# President's column

**Peter Taylor**[1]

Last week, I had the interesting experience of attending a 'Maths Evening' at my children's primary school. The presenter was Rob Vingerhoets, an educational consultant who advises teachers and parents on how best to help children learn basic mathematical skills. The main purpose of the evening was to educate parents in the current ways of teaching arithmetic in primary schools, so that they would be aware of these methods when asked questions by their children.

I have to say that I saw ways of adding, subtracting and multiplying two, three and four digit numbers that I had not seen before, and that were certainly not taught 'in my day'. Rob's main emphasis was on the importance of 'place value' (decomposing numbers into sums of powers of ten). Essentially the methods that he discussed involved clever use of the associative, distributive and commutative laws to organise the calculations in a way that has the best chance of imparting understanding to children. I was very impressed by what he had to say, and I'm sure that both his theoretical instruction and practical advice will prove very useful to many of the parents who were there.

One interesting aspect of the evening occurred at the beginning when Rob gave the audience a warm-up exercise. He told us that he had an integer sum of money between $0 and $500 in his pocket, that we could ask eight 'yes-no' questions about it, and then he would expect us to nominate the amount in a ninth question. Different parents got to ask questions in turn: the first was 'Is it a two-digit amount?', the second was 'Are there any coins?' and the third was 'Is it a prime number?'. After the eight questions, the group was reduced to guessing between two numbers that satisfied all the previous criteria, which was a better outcome than we deserved.

During the exercise, I was feeling a little frustrated, because I didn't think that other parents were asking the right questions. I wanted the group to use a bisection search, asking questions that are guaranteed to eliminate half of the possibilities at each step. It is certain that this will reduce the number of possibilities to two after eight steps, and it is not possible to do better, at least using the standard criterion of minimising the final number of options under the worst-case outcome.

Since the night, I've been reflecting on the way that the group of parents approached the exercise in the context of what a mathematical education brings to a person's problem-solving ability. The 'Maths Evening' was attended by a

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group of parents sufficiently interested in their children's mathematics to go out on a rainy evening, and yet I'd suggest that they didn't approach the exercise like mathematicians would.

To test this hypothesis, I've since tried Rob's exercise on a group of Operations Research professors that I was talking to after a seminar, and also on a single student from my second year probability class. Each suggested using a bisection search. This made me feel pretty good, because I've been known to suggest in a number of forums that a mathematical education gives students problem-solving ability *par excellence.* I'd be interested to hear what readers of the *Gazette* think of this suggestion.

Apart from attending primary school evenings, I've also been involved, along with colleagues, in a number of issues of interest to the mathematical sciences community. My report to the recent meeting of the Australian Mathematical Society (AustMS) Steering Committee contained the following items.

(i) *The Journal Ranking Tender.* Under the leadership of Tim Marchant, AustMS has submitted a tender to the ARC to undertake work at Phase 2 of the Review of the ERA 2010 Ranked Outlet Lists. Readers interested in finding out more about this should visit the web page at http://www.arc.gov.au/era/era_2012/review_of_era10_ranked_outlet_lists.htm. I'd like to thank Tim and his team for the excellent job that they did in putting together this tender under a great amount of time pressure.

(ii) *The Base Funding Review.* The Director of the Australian Mathematical Science Institute, Geoff Prince, has coordinated a submission from the mathematical science disciplines to the Base Funding Review, which is looking at the amount of funding that universities receive for teaching students in different disciplines. Along with a number of senior members of our community, I have been helping Geoff with this.

(iii) *Special Interest Meeting Funding.* For a number of years, the AustMS Council has authorised the use of funds to support Special Interest Meetings, provided that they meet certain conditions. The details of these can be found on the AustMS website. In the past, the funds set aside for this purpose have never been exhausted. However, for the first time, this year the total request for funding has exceeded the budget allocated by Council. The community appears to have 'discovered' the Special Interest Meeting funding. To deal with this, the AustMS Council will have to work out a way to resolve competing requests. This will probably require AustMS to announce annual or biennial funding rounds, rather than allowing applications to come in *ad hoc*, as is the current practice.

(iv) *The Best Paper Prize.* The AustMS Council has approved the rules for a Best Paper Prize to be awarded to the best paper with an author who is a member of the AustMS in each of Pure Mathematics, Applied Mathematics and Statistics (in succeeding years). Papers will be eligible for six years after their publication, and so get the chance to be considered for two rounds of the prize in the appropriate discipline.

(v) *The van der Poorten Travelling Fellowships.* The family of the late Alf van der Poorten has offered to endow a travelling fellowship, named in honour of Alf, to enable an early-career pure mathematician to travel overseas. On behalf of AustMS, I'd like to thank Alf's family for this very generous gesture. It is a fitting tribute to someone of Alf's great standing in our community.



Peter Taylor became the inaugural Professor of Operations Research at the University of Melbourne in 2003 and held the position of Head of Department from 2005 to 2010. His research interests lie in the field of applied probability, with particular emphasis on applications in telecommunications, biological modelling and healthcare. Recently he has become interested in the interaction of stochastic modelling with optimisation and optimal control under conditions of uncertainty.