Society so that WE decide what is the future of statisticians in today's workplace.

The Grand Finale - Clash of the Footy Statisticians

The September meeting saw *The Grand Finale* being played. It was the clash of the footy statisticians. Conditions were perfect for a night match: brisk and cool, but dry, with no wind. Nick Garnham, the organiser and promoter of the event, must have been pleased by the crowd of nearly 50 who turned up. There was the usual pre-game entertainment of drinks and nibbles, after which the spectators, many sporting their team's colours, settled back for the opening bounce. Umpire Ian Gordon (rumours that he has been approached to be St Kilda's new coach were not denied) invited the audience to rise for 'Advance Australia Fair', beautifully rendered on baritone and alto sax by two young ladies (Kate and Anna Gordon) imported especially for the occasion. And, yes, a few bars of 'When the Saints go marching in' at the end do jazz up the national anthem.

Cheers went up as Stephen Clarke of Swinburne University took control of the first quarter with a discussion of home ground advantage. Raw data on AFL matches since 1980 showed that the home team wins about 60% of the time in home and away games. Stephen fitted a hierarchy of linear models in which the home advantage was (a) absent (b) the same for all teams (c) different for all teams (d) different for each pair of teams (e) different for each team and ground. A more refined analysis suggested that the home team advantage is larger for interstate teams, and that the advantage can evaporate in the first

season at a new home ground. On average, about 1 point in 20 can be attributed to home ground advantage.

The second quarter belonged to David Dyte, also of Swinburne University. During the opening skirmish he cited several quotations employing the term 'Premiership Quarter', encapsulating an urban myth that the third quarter is the one that decides an AFL match. The expression may have been coined in 1982 by David Parkin, who coached Carlton to the premiership that year. David Dyte searched for empirical evidence to support this notion, but it was equivocal at best. The umpire's verdict must be left open at this stage.

At half time the crowd discussed progress over beer, chips and traditional pies doused with tomato sauce.

Dean Schutz of Champion Data dominated the third term, with a detailed account of how his company gathers, summarises and graphs AFL football data. These are collected dynamically during a match, are summarised by an on-line computer at the Melbourne Tennis Centre, and then transmitted back (all within a few seconds) to interested AFL coaches who may use them to make strategic and tactical decisions. Typically about 1300 events (kicks, handballs, loose gets, hard gets, contested marks, uncontested marks, clangers and so on) are recorded during a game. These data are tabulated in the major newspapers the next day. Detailed scrutiny of the data may provide clues to the way each team plays (for example, Crows' players are clearly instructed to punch the ball away during heavily contested marks, rather than attempt to mark, and North Melbourne opts to kick longer than other teams). Dean emphasised that summaries for footballers must be simple, but some of his graphical displays (which would delight Edward Tufte) could only make sense to an ardent follower of the game.

Branch Reports

At three-quarter time the audience partook of some sliced orange segments for refreshment. Fears that the overhead projector had suffered permanent injury after an accidental hip and shoulder from Dean Schutz proved unfounded, and the entertainment continued with David Dowe of Monash University. David worked hard to convince us that, in addition to nominating the winning team in each match, footy tipsters should provide its probability of winning. Minimum message length inference suggests that the reward function should be linear in the log of the win probability of the winning team. David also engaged the audience in a Grand Final tipping competition, in which, to earn a handsome prize, participants must provide the probability that North Melbourne wins, and the mean and standard deviation of the winning margin.

During extra time David Dyte demonstrated some results from his cricket simulator, based on batting averages. Barring injuries to key players, Australia has an 80% chance of winning each of the forthcoming Ashes Tests, a very pleasing result.

The event lasted for two hours, slightly shorter than an average AFL match, but long enough in an enclosed venue, however modern and well-equipped. After the match, some players and supporters adjourned to a local restaurant to discuss some of the finer points over a glass or two, and to debate Stephen Clarke's and David Dowe's independent estimates of the probability of North Melbourne winning the 1998 Grand Final — both about 2/3.

Press coverage included, of course, the Victorian daily newspaper with the largest circulation (The Herald Sun, 24/9/98, page 7).

Belz Lecture

An article in the *Age* 19 September 1998 claimed: "At the centre of this scandal is a simple statistical

technique used by scientists as the basis for supposed research breakthroughs. It is called 'significance testing' and it is fatally flawed".

I went along to the Belz lecture expecting to hear Jane Matthews debunk the bunkum. Instead, I was reminded of just how misleading significance testing can be, even under ideal circumstances where there are no sources of bias present. And how really awful results can be when bias is present.

