Platitudes and more at international ed council's first meeting

THE AUSTRALIAN 8:57AM November 28, 2016

Half of government

For years, the international education industry has been stressing the need for — and sad lack of — a whole of government approach. Looks like it's finally got what it wished for, if Friday's inaugural meeting of the **Council for International Education** is anything to go by. No fewer than six federal ministers and assistant ministers popped along, led by Education Minister and council chairman **Simon Birmingham**. Foreign Minister **Julie Bishop** was on song with her pet topic of two-way mobility — a characteristic that her **New Colombo Plan** has done perhaps more than anything else to enhance. Trade Minister **Steven Ciobo** stressed the need for new market opportunities; Science Minister **Greg Hunt** spruiked the quality of Australian research as a carrot for foreign PhDs and postdocs; Assistant Skills Minister **Karen Andrews** put in a word for international VET; and Assistant Immigration Minister **Alex Hawke** put the so-called simplified student visa framework in its best light.

Platitudes plus

It was not so much a case of what was said as who said it, with serious Cabinet firepower there to mouth the usual platitudes of "quality", "excellence", "sustainability", "intercultural capabilities"; "entrepreneurial culture" etc, all nicely summarised in a two-page <u>communiqué</u> that seemed to convey more than the incomprehensible bureaucratise that normally follows such gabfests. Birmo's office even sent out some nice pics to mark the occasion. If we've heard it all before, it seems to have been given a fresh coat of paint and optimism. The proof of the pudding will be next March, when the council meets again to discuss progress on the international education strategy and market development road map.

Itchy footed

Speaking of two-way mobility, Australian students are now more globally mobile than their counterparts in the US and UK, according to a presentation last week from **Deakin University** international education researcher **Ly Tran**. Dr Tran told Deakin's Disrupting Higher Education Dialogues forum that the number of Australian outbound students had increased more than fivefold in a decade, from 6000 in 2005 to almost 32,000 in 2014. One in six — 16.5 per cent — of Australian undergraduates now undertake at least some of their study abroad, she said. By comparison the rate in the US, where study abroad seems almost a rite of passage, is 14.8 per cent; while the UK boasted a paltry 5.4 per cent. And that was before Brexit.

Erasmus to the rescue

And speaking of Brexit, a <u>blogger</u> at **Inside Higher Ed** says that if UK students had been more mobile in the first place, Brexit could have been avoided. **Uwe Brandenburg**, of German higher ed consultants **CHE Consult**, says that if more Brits had put their hands up for Erasmus, the renowned European version of New Colombo, then Britain wouldn't have voted to leave. She says studies have shown that Erasmus alumni are nearly three times more inclined to vote than other Europeans, and 88 per cent of UK Erasmus alumni feel "very European" compared to 62 per cent of non-mobile UK students. A higher Erasmus hit rate might have influenced "just enough people to tip the scales in favour of 'remain'", Brandenburg muses.

Lottery odds

What's more likely: winning the lottery or getting blown up by a terrorist? **HW** has no idea, but **University of Toronto** statistician **Jeffrey Rosenthal** apparently does. Professor Rosenthal helped crack "one of Canada's biggest lottery scandals" (how many does it have?) after calculating that lottery ticket retailers were winning more prizes than could be explained by chance alone. Now he's sharing all in a tour of five east coast cities hosted by the **Australian Mathematical Sciences Institute** and **Statistical Society of Australia**. "With simple logic and an understanding of a few easy principles, such as how to calculate probability and the law of large numbers, people can make smart choices based on fact and avoid unnecessary fears," Rosenthal says. **HW** wonders just how simple it really is, given that Rosenthal's work focuses on something called "Markov chain Monte Carlo algorithms".

How much light can a koala bear?

We all know that it fades the curtains. Now, daylight savings kills koalas. A **University of Queensland** study has found that if daylight saving was adopted in Southeast Queensland, evening peak hour accidents involving the eucalypt-chewing marsupials would slide by eight per cent on weekdays and 11 per cent on weekends. "This is achieved by simply shifting the timing of traffic relative to darkness," said Robbie Wilson, co-author of a report in *Biology Letters*.

