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# Remarkable Delta 03 – a view from across the Planet

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With the formal title 'Fourth Southern Hemisphere Symposium On Undergraduate Mathematics Teaching and Learning', Remarkable Delta '03 was a four-day event held in a comfortable hotel in the New Zealand South Island lakeland and winter resort of Queenstown. Deep in sheep and farming country settled originally by Scots, the town overlooks Lake Wakatipu and has a distinctly Scottish look whilst deceptively matching Lake Como or Garda in size. The Remarkable range of mountains, which gave the event its name, provide a jagged backdrop, excellent winter skiing, and peaks with familiar names including a Ben Nevis at about 7000 feet.

115 delegates, mainly from New Zealand, Australia and South Africa, attended with others from Argentina, Uruguay, North America and the UK. With nearly 90 abstracts and almost as many presented papers the proceedings needed to be split into plenary sessions together with three sessions in parallel plus discussion workshops etc. The range of topics covered was about as exhaustive as one might imagine but there was a strong pedagogic element and special focus on the secondary/tertiary interface, issues of ethnicity and indigenous populations, bridging units and teacher training. The challenges in teaching statistics featured strongly, as did teaching modelling and the reform calculus, but there was an interest too in engineering mathematics and modelling at higher undergraduate level.

With such an all encompassing agenda the conference had much in common with international events devoted to mathematics teaching rather than the much more focused and generally smaller and shorter UK meetings, which address national issues. The Maths, Stats & OR Network events, the IMA Mathematical Education of Engineers triennial Loughborough conferences and even the annual Undergraduate Mathematics Teaching Conferences (UMTC) would be cases in point but the remit (rather than the mode of working) of UMTC is perhaps the closest equivalent to RD03. It is important to keep this comparison in mind as RD03 began with a plenary address by Lynn Steen, formerly President of the Mathematical Association of America, who noted that mathematics must diversify to meet the needs of its expanding use in higher education. Increasingly the general public in different countries is being exposed to mathematically presented information, eg. graphical presentation on television, whereas education systems do not easily adapt to their needs as flexibly as they might. This begs the question of continuing professional development (CPD) among adults in mathematics (of which there appear to be few signs in any of the countries represented, the UK included perhaps). However, in recent years good sales of mathematical interest texts, such as the proving of Fermat's Last Theorem, seem to touch the public imagination and may persuade those needing mathematical training to seek it out.

In the UK some academics recognise that mathematical CPD training may become an emerging job-related issue. Nationally, however, we are more deeply concerned over the paucity of skills in drill and practice among fresher students. Many UK universities now conduct diagnostic tests for freshers and the results of the recent LTSN MathsTEAM survey into diagnostic testing were made known to RD03. Whilst giving an enthusiastic welcome to the MathsTEAM 3-volume set of case studies and good practice there was a mixed reception to the whole notion of diagnostic testing at the workshop dedicated to the secondary/tertiary interface. In the southern hemisphere countries many final secondary school examinations are much more diffuse and diverse than in the UK and there are also special issues associated with the ethnicity, background, first language and numbers of potentially disadvantaged students; this is especially true in South Africa. Many delegates commented that even the best-intended descriptions of mathematics in English could be totally bewildering to certain students, which disadvantages them for a start. So imposing a diagnostic test at the outset of university study, albeit totally non-summative, might be seen as discriminatory.

Another workshop looked at issues related to technology. The debate once prominent in the UK as to whether students should develop PC communication skills on a conventional desktop or be trained with a more sophisticated programmable calculator, had a resonance at RD03. However, more than one speaker from South Africa, talking about teaching and learning in the post-apartheid era, forcefully put the point that technology, whilst desirable and pointing the way, should not be a prime issue with students facing special challenges. This sparked other comments that traditional human interface teaching has a major or even predominant role for the indefinite future and that, for some, technology is in the domain of the nice rather than the necessary at fundamental levels.

Nowhere is the clarity and unambiguity of expression of mathematics in verbal language as important as it is with assessment, and such matters received full attention at RD03. In the UK many universities now teach a bigger proportion of students than ever before whose

first language is not English, and increasingly we find ourselves re-interpreting examination and assignment material. Not surprisingly many RD03 delegates commented on the crucial challenges they face in being as fair as possible to all. Ken Houston outlined the detail behind the Maths, Stats & OR Network good practice guides to assessment, as the linkage to learning outcomes would be of considerable use to those having to contemplate putting packages together. The expansion of higher education in several countries leads to increasing numbers of fresher students and departments increasingly look to shortened forms of drill and skill assessment, or 'point and tick/click', such as multiple-choice tests operated on paper, card or computer keyboard. Some southern hemisphere delegates recognise that such assessment may be viable if proportionately and sensibly used, but they recognise too that a proper taxonomy of mathematical terminology, and the assessment questions themselves, is vital in making it fair. Assessment for RD03 delegates is related closely to wider learning resources such as the use of the web and the geographical demand for distance learning material to encourage actual or potential students. David Green ran a workshop on the FDTL funded project 'Helping Engineers Learn Mathematics' (HELM) which is being led by Loughborough University. This gave delegates a flavour of what is being developed in

the UK to address interface problems and hopefully confront the needs of both attending and distance learning students. This was a useful adjunct to the final plenary session or status report given by Johann Engelbrecht (South Africa) on the teaching of undergraduate mathematics on the web. Many new sources are springing up to offer Internet teaching but characteristics, classification and eventual implication have yet to be systematically defined. He started off with a 2D model of classification taxonomy in 'Interaction vs. Content' as 'y vs. x' with Learn/Do/See/Read in quadrants 1 to 4, but later replaced this with a 3D model accepting that no on-line pedagogy really yet exists. However Engelbrecht argued that the benefits in ranges of resource, dynamic learning, convenience, opportunity and the natural environment of young people will one day prevail over staff reluctance, cost, and lack of face-to-face contact. It will be interesting to note how web learning develops by the next Delta conference due to be held on Fraser Island off the Queensland coast in 2005.

One final note. It was a great pleasure to receive on arrival a full set of abstracts and full transcripts of many of the papers, the leading ones presented in a specially published volume of the New Zealand Journal of Mathematics, Volume 32, November 2003.