Just how misleading is significance testing? The talk started with some basic definitions (possibly to lull us into a false sense of security). Appropriately, the statistical testing procedure was compared with a diagnostic test where we can determine the true positive (sensitivity) rate and true negative (specificity) rate by testing on known positive and negative cases, but to determine the diagnostic sensitivity and specificity we need to know the prevalence of positive and negative cases in the population we are testing.

What percentage of clinical trials currently in progress are testing treatments with clinically important differences in outcomes? Peto et al (1976) claimed that for every trial which compares two treatments which are substantially different, there are probably 5 to 10 "null" trials which compare treatments which are almost equally effective. We will be possibly conservative and assume 20% of trials are testing genuine differences. The typical outcome for 100 trials comparing two treatments with a significance level α of 0.05 and 80% power was used as an example: 5% of trials with non-significant outcomes were actually trials with a genuine difference (false negative conclusion) and 20% of trials with a significant outcome were trials with no real difference (false positive conclusion).

But wait, it gets worse: if trials are under-powered and have only a 25% chance of detecting genuine

differences, then the false positive conclusion rate is as high as 44% if 20% of trials are comparing genuine differences.

How would the situation be changed if we chose $\alpha = 0.01$ as a significance level instead of $\alpha = 0.05$? The false negative rate remains essentially the same at 5%, but the false positive rate drops dramatically from 20% to 5%. That sounds better. But there would be a down side to adopting $\alpha = 0.01$ as the standard. Trials would need to be larger to maintain the same power to detect genuine differences, N being approximately 50% larger for trials with a power of 80% and using 2-tailed tests of significance. Apart from the additional resources required to run the trials, assuming the investigators were not discouraged by the large numbers required, there could be a 50% increase in the time to accrue sufficient patients and hence a delay in the time to finalise the trial and publish the results. Some may also be concerned that in trials where genuine differences in outcome exist, the increase in patients would mean an increase in the patients who were treated on an inferior treatment. These costs would need to be weighed up against the costs of drawing false positive conclusions.

To this point it had been assumed that there were no biases in the design, conduct, analysis or interpretation of trials. However the bad news is that such biases are not at all uncommon and could inflate the false positive rate quite dramatically. If these biases meant that 5% of trials which would have been reported as being negative (non-significant) would be reported as positive (significant) instead, then for the simple situation described above, the false positive rate would increase from 20% to 32.5% (with $\alpha = 0.05$) or from 4.5% to 22.7% (with $\alpha = 0.01$). Thus it is critically important to ensure that all possible sources of bias are eliminated from clinical trials.

One of the major sources of bias in clinical trials is selection bias, comparing two groups which are essentially unequal to start with. Claims for breakthroughs in medical research often come from small, non-randomised, uncontrolled trials, in many cases from early pilot studies of new treatments. Although it is indisputable that the only way to eliminate selection bias is to allocate patients at random to the treatments being compared, it is attractive to many investigators to run non-randomised studies. Fewer patients are required; in some cases only 25% as many patients as in a randomised trial. Thus the investigator may be able to run the trial entirely in one hospital without having to entice clinicians from other hospitals to collaborate. All the patients can get the new treatment and the doctor doesn't have to appear to lose face/control with patients.

Controls may be obtained from previous series of patients treated in the same hospital (retrospective series). This introduces the possibility of selection bias. There are a number of known problems with historical controls: times change; it is difficult to match patients; there are different diagnostic criteria, changing referral patterns, improving quality of care and better methods of detecting disease.

Assessment bias could also be an issue if results were compared only for patients with a particular stage. More refined diagnostic tools could lead to patients being "up-staged" i.e. assigned a higher stage category than would have been assigned without the more refined tools. This can lead to an apparent improvement in results in a stage by stage comparison simply due to the influx of better prognosis patients in the higher stages and the efflux of the worse prognosis patients from the lower stages (the so-called "Will Rogers" phenomenon after the ascribed quotation: "When the

Okies left Oklahoma and moved to California they raised the average intelligence level in both states"). This was well illustrated by a simple numerical example of stage migration in lung cancer.

However, selection bias may still exist with randomised trials. To eliminate bias, proper conduct of the trial is essential. The doctor entering patients should never know which treatment is to be assigned next. In 250 randomised trials where codes were poorly concealed, experimental treatment was found to be 40% more effective than when codes were kept strictly confidential. Apparently some doctors cheat because they know what is best. This cheating included: opening unsealed envelopes; holding envelopes to light bulbs; visiting the radiology department; opening unnumbered envelopes; weighing envelopes; and even raiding offices to find charts.