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FROM THE HOMEPAGE

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No refunds: airlines breach law 🔷



MITCHELL BINGEMANN Consumer advocacy group Choice has strafed domestic airlines, accusing them of systematic breaches of consumer laws. **loneliness**". The app "focuses on **building social confidence** in people who are lonely" via videos. Here's hoping the app isn't called <u>Samantha</u>.

Unicorns in Ultimo

The NSW state government-backed \$25m Sydney School of Entrepreneurship will be based at TAFE's very inner-sity Ultimo campus. The school announced in the state budget includes all the state's universities plus TAFE as participants. So that's ticks for funding, institutional allies and location – Ultimo is start-up central and only marginally less hip and happening than next-door Chippendale. The plan is for 1000 students from partner institutions a year to "learn, collaborate and experiment" so they can "kick start innovative businesses". Good-oh but with so many universities involved there is surely a risk of committees producing camels not unicorns.

Myer at Melbourne

Barrister and investor (a BRW rich-lister) Allan Myer will become University of Melbourne chancellor as of January. Mr Myer is foundation chair of the university's *Believe* fundraising campaign, which launched in 2013. He replaces Elizabeth Alexander, chancellor for six years.



Stats on stage

An astronaut and a bunch of physicists have done stand-up shows in Australia but **Jeffrey Rosenthal** is the first performance statistician CMM has heard of. **Professor Rosenthal** opened a two-week <u>tour</u> last night at **QUT**. He is best known for cracking a **Canadian lottery fraud** where ticket sellers were winning more often than by chance. According to the **Australian Mathematical Sciences Institute** the tour gives "**broader audiences** the opportunity to engage with **field leaders**." CMM is sure it is more fun than this makes it sound.

UniMelb education promotions

Four Melbourne Graduate School of Education staff are promoted to full professor, Sophia Arkoudis, Helen Cahill, Janet Clinton and Dianne Vella-Brodrick.

Digital ends distance

Armidale is on a roll. Last week the University of New England campus there was named the new home of the Australian Pesticides and Veterinary Authority (CMM yesterday). And now the NSW



Teachers must conquer maths anxiety says crime-busting statistics professor



Statistics professor Jeffrey Rosenthal says he is amazed at the bogus gambling strategies which people often believe. Jessica Hromas



by Tim Dodd

When Canadian statistics professor Jeffrey Rosenthal talks to a popular audience about maths he usually asks them if they've ever had an experience where they unexpectedly bump into someone they know and marvel that this meeting, which must have an extraordinarily low probability, has happened.

Professor Rosenthal, from the University of Toronto, had such as experience as a teenager when he went with his family to Disney World in Florida and they ran into his dad's cousin Phil.

Surely the chances of this happening must have been minuscule given that there were then 230 million people in the US?

Well actually no, says the professor, who is known in his home country as the author of a best-selling book on probability.

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"A lot of people have what you might call maths anxiety," says Canadian professor Jeffrey Rosenthal. Jessica Hromas

When you take into account that there's a whole lot people in your life whom you would be surprised to meet at Disney World, and the large number of people you see when you spend a couple of days there, Professor Rosenthal calculates that the probability of being surprised by a chance encounter is about 1 in 200.

Generally about half the people in his audiences say they have had such an experience. And given that most people go to crowded places like Disney World many times in their life that seems consistent with a 1 in 200 chance.

It illustrates, he says, that rigorous mathematical thinking is not something that humans are naturally good at.

Crime buster

So he's not surprised at the worry in Australia about lack of mathematical literacy, a concern only heightened by this week's Trends in International Mathematics and Science Study (TIMSS) report showing school maths achievement in Australia is flat-lining as other countries improve.

