



Maths matters

The other authors of *Counting Australia In*

Graeme Cohen

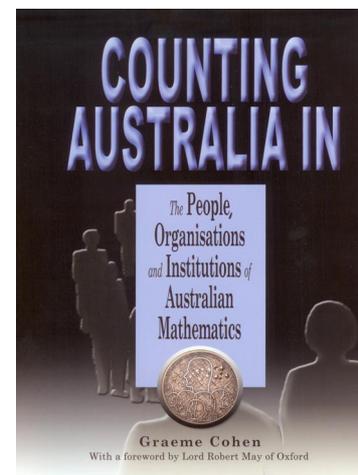
I happen to know that Ernie Tuck has a review of *Counting Australia In* in this issue of the *Gazette*. He tells us that there are about 1200 names in the Names Index. This is a count which I had not carried out myself but I have been cataloguing the material collected over five years, a job not yet finished, and have about 320 files of information on Australian mathematicians, dead and alive, here and abroad. These include published obituaries and other biographical reprints, but mostly consist of letters and emailed notes.

My intention here is to thank all of those who wrote to me, or emailed me, or spoke to me in person or by phone, by writing of some of the stories that arose that way.

Motivation

My time involved more than research directed towards the writing of a history of Australian mathematics. The work as a whole was dubbed the Australian Mathematical Society History Project and an important aspect was the taping of interviews with 25 mathematicians who were foundation members of the Society or who had gained generally acknowledged eminence for their service to mathematics and the profession of mathematician. (By 'mathematics' and 'mathematician' I am covering the gamut of the mathematical sciences. I found that, in nearly all cases, statisticians and mathematical physicists and the rest were pleased to be known generally as mathematicians.)

Of those with whom I taped my interviews, five have since died: Oliver Lancaster, whose interview was sadly too late in his life to be useful for me, Fenton Pillow, Bernhard Neumann, Ren Potts and George Szekeres. It is likely that Neumann, Potts and Szekeres would appear on anybody's list of Australia's top ten all-time most influential and distinguished mathematicians, and I consider it a remarkable honour and a grim coincidence that I was able to conduct these interviews. On this morbid theme, perhaps I should record that others whom I wrote of and who died during the period of my work were Bruce Bolt, Arthur Jones, Ron McKay, Rainer Radok, Marta Sved and Esther Szekeres. Bolt was another with whom I had made email contact and Esther Szekeres was of course present and contributing during George's interview. Alex Rubinov and Max Kelly have died in the few months since the book was launched; I had had an enjoyable meeting, and lunch, with Max in July 2004.



The passing of Neumann, Potts and Szekeres marked the end of an era and pointed to a theme which I made often since beginning the work — how many countries around the world have a record of mathematics, ranging from the first university appointments in the area through to the establishment of a national mathematical sciences research institute, rich enough in all its aspects yet brief enough to fill a single volume of 400 pages? To me, the time was exactly right for that history to be described. That realisation (and the fact that I knew I would soon be looking for something to occupy myself) led me to volunteer for the job, even though the original specification was to document only the 50-year history of the Australian Mathematical Society.



Professor Sir Thomas
MacFarland Cherry

The formation of the Society in 1956 was part of the coming of age of Australian mathematics in the 1950s. Pat Moran had been appointed to the foundation chair of statistics at the Australian National University in 1951; the Australian Academy of Science was founded in 1954 with Tom Cherry on its first council; and the Society introduced its *Journal* in 1959. Soon after, in 1962, Bernhard Neumann arrived as foundation chair of mathematics at the Australian National University. Hans Schwerdtfeger had arrived in Adelaide in 1940 and George Szekeres in 1948; Felix Behrend joined the University of Melbourne in 1942; and John Blatt was appointed foundation professor of applied mathematics at the University of New South Wales in 1959. These and many others made Australian mathematics a direct beneficiary of the war in Europe and of course contributed to its maturation.

Letters, emails and other contributions

George and Esther Szekeres had been friends in Hungary with George and Marta Sved, who had come to Adelaide somewhat earlier, in 1939. Marta died in 2005 and notes from my manuscript, which contributed to a death notice, led to a delightful and prolonged series of emails involving Laci Kovács and Mike Newman at the Australian National University; Peter Taylor from the Australian Mathematics Trust; Tom Sag, who had lectured in mathematics at Flinders University in Adelaide; and John Sved, son of George and Marta and now retired from the School of Molecular and Biomedical Science at the University of Sydney. Together, we sorted out who of a number of Australian immigrant mathematicians had accomplished what in the famed Eötvös national mathematics and physics competitions in Hungary in the second half of the 1920s.