There are still other biases in conduct of trials. Publication bias: it is known that significant results are more likely to be published; and that published benefits are likely to overestimate true benefits. Assessment bias: *soft* endpoints e.g. time to progression and toxicities need to be assessed equally. Multiple testing bias: frequency of significance testing during the trial must be accounted for in the trial design — the more you test, the more you find.

There can be biases in the methods of analysis: when using an intention-to-treat analysis, it is necessary to analyse all eligible randomised patients, no matter what (if any) treatment is received; analyse according to randomisation arm, not by treatment given; survival should be measured from date of randomisation, not date of treatment.

Reviews of medical journals have indicated that: 76% of conclusions or abstracts contained doubtful or invalid statements; 92% required changes after statistical review; 79% of presentations of univariate

& multivariate analyses and graphs were inadequate. Statistical review of articles submitted to the *Lancet* indicated many criticisms of design relating to eligibility of patients, power, comparability of groups and randomisation issues; criticisms of analysis because of lack of clarity in the methods used, requirement for better analyses, lack of attention to distributional shape; criticisms of inference in drawing incorrect conclusions, lack of confidence intervals, and selective emphasis from multiple comparisons.

In another study, bias was found in reports of 196 double-blind trials of anti-inflammatory drugs in rheumatoid arthritis. This bias consistently favoured the new drug in 81 trials and the control in only one trial [$P < 10-22\%$]. Sources of bias found were: incorrect significant results, within group analyses; sub-group analyses; wrong sampling unit; undocumented or doubtful claims (anti-inflammatory activity claimed when no effect on joint size was found; the drug was well tolerated even though 1/4 of the patients withdrew due to gastrointestinal side effects.); unfairness and exaggeration (minor differences favouring the new drug stressed, while equivalent differences in the control not mentioned, differences stressed in the conclusion depended on the fate of just one or two patients.)

Clearly then, biases exist. They are not hard to find once you start to look. And it is important to take care to look. Biases can make a bad story worse.

Conclusions

Even under ideal conditions, there is a very high (20%) false positive rate when $\alpha = 0.05$.

This could be reduced by about 75% if we chose $\alpha = 0.01$, but we would need to increase the number of patients in our trials by about 50%.

False positive results will increase with underpowered trials, historical controls, biases in analysis and inference.

Branch Reports

Data Mining and Statistics - What's the Connection?

Professor Jerry Friedman of Stanford University gave a very interesting talk at the well attended November meeting entitled "Data Mining and Statistics-What's the Connection?" In the first part of his talk Prof. Friedman looked at various definitions of Data Mining and indicated that, at the present time, Data Mining was largely a commercial enterprise. Most Data Mining products had attractive GUI interfaces with flexible input and sophisticated graphics.

He claimed that although data mining clearly had a big intellectual future, at the moment the methodology had no real regard to performance with the emphasis on the user interface rather than "what's under the bonnet".

Professor Friedman then focussed on what contributions Statistics and Statisticians could make to Data Mining. He warned that unless Statisticians widened their outlook Statistics could be reduced to a small player in the information revolution. Big changes in how we do things are needed.

We need to come to grips with computers, expose our students to relevant Computer Science topics, teach current data analysis techniques, moderate our romance with mathematics and change our culture. However, he concluded that if the opportunities are embraced correctly that Statistics has a big future and will make a significant impact on Data Mining.

QUEENSLAND

Gordon Smyth, president of the Queensland Branch, is spending 1999 as a Visiting Associate Professor at the Department of Statistics and Demography, Odense University, Denmark. He is visiting Bent Jorgensen, professor of statistics in that new department. The first half of his visit is funded by the Danish Research Academy, to "enrich PhD education in Denmark", and the

second half is funded directly by Odense University.

Gordon will also be in Austria for a week in July, when he will be an invited speaker at the Statistical Modelling conference in Graz. Gordon completes his two-year term as branch president at the March AGM. Apart from all of his hard work in branch activities, Gordon has pioneered a directory of Queensland branch members on the Web, as well as developing an electronic archive of jobs in statistics (including archives of related "anzstat" broadcasts) which was partly funded by the Society. This is a good opportunity to thank Gordon publicly and to wish him well for his stay in Denmark.