"I think our brains are not wired well to have good intuition about probability and randomness and numbers in general," Professor Rosenthal said.

One example: people are way more afraid of becoming a victim of crime than they should be.

"In the pre-historic days of little tribes if you heard that somebody had been killed by a lion, then that must be one of the 50 or 60 people in your pack. So there are probably lions about and you better be scared," he said.

"Whereas now if there's a front page story about a horrible, grisly murder that means one person out of millions and millions of people has been killed. It doesn't mean there is somebody around the corner who is going to kill you next."

A few years ago Professor Rosenthal used his statistical expertise to uncover Ontario's

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biggest-ever lottery scandal, which led to people being jailed for fraud and millions of dollars being restituted.

Improv comedy

Somewhat improbably, he also does improvisational comedy and sings songs about maths and statistics – all in the service of improving the Canadian public's understanding of numbers. And on his current lecture tour of Australia he has scheduled talks to popular audiences to do the same here.

He thinks that, to some extent, children's problems with maths are due to their parents not enjoying it.

"The elementary school teachers also might not love maths that much. A lot of people have what you might call maths anxiety," he said.

Australian experts agree that poorly prepared primary school teachers contribute to the problem.

"A lot of primary teachers have maths anxiety themselves," said Geoff Prince, director of the Australian Mathematical Sciences Institute, who believes that teachers need specialist support to give them confidence in teaching maths.

Most of the questions which Professor Rosenthal gets from the public are about lotteries, and he says most people don't know how to distinguish between sensible and bogus strategies when it comes to gambling.

"It's amazing to me that when the lottery jackpot goes up more people buy tickets because they think they can win more money. But they don't stop to think about the probability of winning and that they might have to share their prize," he said.

He never buys a lottery ticket himself. He doesn't like the odds.

Professor Rosenthal will give *public lectures* at the University of Adelaide on December 13 and the University of Melbourne on December 15.

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Herald Sun



US man dead after lightning strike

News

Sam Beattie falls victim to unfathomable odds in lightning strike

Aaron Langmaid, Herald Sun December 9, 2016 4:16pm ♣ Subscriber only

THE odds are almost unfathomable. That American backpacker Sam Beattie would board a plane with his girlfriend, fly to Australia, trek through a national park, pitch a tent beneath a tree — then place his feet against it.

When lightning struck just before dawn during a thunderstorm at the ominously named Mt Warning this week, the 24-year-old's number was up.

One in three million to be exact.

Some say wrong place, wrong time. Others call it fate.

Mr Beattie died instantly. The young traveller became one of around 100 people struck by lightning in Australia each year and among the list of around five to 10 who die as a result.

It is a killer scenario with spectacularly wide odds.



💿 Social media picture of Sam Beattie with his partner Michele Segalla. Picture: Supplied

This was a man who had more chance of getting killed in a terror attack. Even falling out of bed.

But University of Toronto statistician Professor Jeffrey Rosenthal, in Australia as part of a national tour exploring chance and probability said such tragic events weren't necessarily as random as they seemed.

"With simple logic and an understanding of a few easy principles, such as how to calculate probability and the law of large numbers, people can make smart choices based on fact and avoid unnecessary fears," Prof. Rosenthal said.

Author of the book, Struck by Lightning: The Curious World of Probabilities, the professor said the chance of getting killed in an obscure way was rare but not impossible.

He said Australians had a one in three million chance of getting struck by lightning - and a one in 45 million chance of winning the Oz Lotto jackpot.



Social media image of Sam Beattie with his partner Michele Segalla. Sam died from a lightning strike at the top of Mt Warning

"It is true that if that backpacker had not been camped at that precise tree on that precise mountain at that exact time, then he would not have been killed by lightning," Prof. Rosenthal said.

"For the most part we cannot predict precisely when or where lightning bolts and other killers will strike, so there is not too much that we can do to protect ourselves."

"But the probability that we will be killed in this way is extremely small, no matter what we do."