George Sved had apparently won a separate Hungary-wide schools competition. That had been difficult to confirm until it was pointed out that he had changed his name to Sved from Schossberger, to avoid antisemitic taunts as Marta had written in autobiographical notes excerpted by John and forwarded to us. The successes of Marta (née Wachsberger), George Szekeres and Esther (née Klein) in these competitions were better known but, on one website, there was also mention as a prizewinner in 1929 of a ‘Székely Lilly’, who had moved to Australia. I asked Tom if this might be his mother, Lily Sag, and indeed that was so. My file on this correspondence alone consists of 20 pages, but contributed to only a few lines and a footnote in the book.

Little has been written previously on the history of Australian mathematics as a whole. It interested me that, of the various branches of mathematics, it seemed to be the statisticians who were most keen to document their field and its early practitioners, or the wider subject itself. Jim Douglas, Joe Gani, Chris Heyde, Oliver Lancaster, Eugene Seneta and Terry Speed are notable in this regard. Joe, in particular, has also been a commentator on the state of Australian mathematics for many decades and was very helpful and encouraging in my work. He has recently given a comprehensive account of the statistics departments at the Australian National University, in the Academy's *Historical Records of Australian Science*. Lancaster had written in the *Gazette* of the Sydney University mathematics departments, and Ren Potts and Bert Green of those in Adelaide.



Cherry (left), Walter Freiberger (right).
Can anyone identify the mystery person?

There was a deal of unpublished material available to me — John Clark's work on Melbourne University, as presented at a number of annual meetings of the Australian Mathematical Society, and internally produced documents at the Universities of New England, New South Wales, Newcastle, Queensland, Western Australia and Wollongong. Furthermore, it must be acknowledged that a great many senior mathematicians have contributed to obituaries for their past colleagues and these were of course essential reading for me.

If it is the statisticians who are keenest to document their history, then the applied mathematicians are certainly second best. Potts and Green have just been mentioned in this regard. Moreover, Roger Braddock wrote an *Anecdotal History* of the Society's Division of Applied Mathematics (now ANZIAM) in 1984 and Neville de Mestre updated it a few years ago. In the book, I described Roger's history as 'breezy but well-

documented', a phrase which he seemed to enjoy when I checked the relevant passages with him in Brisbane.

Some people, more than others, were very keen to assist in writing the history of their slice of Australian mathematics. Barry Ninham and Rodney Baxter helped me sort out the unusual story of applied mathematics at the Australian National University. If you don't know it, then you need to read *Counting Australia In* to understand how the Department of Applied Mathematics, formed in 1970 with Ninham as foundation professor, was able to exist separately from Bernhard Neumann's department; it is still separate from Neil Trudinger's Mathematical Sciences Institute. There was another Department of Applied Mathematics in the old School of General Studies, but Baxter was representative of still another group, within the Department of Theoretical Physics. My statement in the book, that most members of that department regarded themselves as mathematicians as well as physicists, is due to him. Rodney is now an emeritus professor attached to the Mathematical Sciences Institute.

On many occasions there were six or more communications between individual correspondents and me, and nearly always they were people I had not previously met but had chased up by email and other means. Walter Freiberger, for instance, told me the delightful story

of Tom Cherry's assault on Federation Peak in Tasmania in 1949. Walter was a student of Cherry's and later professor of applied mathematics at Brown University, Rhode Island. He is still active as managing editor of the *Quarterly of Applied Mathematics*. After the book came out, Walter wrote to me and, not previously aware that it would be illustrated, told me of photos he had taken on his mountaineering trips with Cherry. He sent six, and two appear hereabouts. One has Professor Sir Thomas MacFarland Cherry wearing not much. In the other, Cherry is on the left and Walter on the right, partly cut off. Can anyone identify the third person? These were taken on an earlier trip to Tasmania, before the unsuccessful attempt on Federation Peak.

Richard Dalitz was another with whom I exchanged many emails. Also a student of Cherry's, he went to Cambridge in 1946 and at Oxford became noted for his decisive work on elementary particle physics; he gained an FRS in 1960. I was very saddened when he died just on a year ago, hardly known amongst mathematicians in Australia.

Fenton Pillow, professor of applied mathematics at the University of Queensland from 1964 to 1986, became a good friend over two visits to his home in Brisbane and numerous letters and emails. He was eager to tell me of his student, Adrian Gill, who joined George Batchelor's Department of Applied Mathematics and Theoretical Physics at Cambridge. Gill could not find a suitable position back in Australia and died at Oxford, aged 49, a month after being elected FRS. Fenton was very keen to see the publication of my book, and again I was greatly saddened by his death last year.