Geoff McLachlan, a Queensland Branch member, was appointed in 1998 to a personal chair at the University of Queensland, from where he also recently received a DSc.

Rodney Wolff

SOUTH AUSTRALIA

Likelihood Methods When the Solutions May Lie on the Boundary

Richard Jarrett, of University of Adelaide, presented an extended version of a talk given at the Statistical Conference in Coolangatta in July to the Branch meeting in August. It covered joint work with Byron Morgan at the University of Kent at Canterbury. Interest was centred on fitting models in which parameters are either

- (i) constrained to lie in a particular region, so that the maximum likelihood solutions may be on the boundary, or
- (ii) such that some parameters disappear from the model under some conditions.

A number of examples were used to illustrate the problems.

Biographical: Richard Jarrett worked for 14 years with the CSIRO Division of Mathematics and Statistics in Melbourne. In 1987, he moved to the

University of Melbourne where he was Director of the Statistical Consulting Centre. At the beginning of 1991, he moved to his present position as Professor of Statistics at the University of Adelaide.

His research interests are in design of experiments, quality management techniques, inference and random effects models.

KP, RAF, and the Battle over Degrees of Freedom: Was it a Knockout or was Pearson merely Down for the Count?

Stephen Stigler of The University of Chicago gave a talk entitled "KP, RAF and the battle over degrees of freedom" to the September Branch meeting.

Karl Pearson, as everyone knows, invented the Chi-square test in 1900, and in subsequently applying it to contingency tables he got the degrees of freedom wrong, only to be corrected by Ronald A. Fisher in the 1920s.

The full story, however, is more complicated than this. Some little-known aspects of work by Francis Galton and Karl Pearson on the analysis of contingency tables were reviewed. This included a digression on the calculation of the probability of profile matching in forensic science a century ago.

Biographical: Professor of Statistics and the Conceptual Foundations of Science at the University of Chicago since 1979; previously taught at the University of Wisconsin Madison, after receiving a PhD at the University of California Berkeley. Published *The History of Statistics: The Measurement of Uncertainty Before 1900*, (Cambridge, Mass., 1986), and papers on mathematical statistics and other topics.

Some Topics in Nonparametric Smoothing

Berwin Turlach of The University of Adelaide spoke to the October meeting on some topics in nonparametric smoothing.

In the first part of the talk a short overview of nonparametric

smoothing techniques was given. The main focus of this overview was on kernel smoothing and spline smoothing techniques. The usefulness of these techniques in density and regression estimation was illustrated on several examples.

The second part of the talk discussed some of the research problems in this field of statistics in which Berwin is involved. These problems include, among others, fast and stable implementation of smoothers, incorporating prior information into the non-parametric smoothing process and knot selection for regression splines.



Steve Stigler addressing the September 1998 meeting of the SA Branch

Biographical: 1991 Diplom in Mathematik, University of Bonn, Germany 1992 Diplome d'Etudes Approfondies en Mathematique, University of Louvain, Belgium 1994 Docteur en Statistique, University of Louvain, Belgium 01/95-12/96: Research Associate, Centre for Mathematics and its Applications, Australian National University 01/97-06/98: Research Fellow, Cooperative Research Centre for Advanced Computational Systems, Australian National University 06/98- : Lecturer, Department of Statistics, University of Adelaide.

Exegeses on Linear Models

Bill Venables of The University of Adelaide presented his talk on exegeses on linear models to the November Branch meeting.

This talk was a series of comments, some highly opinionated and contentious, some less so, on linear

models. Bill offered some thoughts he has had after 30 years teaching the subject.

His side-comments, or exegeses, were directed towards how the subject is, and might be, taught, the support software and how it is documented, and various other aspects such as invariance and model selection, additive models, the silliness or otherwise of testing for main effects in the presence of interactions, "Type III Sums of Squares", and so on. (And at least some of it was supposed to be serious.)

[The talk was based on an invited presentation to the S-PLUS= users' conference in Washington on October 8th this year.]

Biographical: Bill's BSc (Honours in Mathematics and Statistics) from University of Queensland was awarded in May 1966. His first permanent job was with the University of Adelaide as a statistical consultant (1966), then as tutor in statistics (1967-69), lecturer (1970-74) and senior lecturer (1975-present). Bill's interests have always been in inferential and practical statistics, consulting, modelling, graphics, statistical computing and statistical software.

End of Year Barbecue

The SA Branch celebrated the end of the year with a barbecue. Although the scheduled speaker was unfortunately not able to attend, the evening was, as always, well attended and thoroughly enjoyed.