Chaplains Without Borders Father James Grant said while some would argue otherwise, a death like that was not a question of fate.

"We are not just pawns on a chess board," Fr Grant said.

"This was not just a random event.

"There is meaning and purpose even if we don't understand what it is.

"It looks like a pointless action but there is a reason and a purpose in it."

He said traumatic experiences were often a tipping point in the lives of those affected, even if it meant the death of a loved one.

"As Christians we don't see death as the end of the story."

The Australian Mathematical Sciences Institute will host Prof. Rosenthal at a public lecture at the University of Melbourne next Thursday from 6pm. See http://research.amsi.org.au/amsi-ssalecturer/#schedule

STRUCK BY LIGHTNING THE CURIOUS WORLD OF PROBABILITIES

The Advertiser



Canadian probability and maths expert Professor Jeffrey Rosenthal, who is also a pianist, at the Mayfair Hotel. Picture: ROGER WYMAN

SA News

Canadian probability expert Professor Jeffrey Rosenthal explains how we can all get better at playing the odds

Tim Williams, The Advertiser December 12, 2016 12:35am

Subscriber only

HOW do you expose widespread fraud within a lottery system?

For Jeffrey Rosenthal, the answer was to do the maths.

A decade ago, the Canadian expert in probability, who had shot to prominence with a best-selling book on the subject, was asked by investigative journalists to crunch some numbers on the likelihood of ticket selling agents winning big prizes.

It followed the 2001 case of an elderly Ontario man who always played the same lotto numbers based on his grandchildren's birthdays.

A female employee at the shop where the man bought his tickets, and went to have them checked, hid the fact that he had won \$250,000 and claimed the winnings as her own.

When the man realised what had happened, he fought for four years before the Ontario Lottery and Gaming Corporation paid him \$200,000 of his winnings on the condition he kept quiet about the battle.

The insistence on confidentiality led the journalists to suspect a broader problem.

That's when they called upon Prof Rosenthal, who calculated that over seven years, lottery ticket sellers had won 200 of 5700 prizes of \$50,000 or more, when it should have been 35 to 50.

It prompted an investigation that resulted in several arrests for fraud, payouts to rightful winners of more than \$20 million, and significant changes to lottery rules.

"It became a huge story in Canada, front page news," he says.

The scandal highlighted the importance of being able to calculate odds and acting accordingly, something most of us are not very good at.



You have about a one in 45 million chance of winning an Oz Lotto jackpot, says Professor Jeffrey Rosenthal.

That's why we keep playing lottery games, despite our chances of dying in a car crash driving to the newsagent to buy a ticket being better than the chance of winning the jackpot.

Prof Rosenthal says that as a result, many people worry about the wrong things, like dying in a plane crash or being the victim of a horrible violent crime.

He says we'd be better off worrying about the very big chance of dying of heart disease, and managing our diets and exercise to minimise that risk.

He thinks our over-inflated fear of being violently killed probably goes back to our primitive ancestors who lived in small bands, so the loss of any one of them had a big impact.

These days the chance of any one of us being murdered among the huge populations of our cities is minimal, yet killings remain big news around the globe.

Prof Rosenthal says that makes it easy for politicians to run on anti-crime platforms, even when crime rates are going down. So our inability or unwillingness to do our own basic number crunching means we fail to keep governments accountable for their policies and spending.

The solution? We need to collectively get better at maths. To do that, we need to like maths enough to stick at it. And that means teachers and parents need to get enthusiastic about it.

"Some people almost take pride in being bad at maths. In Canada, a lot of elementary teachers don't like maths," he says, suspecting the same is true of Australia.

Prof Rosenthal says being realistic about odds can change our thinking. He used to be nervous about flying, but not after realising just one in every five million commercial flights ends in a fatal crash.

And we should not be so surprised by a coincidental meeting with friends or acquaintances. Given we all know quite a few people, and see thousands more as we go about our lives, the odds of such meetings aren't that long.