Freiberger, Dalitz, Pillow and Batchelor are four of around 25 great mathematicians to come out of the University of Melbourne in the 1930s and 1940s. I spoke on this at the Society's annual meeting in Melbourne in 2004 and it is a persistent theme in the book, with the details based of course on information provided by my correspondents. Besides Freiberger, there are perhaps another six of the 25 alive today, including Angas Hurst in Adelaide, Phil Silberstein in Perth and Roy Smith in Armidale, all of whom I had interviewed.

Towards the end of Angas's interview, he suggested that I speak to Barbara Rennie, widow of Basil who is best remembered for his *James Cook Mathematical Notes*. The meeting with Barbara was arranged for later that day and I really felt like a historian when she asked rather casually if I would like to look through Basil's diaries. They contained a day-by-day account of the inaugural meeting of the Australian Mathematical Society, held in Melbourne in August 1956. There followed a number of letters between Barbara and me, involving also Basil's friend from his student days in Cambridge, John Parker.

Our 10 best?

Let me return to a statement above, that Bernhard Neumann, Ren Potts and George Szekeres must be acknowledged as three of Australia's all-time ten most distinguished mathematicians. The *Gazette's* new editors, in inviting me to write this note, expressed the wish that it be 'provocative, stimulating a debate'. The closest I can get to that is to ask readers to contemplate who else might be on the list. John Michell and Kurt Mahler, almost certainly, but I won't venture any candidates from amongst our living, local mathematicians. I did ask the question of most of those I interviewed, and Bernhard's answer was the one that surprised me most (only because I had not then heard of the person). He pointed to John Miles, one of his first appointments to a chair (of applied mathematics) in his new department. Perhaps Miles is disqualified from the list because he is an American who spent only three years in Australia. He has been retired since 1983 but still holds a research

chair at the University of California, San Diego. I was able to contact him by email for his recollections of Canberra, and dominant among those was the fact that Herbert Huppert had gone to study under him there.

When contemplating our 10 best, you must decide whether to include expatriate Australians, such as Huppert, George Batchelor, John Coates and now, of course, Terence Tao. Robert McCredie May, now Lord May of Oxford, must also be a candidate. It was a magnificent honour for me when he agreed to write the foreword; and in writing that he alerted me to the fact that I should add some information about Australia's other mathematical biologists.

I am well aware that I have mentioned very few women here. Are there any deserving of being on our list of the top 10? Top 20? I hope I did justice to our women mathematicians in the book — see the stories of Fanny Cohen, Margaret Moir and Betty Allan, among early examples — but the matter must be kept in proportion. As a mere chronicler, I can point out that, starting with Morris Birkbeck Pell in 1852, there have been well over 250 Australian professors of mathematics and statistics or equivalent, including foreigners who took positions in Australia and Australians who took positions overseas. Fewer than 20 of these are women.

Lynne Billard, who graduated PhD from the University of New South Wales in 1969, has had an outstandingly successful career as a statistician at the University of Georgia, Atlanta, with awards from the American Statistical Association both for her research career and her contribution to the profession. I mention her because she might not be known to those trying to compile their top 10 or top 20, and because she is another with whom I was pleased to make email contact. And finally I mention Elizabeth Yoffe, who, as Elizabeth Mann, was another of the 25 or so from the University of Melbourne in the 1930s and 1940s. She went to Cambridge after World War 2 and established a fine reputation in fracture mechanics there. Her letter to me describing the period in Melbourne and the background, as she understood it, of the rush of Australian mathematicians to Cambridge and Oxford after the war, is one of my many treasures from writing *Counting Australia In*.

I intend within a year or so, after the cataloguing is complete, to deposit all my files and images with the Society's archive in the Basser Library, Australian Academy of Science. To all the correspondents who made feasible the task of documenting the people, organisations and institutions of Australian mathematics, only a few of whom I have mentioned here, I would like to say a heartfelt 'Thank you'.

Department of Mathematical Sciences, University of Technology, Sydney, Broadway, NSW 2007
E-mail: graeme.cohen@uts.edu.au



Graeme Cohen, born in Sydney in 1943, has an MSc from the University of Sydney and a PhD from the University of New South Wales. He retired as associate professor from the Department of Mathematical Sciences at the University of Technology, Sydney in 2002 after 36 years there. His research interests include elementary computational number theory and the applications of mathematics to sport. Graeme has written more than 50 journal articles and three undergraduate texts including *A Course in Mathematical Analysis and its Applications* for the *Australian Mathematical Society Lecture Series* (Cambridge University Press, Cambridge, 2003). *Counting Australia In* is his first serious publication outside mathematics and has led to the further award of an MA in Public History from UTS. The Australian Mathematical Society made Graeme an Honorary Member on the occasion of the book's launch in September 2006.