

BEEN TO ANY GOOD CONFERENCES LATELY?

Our intrepid roving reporter, Stephen Shenfield, has been testing the waters. He arrives back with a timely reminder of the hosts for the next International Statistical Institute Meeting.....

Backed by the promise of some financial support from my university Department, I went off to attend an "international scientific conference" for the first time in my life: no less than the 13th European Meeting of Statisticians held at the University of Sussex on 8-12 September 1980 under the auspices of the European Regional Committee of the Bernoulli Society for Mathematical Statistics and Probability. I feel it my duty to report back to the readers of Radical Statistics Newsletter some impressions of this unique experience.

Let me start in the middle - at the reception given us by the Mayor of Brighton, after my successful attempt to land myself some of the asparagus quiche and my unsuccessful attempt to communicate with a cluster of Hungarians. We were shushed for the Mayor's speech. The Mayor confessed himself unable to make head or tail of most of the abstracts in the conference booklet. It seemed we were trying to solve some mathematical problems. There were, however, two titles of local relevance - winning strategies for the two-armed-bandit gambling machine, and "jogs and jolts on random roads" - and with the cuts in council expenditure these subjects would become of even greater moment. The ladies (referring to the wives of male participants, whether also to the handful of female participants I am not sure) were meanwhile urged to sample the delights of Brighton's shopping arcades. The Mayor concluded by expressing his confidence that our deliberations would be of great benefit to humanity. Experts on Mayors might like to comment on the likelihood that any irony was present in this statement.

Cut to scene of brilliantly lit amphitheatre, crowded with rapt scientific audience listening to the voice of and looking at the transparencies of the distinguished Forum Lecturer, the Soviet probability theorist A N Shiriyayev. The impressive stillness of the audience can be explained first of all by the melodious voice and beautiful handwriting of A N Shiriyayev, for a straw poll found very few people who would admit to understanding his mathematics...

CONVERSATION WITH A COMPOSITE MATHEMATICIAN INTERLOCUTOR

- me - I feel handicapped by my inability to follow advanced mathematics.
X - Who needs it?
me - I feel that if I understood measure theory, or knew what a Banach space was, it might help me solve some problems which are niggling me.
X - In practice you only ever need Euclidean spaces. Believe me, it's all useless. It's not intended to be applicable.
me - But Shiriyayev's second lecture on martingales is entitled "Practical Applications".
X - That means "practical applications" to other equally abstract theories.
me - It's no good. I get completely lost almost straight away.
X - Don't worry. I've been studying pure mathematics for ten years and I can't understand it either.

Yet it seems X was unnecessarily nihilistic. While walking over the Downs on the afternoon excursion, a friendly Dutch statistician (and I must say they were all straightforward and unpretentious people) assured me that martingales (though they say semi-martingales are the really important notion) are the greatest thing since sliced cheese. There is no reason why these elegant processes of interdependent chance events in time should not be applied to anything you like, but for that you need people who understand both (a) martingales and (b) something else to apply them to. Such people are in short supply. (Flash fantasy: perhaps, if I shut myself away and study hard for twenty years, I might be such a person?) But rescue is at hand. Professor Keiding at the University of Copenhagen is working on a popularised version (maybe even people who have studied mathematics for as short a period as 6 years will understand it). Why not drop him a line?

At the risk of being unfairly suspected of patriotism, I'll say that the most practically relevant, easily comprehended and clearly presented talks were by British speakers - Professor Durbin on regression and autocorrelation, or Whittle on multi-armed-bandit problems. The first made me wonder how many theories are floating around in the physical and social sciences which are based on analyses of data which are invalid because they neglect the presence of autocorrelated errors. Bandits are situations in which you have to choose repeatedly among projects with different and initially unknown payoffs. You have to maximise your payoff while learning about the chances of payoff from each project as you go along. The projects need not be arms of a gambling

machine but can be, say, different treatments available for successive guinea-pigs in a clinical trial. So bandits could be applied but two speakers questioned whether the relatively sophisticated methods proposed were likely ever to be used, when medical people could not be persuaded even to use simpler methods. Afterwards I chatted with someone who actually designed trials for a drug firm, but had been too shy to speak. He pointed out to me that it was not practicable to apply such methods while controlling for extraneous variables at the same time, and the latter was more important than the potential gain in efficiency from the former.