Gary Glonek

CANBERRA

Selling Statistics: Is it Time to Segment the Market?

Professor Geoff Eagleson of the Australian Graduate School of Management engaged the whole audience during his 1998 Knibbs lecture. The pace was hectic. One minute we were in pairs discussing the strengths of statisticians: next, we were filling in a questionnaire to determine whether we were

sensates (focusing on detail and the present) or intuitives (focusing on the big picture and the future).

This questionnaire shows that managers tend to be intuitives, while statisticians tend to be sensates. (But statisticians know not to trust such broad statements: the sample of statisticians present turned in "sensate" scores ranging from 0 to 100%!). This discrepancy need not cause conflict though: statisticians can use their strength at presentation (mentioned in the earlier discussion) to tailor presentations to different audiences.

Geoff opened his talk with a reference to the ill-fated Franklin Arctic expedition in the 1840s: armed with tools more appropriate for an English gentleman at home than an Arctic explorer, the expedition failed tragically.

At its close, he likened his lecture to a scout's report of what was out on the Arctic ice.

Alan Welsh of the Australian National University (ANU) and Gemma van Halderen of the Australian Bureau of Statistics responded to Geoff's talk.

Gemma spoke about how the roles of statistician and manager are often performed by single individuals at the Bureau. Alan spoke about the necessity for statisticians to be flexible enough to allow a gut reaction to data to be a valid analysis technique.

Following the talks, a large group of Branch members enjoyed dinner at the Hotel Heritage.

A meander between theory and "application": false discovery rates, orthogonal regression and wavelet shrinkage

In December, Professor Iain Johnstone of Stanford University and the ANU led the Branch on a meander through the topics named in the title of his talk.

He started with a warning about the dangers of multiple inference, which led to discussion of well-established techniques such as

Bonferroni's correction, as well as the more recent idea of false discovery rates (FDR). (A discovery is essentially a rejected hypothesis). From there, Iain showed us how the testing flavour of FDR can be turned into an estimation flavour and combined with a form of penalised least squares, which in turn related to orthogonal regression and a theorem about sparse adaptive minimaxity.

By way of examples, Iain presented data ranging from "bad" ECG data to ion channel data which arises from measuring the electrical activity in a single cell. The idea each time was to denoise the series using wavelets. FDR theory can be used in the threshold stage of this process by allowing the threshold value used at each frequency to vary depending on the sparsity of coefficients at that frequency.

Iain's conclusion was that sparsity versus complexity is an ongoing theme in statistics, and that there's plenty of work still to be done relating these two ideas to noisy time series.

The traditional Christmas barbecue was held at the close of the meeting – with thanks to the ANU for installing a permanent brick gas barbecue within 50 paces of our meeting venue.

Alice Richardson

Special Interests

YOUNG STATISTICIANS

WAYS98 "Get amongst it" or "Danish delights"

Q: Is it possible to detect a significant difference in temperature between the Gold Coast in July versus Canberra in August?
A: YES!!! (just ask the Danish swim team.... more on this later)

After an excellent time was had by all at ASC14, the young statisticians thought it a good idea to gather again at WAYS98 in Canberra. (Disclaimer: young = "you don't have to be young, just new to the field or supportive of young statisticians' issues") After feedback from previous years regarding college accommodation, a more 'upmarket' venue was chosen in the Hotel Heritage Narabundah. This proved to be a popular choice.

Forty keen but chilly Young Statisticians arrived on the night of Wednesday 12 August, ready to "get amongst it". Jenny Kelly, President NSW Branch opened the workshop with a great talk, on how to market our profession. This is an issue near and dear to the hearts of young statisticians as we are often asked to 'peddle our wares' when we approach potential employers.

We will never eat chocolate the same way after Rodney Wolff's talk on chaos. He asked to imagine sneezing with a mouthful of

chocolate and modelling the pattern of brown blobs that would appear on a piece of paper that had gotten in the way... interesting concept... Geoff Robinson dazzled us with a piece of string and had us play an experimental design game in which the competition became very cutthroat.

Alice Richardson from the University of Canberra shared her experiences as an 'older' young statistician and introduced us to a program called 'Chance', where statistics lectures and tutorials are based on statistics reported in newspaper clippings, TV reports etc.. For more information on this program, refer to www.dartmouth.edu/~chance/welcome.html.