Prof Rosenthal will give a free talk in the Horace Lamb lecture theatre, Adelaide University, tomorrow from 6-7pm.



Canadian Professor Jeffrey Rosenthal was asked by investigative journalists to crunch some numbers on the likelihood of ticket selling agents winning big prizes.

ONE EXPERT'S TAKE ON LIFE - BY THE NUMBERS

Professor Jeffrey Rosenthal

- Works in the Department of Statistics, University of Toronto.
- Author of Struck by Lightning: The Curious World of Probabilities, a bestseller in Canada and produced in 16 editions and 10 languages.

• Used his mathematical expertise to expose a lottery scandal in Ontario, in which ticket sellers were fraudulently claiming other players' winning tickets as their own.

• Also an improvisational comedian and musician, rewriting the lyrics of popular songs to be about maths.

What he says

• You have about a one in 45 million chance of winning an Oz Lotto jackpot. If you have to drive to the newsagent to buy your ticket, you're six times more likely to get killed in a car crash on the way than winning the jackpot.

• There's about a one in 3 million chance that a randomly chosen Australian will become PM.

• Only one commercial flight in 5 million crashes badly enough to cause fatalities.

• The chance meetings you think are "one in a million" coincidences aren't really that remarkable. Depending on the circumstances, they could be more like one in 200.

• People worry too much about unlikely events, such as their child being abducted. On the other hand, one in three people die from cardiovascular disease, so we should worry more about diets and lack of exercise.



The statistics of fear: Should we be most concerned about cars, planes or terrorists?

ABC News Breakfast By Patrick Wood

Updated Thu 15 Dec 2016, 12:15pm

Are you more likely to die in a car crash or a terrorist attack? And what is safer: driving across the country for your family Christmas or getting on a plane?

Everyone has their fears and safety concerns, but chances are that — statistically speaking — we are worrying about the wrong things, according to a visiting statistician who specialises in probability.

Professor Jeffrey Rosenthal works in the Department of Statistics at the University of Toronto and is currently doing a series of public lectures in Australia.



PHOTO: Almost half of Australians are concerned they or a family member will be the victim of a terrorist attack. (AAP: Stefan Postles)

8

MAP: Australia

"People do worry about a lot of things which are extremely unlikely and we shouldn't," he told ABC News Breakfast.

Terrorism is a particularly emotive topic in Australia, with a recent ANU survey finding 45 per cent of Australians are either "very" or "somewhat" concerned about either themselves or a family member being the victim of a terrorist attack in Australia.

"Terrorism, in a way it's a tricky thing because you don't know what the future will bring and situations can change," Professor Rosenthal said.

"But one example I give is if you look at the 9/11 terrorism attacks ... in the month of September 2001 more people in the United States were killed in ordinary car crashes than were killed in the 9/11 attacks."

Professor Rosenthal said sales of anxiety medication rose in the US after the attacks and he knew one couple who made the decision to get married because they feared the threat of terrorism.

"As far as what your fear is, if you're just a random person living in the United States even in 9/11 — the worst terrorist attacks in the history of the United States — your chance of being killed in a car accident were higher than if you were killed by terrorists," he said.

"So if you think of it that way then a lot of people had really exaggerated fears."

'Control and the media play a part'

A lack of control can be the cause of heightened fear, which is why we don't often rate the dangers of things like driving a car as highly as other potential threats, according to Professor Rosenthal.

"I think that's why people are more afraid of being in an aeroplane than being in a car, even though statistically it's actually safer to get somewhere by aeroplane," he said.

"But if you're in the plane you have no control, you're not piloting the plane, you hope the pilot doesn't do anything wrong. With the car you think, 'Well I can get out of the way, I can steer my way out'."

He said from a purely statistical point of view, people should be more concerned about heart disease than car accidents.

"[I'm] sceptical in a way, in the sense that when I hear something whether it is in the newspaper or what somebody said, I will say, 'Wait a minute, show me the facts'."