Not only were these few talks clear, but they also had the odd joke and personal touch. It was curious to discover that this did not go down well with some people: a German participant felt that it showed disrespect to the audience. To make it hard to decide which side I was on in this argument, he went on to argue that the British tendency to be indifferent to mathematical rigour opened the door to convenient fudging and the loss of scientific integrity. Exchanges of horror stories on this subject followed: eg. a firm finances a study which comes up with the finding that the sponsor's product is the worst on the market, so the firm's statisticians discover all sorts of far-fetched shortcomings in the study and a new study is funded to come to the right conclusion. Such things appear very common in both State and private sectors of many (all?) countries.

With $1\frac{1}{2}$ hours at their disposal, the special speakers had a reasonable opportunity to make themselves comprehensible, but the rank-and-file speakers, with 15 minutes each for both presentation and discussion, could not be expected to reach those outside their narrow field - who were familiar with their work in advance anyway. One poor fellow had set himself the task of presenting the history of Indian statistics: in spite of an impressively rapid rate of delivery, he only got to about 1700 when the Chairman threw him off the platform. The flat tone of speech of many speakers, their poor English, the illegibility of their transparencies didn't help, and a number of times I didn't resist the temptation to get out into the sunshine and the woods.

Some readers may take an interest in the conflict between adherents of different schools of statistical inference - Bayesian, frequentist, likelihoodist etc. I'll not go into it in substance but just comment on the attitudes to this sort of problem you come across at such a conference. In both the fanaticism ("I'm a religious Bayesian") and the subtle ideological nitpicking ("I'm not anti-Bayesian, only anti-subjectivist") of at least some mathematical statisticians I felt an uncanny resemblance to the sectarian world of marxist groups. I've always sympathised with the subjectivist view of probability - that probability should be viewed in terms of states of belief updated by new evidence. This is partly because it's appealing to me philosophically, but also because I automatically side with dissident minorities - and I've always thought that the Bayesians remain such a minority. But perhaps not for much longer:

"De Finetti says there is a gap of 40 years before an academically victorious theory starts to be generally applied in Government, industry and so on. Many universities are already controlled by Bayesians. My own students learn only Bayesian methods, except for those on one advanced course on comparative statistical theories, who learn that there are still strange people in the world who believe in other theories. And they have to be Bayesians if they are to pass my exams. Bayesian methods now dominate work in the oil industry."

So the "religious Bayesian" is at least as dogmatic as his opponents in imposing his "correct" ideas when he has the power to do so. What difference it will make to the world when the Bayesians have taken over the statistical part of it is something worth thinking about. The Bayesian approach tries to place more responsibility on the people for whom analysis is carried out; they have to make explicit their beliefs and aims, which they dislike doing (or

can't do). But they can still find ways of avoiding responsibility, like the doctor who brought a patient to the statistician's office to tell him - "We're operating on your brain because this man's mathematics tells us to."

There was one interesting afternoon when speakers from four countries (USA, UK, West Germany, Hungary) described the difficulties they were having in introducing statistics teaching into schools. It seems that to do this successfully (and some people are against trying) you need

1. an educational system with room for experimentation at the grass roots (which is true of Britain but not of countries with highly centralised control of the curriculum, like France or the East European countries);
2. the right attitudes among teachers which makes them willing to experiment in general, and to try statistics teaching in particular. For example, German mathematics teachers resist a subject which is too vague and not demanding enough mathematically;
3. money for curriculum development. Thus the Schools Council in Britain is having its budget so drastically cut that there is no hope of further development at present.

You need all three conditions and nowhere are they all fulfilled simultaneously. The educational innovators come up against other problems - they are all keen on progressive teaching styles in which the pupils are supposed to discover things for themselves through ingenious games, but the cry of unimaginative teachers and administrators is - "Why are you proposing to waste valuable curriculum time on silly games? We want Kolmogorov's axioms!"

The British and American educationalists were trying to introduce teaching of "Statistics for Citizenship" into the schools, to develop in pupils the ability critically to assess the statistical claims they come across in the mass media. This civic awareness seems lacking on the continent of Europe, where statistics teaching is a matter of introducing just one more mathematical specialisation (which has advantages over other specialisations taught in schools). The Hungarian speaker said he would not use political examples in his teaching; the reasons are obvious.