Richard Jarrett was our fifth invited speaker and gave us an idea of how broad a statistician's role can be. It prompted much discussion on how to improve skills such as communication and teamwork. Thanks to all our invited speakers for giving up their time, sharing their statistical adventures and imparting words of wisdom.

A very popular session was the consulting workshop run by Ky Mathews and Jason Boland. For those of you who heard Doug Zahn speak at ASC14, you may recall his video taping of consulting sessions to use as reference and improvement tools. Ky and Jason managed to spend time with Doug Zahn at ASC14, and presented an excellent

overview of Doug's material. We are hoping to continue with interactive consulting and problem solving sessions at future Youngstats workshops - any volunteers to help with such workshops would be most appreciated!

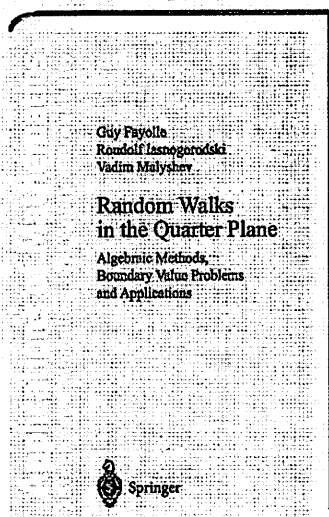
Two particular delegates deserve a special mention. Bjarke and Klaus, the 'Danish delights' allowed us to continue the WAYS tradition of attracting international delegates. Not only did they talk about dirty movies (signal processing noisy images - what else?!), but they provided some early morning entertainment in the motel swimming pool. (Apparently most of us really missed a great show - "the water will be *this* cold". *this* was a very small number which increased exponentially with the amount of time spent in the water)

Many thanks to our sponsors and to those we made contact with when seeking sponsorship: CSIRO CMIS, BHP, Statsoft, and the Centre for Mathematics and its Applications, Canberra. Thanks also go to Anna Poskitt who did a super job of organising the venue, programs, budgets, etc. and who still had a smile at the end of it all!

For more great photos from WAYS98, see <http://stat1.stat.auckland.ac.nz/~klein/WAYS98/Pictures>.

Stay tuned for WAYS99 to be held in wonderful Wollongong. Remember..."Get amongst it"

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Australasian Conferences

CONFERENCE SUMMARY

First Western Pacific/Third Australia-Japan Workshop on Stochastic Models, 23-25 September 1999, Christchurch, New Zealand.

50th Anniversary Conference of the New Zealand Statistical Association, 5-7 July 1999, Victoria University of Wellington.

Information: NZSA 1999 Conference Secretary, PO Box 1731, Wellington, New Zealand; email: nzsa99@mcs.vuw.ac.nz.

SEEM3 - Third Conference on Statistics in Ecology and Environmental Monitoring, 6-10 December 1999, University of Otago, Dunedin, New Zealand

Information: Email enquiries to: igoodwin@maths.otago.ac.nz; <http://www.casm.otago.ac.nz/courses/SEEM3/>

International Biometric Society Australasian Region Biennial Conference, 12-16 December 1999, University of Tasmania, Hobart.

Information: Helen Stewart, Convention & Venue Services, University of Tasmania; tel (03) 6226 2799; fax (03) 6226 1777; email Uni.Centre@utas.edu.au; <http://www.cmis.csiro.au/biometrics99/>

15th Australian Statistical Conference, 3-7 July 2000, Adelaide.

Information: <http://www.sapmea.asn.au/15ASC.htm>

There is a list of Australasian statistics conferences for 1997 and 1998 at: <http://www.maths.uq.oz.au/~gks/webguide/conf.html>

50th Anniversary Conference of the New Zealand Statistical Association

Victoria University of Wellington, New Zealand, 5-7 July 1999

As part of the celebrations of 50 years of the New Zealand Statistical Association, the 1999 conference will be in Wellington, where the first conference was held in 1949. To help mark this special occasion we would encourage all members to attend. The organising committee is currently seeking a range of overseas statisticians to provide keynote addresses to help celebrate our golden jubilee.

As Usual we are seeking contributions from statisticians for presentation at this conference. Possible topics include history, medical statistics, statistics education, data mining and risk management. Papers in these and other areas will be welcome.

The main source of information will be a conference web page <http://www.mcs.vuw.ac.nz/stat/nzsa99/>

Information and facilities available include:

- A listing of accommodation options and rough prices. It will be the responsibility of registrants to find their own accommodation.
- Registration and submitting of abstracts.
- Timetable and listings of invited and contributed talks, being updated as the programme develops.