"People will say crime is increasing when it turns out it isn't; something is dangerous when it is not."

Topics: mathematics, terrorism, australia

First posted Thu 15 Dec 2016, 12:14pm

This also appeared in Sydney Morning Herald, Brisbane Now and other online news sites.

[<u>The Age</u>]

Your chances of winning lotto are one in 45 million, which is why Macquarie wants Tatts

Date: December 15 2016

Colin Kruger, CBD

You know there is truth to the adage 'the lottery is a tax on people who are bad at math' when some of the most rapacious names in investment banking and private equity are lining up to buy a multi-billion-dollar lotto ticket.

Punters hoping to pick that multi-million-dollar win are getting a math lesson from the real millionaires' factory, **Nic Moore**'s Macquarie Group. It has joined with the legends of private equity, KKR, in a plan to strip Tatts' lottery business out of the hands of its suitor, Tabcorp.

Why does this business interest the smart suits from the top end of town so much?

In simple terms, there is a guaranteed win for those behind the lotto registers who collect the cash from mug punters who buy \$10 worth of hope for the next big jackpot.

Tatts reported that it generated \$2.14 billion from lottery sales last year, up more than 8 per cent on the previous year.

It paid out \$1.19 billion to state governments in the form of taxes, in what amounts to a very regressive tax on those who can ill afford it.

Tatts' profit margin (before tax) ate away another \$320 million of last year's takings.

According to CBD's maths this less than 29¢ in every dollar available as a lottery win. But the legislation mandates that 55 per cent of the ticket revenue is paid out in prize money so don't rely on this columnist either.

But to give you an idea of what the real odds are for your average ticket holder on the street, Tatts states that the chances of winning a Division 1 prize in Oz Lotto is one in 45,379,620.

To put this in perspective, **Jeffrey Rosenthal** – a professor of statistics at the University of Toronto, who has been touring Australia – calculated that the chances of a randomly chosen Australian becoming our prime minister are much better at one in three million.



Mother lode

Not all of the surprises were nasty this year. Not if you were one of Australia's lucky iron ore billionaires.

Mind you, Fortescue founder **Andrew** 'Twiggy' Forrest would tell you that luck had nothing to do with the rapid turnaround in the fortunes of his miner, which just last year was on its death bed if you believed the whispers from industry insiders.

It has survived in spectacular fashion and added \$5 billion to Forrest's wealth this year as rising iron ore prices and falling debt levels put the company in an unusually safe financial position after more than its share of near-death experiences.

Not that Forrest would admit to this either.

"I had this rock-solid faith in Fortescue since I started the company," <u>Forrest told BusinessDay in October</u>. "With every really brave plan A, we had had a bulletproof plan B, and people don't give us credit for that. People just see the high-wire of the plan A. It's not a rabbit out of a hat."

Forrest's stake in Fortescue is now worth more than \$6.5 billion, which has sent him rocketing back up the ranks of our most wealthy billionaires.

The fact that **Gina Rinehart**'s Hancock Prospecting is privately owned makes it difficult to assess her exact fortune. But she – along with property developer **Harry Triguboff** – are the only billionaires standing between Forrest and top spot on the rich list.

Not that this represents the peak of his wealth – not in paper terms, at least. In 2008 the value of Forrest's shares hit \$13 billion. This was the same year Fortescue dug up its first ounce of the steel-making ore.

When the iron ore market plunged to its nadir last year Forrest and Rinehart had <u>lost almost \$25 billion of</u> wealth between them, on paper at least.

The resurrection of the iron ore billionaires is in stark contrast to the declining fortunes of the businesses which were meant to boom on the back of China's newly-emerging middle class.

Bellamy's Organic has been suspended from trading while it attempts to determine just how bad the financial damage is from the disastrous fall-off in milk formula sales from China.

The fortune of Blackmores chairman **Marcus Blackmore** has declined more than \$460 million this year as the market's wariness hit the vitamin maker.