Of course there is not a huge overlap between "statistics" in the sense of State social and economic figures, their production and interpretation, and "statistics" in the sense of the theory of mathematical statistical inference from data in conditions of uncertainty, based on the theory of probability. They are really two separate subjects, though the latter can be applied to the former (as it is applied to, say, biological data also). This conference was almost totally dominated by academic mathematical statisticians, and most participants knew no more about the State statistics of their countries than any other ordinary citizen would. The gap between the two sorts of statistics is greater in most countries than in Britain, where at least they have some basic training in common. In France or the USSR, they are trained completely separately - the mathematical statisticians in isolated university mathematics faculties, the State statisticians in special State training schools - and they understand and know very little about one another. The State statisticians fiddle around with arbitrary indices while the mathematicians write their abstruse theorems. I'll finish with two snippets relating to State statistics.

1. East European hospitals are assessed on the mortality rates they achieve (the lower the better). So they send terminally ill patients home to die.
2. Catherine II of Russia was asked permission to destroy archive records for which no room remained in the storerooms. She ordered: "Make three copies of the records, and then destroy them."

This report isn't over after all, because I forgot something important. Among the many people whom the Argentine secret police have kidnapped is Nuriega, a statistician (in fact, the chief statistician of the country).

Nobody knows where he is - his mutilated corpse has not been washed up on any beach so far. Now the Bernoulli Society* is having its next conference in Argentina, at which its luminaries will be honoured to shake hands with the chief torturers. Statisticians in various countries have been trying to get it to change its mind and move the conference elsewhere if Nuriega is not released, or otherwise to organise a boycott of the conference. Now I know you must be looking forward to a luxury holiday in Buenos Aires, but ...

When I receive more information about Nuriega it will go into this Newsletter. It is instructive to report how the question was handled at the meeting of the European Regional Committee of the Bernoulli Society which took place in Brighton. Adrian Raftery informed the Chairman in advance that he intended to bring the matter up; the Chairman said that he could of course bring it up though he'd sooner he didn't. Raftery came to the front when "any other business" came round and explained the situation. The Chairman then spoke on the following lines: while from the human point of view it makes things no less terrible, still Nuriega was not a member of the Bernoulli Society, and this makes it difficult to intercede on his behalf. Also this is not in fact a formal meeting, so moving resolutions is inappropriate. But he will convey the concern of the meeting to the central committee of the Bernoulli Society.

Those who then spoke were disappointed at the mildness of this proposal. Even if he were not a member, Nuriega was a statistician and thus a colleague. The requests of the Bernoulli Society for information concerning him had been ignored, and this was an offence to our dignity and honour. And people talked about a resolution, but somehow it didn't happen.

Meanwhile I was looking around at the faces of those who weren't speaking. Quite a few seemed worried or annoyed. I wondered what those were thinking. "Nuriega is probably a commie"? "Keep politics out of statistics"? "This is a bit unpleasant - can't they get onto something else"? "This time it's Argentina but next time it'll be the USSR, and that'll put us East Europeans into an embarrassing position."?

The Chairman then summed up. He would convey the concern of the meeting, and in slightly stronger terms than he had suggested before. No doubt this slightly stronger concern will eventually reach the ears of the Argentinian Government and strike terror in their hearts.

But let's be fair to the cliques who control international scientific bodies (they can't be run democratically, purely for logistic reasons). There is no reason to suspect them of caring less about the repression of their colleagues than anyone else. But they must feel that international scientific collaboration is a fragile achievement, the world being as it is: an achievement important not only for science but also a factor working for peace. Mixing in "politics" would quickly threaten the destruction of all their work, and must be avoided, though this does not exclude lobbying behind the scenes. In fact, by going to Argentina we are demonstrating our support of Argentine statisticians (so it seems they argue; perhaps they even believe it). We must realistically assess what is and what is not possible. For example, any Soviet scientist who supports any move on behalf of Soviet repressed scientists will certainly not travel abroad again (at least).

The arguments used for 'realistic' politics, and those against them, are so old that they are boring. I for one can't make up my mind. Still, perhaps the realists lack a realistic self-confidence which could come from a stronger awareness of the ways in which the powers that be need international science. If they need us, then we should risk sticking our necks out a little further. This line of argument assumes that the controlling cliques of scientific bodies are in fact disinterested and well-meaning, which may be a little naive.

* Probably ISI, not Bernouilli, but the principle is the same. Ed.