Further Enquiries

Email: nzsa99@mcs.vuw.ac.nz

NZSA 1999 Conference Secretary, PO Box 1731, Wellington, New Zealand

International Biometric Society Australasian Region Biennial Conference

University of Tasmania
Hobart campus
Churchill Avenue,
Sandy Bay, Tasmania
12-16 December 1999

Major Themes

Genetics, Biomedical Studies, Longitudinal Studies with Spatial Correlation, Planning Experiments

Closing Dates

Early bird registrations close Friday 3 September

Submission of abstracts close Friday 1 October

Invited Speakers

Sue Wilson, Gary Churchill, Scott Emerson, John Neuhaus, Patrick Hegarty, Peter Johnstone

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For more information contact

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Visit the Conference Web site at <http://www.cmis.csiro.au/biometrics99/>

Overseas Conferences

Ninth Eugene Lukacs Symposium on Frontiers of Environmental and Ecological Statistics for the 21st Century, 23-25 April 1999, Bowling Green State University, Ohio, USA
Information: If you wish to participate, contact: Arjun K. Gupta

email gupta@math.bgsu.edu; or G.P. Patil email gpp@stat.psu.edu

16th International Symposium on Combining Data from Different Sources, 5-7 May 1999, Statistics Canada, Ottawa, Ontario, Canada.
Information: Christian Thibault,

HSMD, Statistics Canada, Tunney's Pasture, Ottawa, K1A 0T6 Canada; email thibchr@statcan.ca

International Conference on Statistical Methods and Forest Models, 19-21 May 1999, Moscow, Russia.

Information: Dr Victor Teplyakov, Deputy Head RFFS, Headquarters-Research Department, Federal Forest Service of Russia, Pyatnitskaya Str. 59/19, Moscow 113184, Russia; email tapl@forest.msk.su or George Gertner, Leader IUFRO S4.11.01 (Statistical Methods) W503 Turner Hall, Department of Natural Resources and Environmental Sciences, University of Illinois, Urbana, IL 61801; fax +1 (217) 244-3219; email gertner@uiuc.edu.

International Conference on Applied Statistics, 22-23 May 1999, Rider University, Lawrenceville, New Jersey, USA.

Information: Mohammad Ahsanullah, 2083 Lawrence Rd., Lawrenceville, NJ 08648-3099, fax +1 (609) 896-5304, email ahsan@rider.edu; Jagbir Singh, 203 G Speakman Hall, Philadelphia, PA 19122; fax +1 (215) 204-1501, email jagbir@surfer.sbm.temple.edu; James R. Kenyon, Bristol-Myers Squibb, PRI, 1 Squibb Dr., PO Box 191, New Brunswick, NJ 08903-0191, fax +1 (732) 519-2351, email james_r_kenyon@cmail.bms.com.

19th International Symposium on Forecasting, 27-30 June 1999, Washington, DC, USA.

Information: Symposium website <http://ifsm2.ifsm.unbc.edu/ISF/> of Publicity Chair, Stephen MacDonald fax +1 (202) 694-5823; email stephenm@econ.ag.gov.

5th International Decision Sciences Institute Conference, 4-7 July 1999, Athens, Greece.

Information: Program chairman, Prof. S. Zanakis, Florida International University, email dsi_athens@fiu.edu or conference co-chairman Prof. G. Doukidis, Athens University of Economics and Business, email douk@aueb.gr; <http://www.dsi99.athens.gr>

14th International Workshop on Statistical Modelling, 19-23 July 1999, Graz, Austria.

Information: Herwig Friedl, Institute of Statistics, Technical University Graz, Lessingstr. 27/1, A-8010 Graz; email friedl@stat.tugaz.ac.at;

www.cis.tugraz.ac.at/stat/iwsm/;

The Eighth International Workshop on Matrices and Statistics, 6-7 August 1999, Tampere, Finland.

Information: The Workshop Secretary, Dept. of Mathematics, Statistics and Philosophy, University of Tampere, PO Box 607, FIN-33101 Tampere, Finland; email workshop99@uta.fi; fax +358-3-215-6157; web site www.uta.fi/~sjp/workshop99.html.

52nd Session of the International Statistical Institute, 11-18 August 1999, Helsinki, Finland.

Information: ISI Permanent Office, 428 Prinses Beatrixlaan, PO Box 950, 2270 AZ, Voorburg, The Netherlands; tel 31-70-337 5737; fax 31-70-386 0025; email isi@cs.vu.nl; website <http://www.cbs.nl/isi/>.

