Newsletter
Mathematics & Statistics

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

ISSUE 5/06 **JUNE 2006**

THIS ISSUE

RUNNING THE ROUTEBURN

Congratulations to **Mike Plank** and **Alex James**, who completed the Routeburn Adventure Classic 38km run in Fiordland National Park on 13 May! Mike reports that the weather was perfect, although a heavy snowfall the previous day, coupled with a frosty morning, made for challenging running conditions - very icy underfoot for some stretches. However, the combination of fine weather and new snow made for awesome views of the Fiordland mountains. Mike finished in 4 hours 18 minutes, and Alex in 6 hours 9 minutes. Both were very happy with their performances and promptly headed to Queenstown for a well-earned beer!

PAPERS ACCEPTED

Bill Baritompa, Rainer Lowen, Burkard Polster & Marty Ross: *Mathematical Table Turning* (Mathematical Intelligencer)

Bill Baritompa, David Bulger & Graham Wood: *Generating Functions and the Performance of Backtracking Adaptive Search* (Journal of Global Opimization)

PAPERS PUBLISHED

Douglas Bridges, Hajime Ishihara & Luminita Vita: *A New Constructive Version of Baire's Theorem* (Hokkaido Math. Journal 35 (1), 107-118, 2006)

Josef Berger, Douglas Bridges & Peter Schuster: *The Fan Theorem and Unique Existence of Maxima* (J. Symbolic Logic 71 (2), 713-720, June 2006)

'Goal rush' a scientific fact

Eleanor Wilson and **Kristi Gray**

Score once and you'll score again may be a soccer cliche, but mathematicians say it might just be the case.

Australia's shock 3-1 soccer win over Japan in the pool round of the World Cup focused attention on the age-old theory that getting the first goal gives the team a psychological boost and spurs it on to greater heights.

Mathematician Martin Weigel, who did research at the University of Leipzig in Germany, the country hosting the World Cup, analysed a raft of soccer results and came up with a mathematical model in which a team's chances of scoring a goal were multiplied for every goal scored.

"Each time a team scores, it generally increases the probability of scoring during the rest of the game regardless of its ranking," he said.

However, the result was more noticeable at lower-level leagues than in the upper echelons, he said. In premier games such as the World Cup finals, teams were more evenly matched and therefore less likely to gain the psychological upper hand.

Canterbury University senior lecturer in mathematics Bill Baritompa said the model was a great example of the power of mathematics.

Gilbert Enoka

The researchers had looked at the phenomenon of teams scoring higher than expected on their rankings and come up with a simple mathematical explanation.

"In maths, we use parsimony to try to come up with simple ways to explain complex situations," Baritompa said.

All Blacks mental-skills coach Gilbert Enoka said that in his intuitive experience, most teams in high-level sport went in with a high degree of apprehension.

"This makes them conservative and leads to defensive rather than offensive play," he said.

"However, once they get a goal, it puts them in position of power and they can express their talent in a free and open perspective."

Steve Sumner, who captained the All Whites soccer team in 1982, said he was familiar with the phenomenon.

"Sometimes the impetus can change in a game," he said.

He realised the mood of the game had shifted while watching the Australian team playing Japan. "For 80 minutes, Australia looked a little devoid of ideas."

He said Australia substituting three more attacking players after half time was an inspired choice that helped break the deadlock. The "goal rush" was the result.

"Certainly, after a goal, all of a sudden one gets a burst of energy," he said.

Sumner said he remembered playing Scotland in 1982, when the All Whites were three goals down.

"Then in the second half, we were the first to score and we scored twice," he said.

"I got the first one and the impetus changed for us and we got a second one.

"Then I can tell you — the Scots, the look on their faces was terrible. It was like, 'What's happening? This wasn't in the script.' The Scots lads started having a go at each other."

Socceroos win — F8

(The Press, courtesy of Bill Baritompa)

REVOLVING DOOR POLICY

John Hannah, our Deputy HOD, is Acting HOD until 10 July. Rick Beatson will then resume the role of Acting HOD for a further 3 weeks until David Wall's return.

WELCOME

Welcome to Justine Willett, Julie Daly's replacement for the next 3 months.

Justine arrived from England late last year with her husband and son. Previously, Justine worked in an administrative role at a middle school.

The Willetts have just bought a home in Woodend and are settling in well to the NZ way of life.

CONFERENCES

Douglas Bridges will be giving a talk entitled *Abstract Apartness* at the Third International Conference of Computability and Complexity in Analysis, in Florida from 1-5 November 2006.

Charles Semple is giving a talk on *Hybridisation Networks* at the 2006 Winter School in Mathematical and Computational Biology in Queensland from 26-30 June 2006.

Easaw Chacko and **Issarest Weeraprajak** are attending the International Conference on Time Series Econometrics, Finance and Risk in Perth from 29 June to 1 July. They are presenting a paper entitled *New Learning Algorithm for Adaptive Network-based Inference System in Application of Forecasting Chaotic Time Series.*

Josef Berger is currently attending two conferences in Europe – Trends in Constructive Mathematics (Frauenworth Bavaria, 19-23 June), and Computability in Europe 2006 (Swansea, 30 June to 5 July).

Oliver Will is to attend the Geology and Genes III Conference in Wellington on 14 July.

VISIT

Ben Martin spent two weeks in May/June working with three UK collaborators at the Mathematics Institute in Oberwolfach, Germany. Ben reports that the Summer weather there was barely warmer than the weather here in Christchurch. There were even rumours of snow!

DEPARTMENTAL VISITORS

(E) = Erskine Fellows

Welcome to 3 new Erskine Fellows who arrive at the beginning of July.

Professor Stephen Gardiner is coming from University College Dublin for a two-month visit commencing 1 July. He will be hosted by Rick Beatson and Qui Bui, on behalf of Neil Watson, and based in Room 605.

Also in Room 605 will be **Professor Jeremy Levesley** from the University of Leicester, who arrives on 9 July for a two-month visit. He will also be hosted by Rick Beatson.

Professor Christian Robert, who is visiting us for 6 weeks, is an internationally renowned expert in Bayesian and Computational Statistics from the Universite Paris Dauphine in France. He will arrive on 9 July and can be found in Room 607. His host is Dominic Lee.

Visitors	Name of Organization	From	To	Room	Extn
Dr John Holt	Massey University, Albany	15 Mar 2005	10 Apr 2007	502	7663
Ramona Schmid	Tübingen University, Germany	6 Jan 2006	15 Aug 2006	620	7431
Dr David Borchers	University of St Andrews, Scotland	23 Jan 2006	11 Aug 2006	501	8376
Prof. Daniel Huson (E)	Tübingen University, Germany	15 Feb 2006	30 Jun 2006	624	8877
Dr Bhalchandra Thatte	Massey University	1 Apr 2006	1 Oct 2006	616	8876
Tobias Thierer	Auckland University	24 Apr 2006	10 Dec 2006	620	7431
Prof. Stephen Gardiner (E)	University College Dublin, Ireland	01 Jul 2006	31 Aug 2006	605	8028
Dr Inna Korchagina	Birmingham University	5 Jul 2006	11 Jul 2006	710	7694
Prof Christian Robert (E)	Université Paris Dauphine, France	8 Jul 2006	20 Aug 2006	607	8875
Prof. Jeremy Levesley (E)	University of Leicester, England	9 Jul 2006	14 Sep 2006	605	8028
Prof. James Oxley	Louisiana State University, USA	7 Aug 2006	11 Aug 2006	724	7691
Prof. Geoff Whittle	Victoria University	7 Aug 2006	11 Aug 2006	724	7691