School on Modern Statistical Methods in Medical Research, 6-24 September 1999, International Centre for Theoretical Physics, Trieste, Italy.

Directors: J.L. Hutton, E.J.T. Goetghebeur and P.J. Solomon; Sponsors: UNESCO and IAEA

Information: email smr1122@ictp.trieste.it or sci_info@ictp.trieste.it; website <http://www.ictp.trieste.it>; International Centre for Theoretical Physics, PO Box 586, I-341000, Trieste, Italy.

International Conference on Survey Nonresponse Error, 28-30 October 1999, Portland, Oregon, USA.

Information: Email: icsn@survey.umd.edu; www.jpsm.umd.edu/icsn99.

IASE Round Table Conference on Training Researchers in the Use of Statistics, Meiji University, Tokyo, Japan, August 2000.

Information: Carmen Batanero, Department of Didactics of Mathematics, University of Granada, 18071 Granada, Spain. Email: batanero@goliat.ugr.es URL: <http://www.ugr.es/~batanero/iasert.htm>

Continued from Page 2

ACCREDITATION COMMITTEE - EXPRESSIONS OF INTEREST

The Central Council of the Statistical Society of Australia Inc. is seeking expressions of interest from accredited members to join the Society's Accreditation Committee for the period July, 1999 to July, 2002. The Committee consists of six members and it should be as representative as possible of the Branches and of areas of statistical expertise. The Central Council is mindful of the need for continuity in membership and the need to bring new members onto the Committee so two positions are to be filled by new members each year.

The Terms of Reference for the Committee and details of the accreditation model are given in the November 1995 Newsletter. Most committee meetings are via telephone conferencing.

Those interested in serving on the Accreditation Committee should send their name and contact details along with a brief outline of their areas of expertise to

Dr Neville Weber,
Secretary, SSAI,
School of Mathematics and
Statistics, F07,
University of Sydney, NSW 2006

Facsimile: (02) 9351 4534

The closing date for expressions of interest is 16 APRIL, 1999.

As noted in the Society's Regulations, the Nominating Committee of Central Council may act as a search committee.

Neville Weber
Honorary Secretary

Letter to the Editors

The Editors, SSAI "Newsletter" 6 January 1999

Sirs,

Alice Richardson's letter (*Newsletter No. 85*) on the source of "Thou shalt not sit with statisticians" was a useful and entertaining contribution. Those of us who like to be sure of their sources are in her debt. However, her references to two other common quotations need some amplification.

The *Oxford Dictionary of Quotations* states that "lies, damned lies and statistics" was attributed to Disraeli by Mark Twain in his *Autobiography* (1924, vol. 1, p. 246), so it seems reasonable to say that the quotation cannot be attributed to Twain.

The second case is more interesting. What H.G. Wells actually wrote was:

The time may not be very remote when it will be understood that for complete initiation as an efficient citizen of one of the new great complex world wide states that are now developing, it is as necessary to be able to compute, to think in averages and maxima and minima, as it is now to be able to read and write.

The version which Richardson quotes has been used by several authors, and seems to hark back to an article by Warren Weaver in *Scientific American* in January, 1952. Weaver does not quote his source. Professor Stephen Stigler, University of Chicago, has pointed out to me that another form was cited in 1929 by Helen M. Walker in *Studies in the History of Statistical Method*. This enabled me to locate the original text quoted above.

This was first written as part of an article in "Schooling" in the *Fortnightly Review* in 1901 or 1902, and subsequently published in *Mankind in the Making*. It may be found on p. 204 of the 1914 edition by Chapman & Hall.

We may note that, contrary to the version of Richardson/ Weaver, Wells did not use the actual word

"statistics" at all, and that he saw the statistical concepts mentioned as being useful for "the great body of physical science, a great deal of the essential fact of financial science, and endless social and political problems". In other words, his vision was much wider than the political meaning of "efficient citizenship" which seems to be implied in the shorter form.

Mankind in the Making was in part an attack on the eugenics movement, but I have not been able to locate any direct link in the text between Wells' brief advocacy of statistical understanding and his opposition to eugenics. This is of some interest, because some 20 years later in England, statistics was being advocated as a suitable subject for schools by eugenicists, who argued that its understanding would further their cause. A good example may be found by W. Hope-Jones in the *Mathematical Gazette* in 1924.

John Truran
Graduate School of Education
University of Adelaide.

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