

Gambling study shows it's good to be bad

GAMBLING, genetics, the economy and swinging voters—what do they all have in common?

The answer: we can now start to better understand each and every one of them thanks to Parrondo's paradox, a mathematical theory developed by a Spanish physicist which explains how we can mix "bad" strategies and get a "good" outcome.

Adelaide University engineers have now taken that theory one step further by demonstrating it in a unique gambling study published in the prestigious journal *Nature*.

Dr Derek Abbott and Mr Greg Harmer from the Department of Electrical & Electronic Engineering have shown that two "bad" (losing) games played by tossing coins can be mixed together to produce a win or a "good" outcome.

When played separately, each toss of the coin guarantees a loss. But when played alternately, the losing coins come up winning, time and time again.

Dr Abbott describes this as a "ratchet effect", like shaking a bag of nuts to force the large onesto the top.

"Shaking is normally regarded as something 'bad' because it creates disorder, but in this case it is 'good' because the desired response is produced.

"In chess we can sacrifice pieces to win. Farmers know that sparrows can eat all the crops and insects can eat all the crops—but by having a mixture of sparrows and insects, some crops survive because the sparrows also eat the insects. In a similar way, mixing two losing games wins when there is a subtle link between them."

Dr Abbott said the implications for the further development of this theory were almost inexhaustible.

"We're now studying how to apply the mathematical theory we have developed, for these simple games with coins, to the economy and biology.

"It could help to answer financial questions, such as finding the best strategy for combining high-risk shares and cash reserves in managing an investment portfolio.

"In biology, a population of animals contains a certain pool of genes, some of which are good and some bad. Considering probabilities that certain genes become expressed, in each generation, is rather like a gambling game.

"Some bad genes may become beneficial if there is a change in the environment," he said. "For instance, a DNA error causes sickle-cell anaemia and is common in West Africa where it also protects against malaria."

In politics, Parrondo's paradox may also be at work. Could a bad strategy be good in some cases? Does some notoriety and scandal increase Bill Clinton's popularity?

Dr Abbott said he believed Parrondo's paradox could also help explain one of the biggest mysteries of all time:

"One of the great mysteries is 'biogenesis', or how life began from a 'primordial soup' of chemicals. The problem is when simple amino acids were formed by chance, there would also have been many other influences tending to destroy the order produced. Perhaps in the biogenesis of life Parrondian principles are at play, where life is formed via a 'ratcheting action' from the primordial soup. The game of life may well have been helped by the very influences we thought were destructive."

Former Adelaide University physics professor Paul Davies said he also believed that life must have started via a "molecular ratchet mechanism", but that we still need to fill in the details.

"Anything that clarifies how information and organised complexity can emerge from the randomness of molecular chaos will cast welcome light on this most profound of scientific mysteries. That is the significance of Parrondo's paradox, and the associated work of Derek Abbott," he said.

"Great discoveries change the way we see everything," said Dr Abbott. "Without a doubt, Parrondo's paradox has the potential to do that, because one of its main messages is that 'a little bit of badness is good'."

—David Ellis

Drew goes from big game safari to BIG student

WHEN you meet Drew Kluska you can't help thinking you've met him before.

At a B&S Ball at Glendambo, or exhibiting sheep at a Royal Adelaide Show.

He presents as your typical Aussie country lad, brought up on an Eyre Peninsula farm, sent to a city boarding school and educated as an AgScientist at Roseworthy.

While at Roseworthy, Drew befriended a fellow student from Kenya. He took up an offer to travel to Kenya, stayed with his friend's family and soon found himself working for a privately owned wildlife conservation park that hosted the "rich and famous" in five-star Safari-type bush accommodation.

From these locations discerning travellers are shown the delights and mysteries of the African bush.

Drew soon became the manager of one of the host properties and got to know the close network of travel wholesalers in the USA who specialise in providing exclusive experiences for the "high yield" discerning traveller.

These agents and Drew collaborated to establish a network of outback stations in Australia to offer their wealthy clients alternatives to travel experiences in Africa, Argentina and other world destinations.

Mindful of his need to develop some business acumen, Drew applied for a scholarship to the BIG (Business Initiatives from Graduates) program at Adelaide University in 1999.

Today Drew Kluska Australian Safaris operates out of an office at the University's Thebarton Campus, where he manages the itineraries for his exclusive clients.

"Itineraries can span several weeks for small groups, visiting some very special outback locations throughout Australia.

"Our emphasis is on providing the visitor with a unique experience of the bush, hosted by the kinds of country families that I personally grew up with," Drew said.

His sister Megan is working for a major wholesaler in Atlanta. Megan is a marketing graduate, and her expertise is clearly evident in the quality of her travel proposals and individualised itineraries.

Drew's business is supported by the commercial arm of the University, Luminis Pty Ltd, where he receives assistance with business planning, mentoring and account management.

His long-term vision for the business is to have more ability to generate cash flow upstream on its value chain, meaning that he sees benefits in having more control over the actual services provided to the clients.

"Eventually we hope to own at least some of the travel destinations, as well as aircraft, specialised vehicles and the like.

"By doing that we can better maintain the quality of service and ensure that our Australian safaris are specifically tailored to the client," he said.

Drew Kluska Australian Safaris is a business that has a clearly identified niche market with a high yield and an established network of international wholesalers.

This recipe for success is a model for other young entrepreneurs to follow.

—Paul Szuster
Business Development Manager, Luminis



Drew Kluska with Mrs Jane Fargher at the summit of Mt Micky, Nilpena Station via Leigh Creek, South Australia. Photo courtesy of Drew Kluska.

Child racism targeted

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"But as children develop they become exposed to egalitarian attitudes, egalitarian values. So we felt that older kids, the eight and nine-year-olds, would be starting to differentiate between what they knew of society's representation and their own personal beliefs. And in fact that's what we found," Dr Augustinos said.

She said this work had major implications for anti-racism education.

"Around the age of seven, children's mental capacity increases considerably, their flexibility in thinking increases, and they start to realise that things they thought were true and written in stone are not necessarily the case.

"This has important implications because it suggests that there's a window of opportunity in the education system to encourage more egalitarian, tolerant views towards a variety of groups in our society."

It is also a more upbeat conclusion to the ongoing discussion of racism among children, she said.

"The research for many years has been quite depressing, because the results of all these studies have continually shown that five and six-year-olds had racist attitudes.

"But our conclusion is that what you see at that early stage isn't prejudice per se, but merely the child demonstrating their knowledge; they've picked up what the dominant societal norms and views are, and they're basically parroting them back.

"Older kids, however, have started to think about how they stand personally in relation to those societal beliefs. Some of them start to challenge those and develop beliefs which aren't consistent with the stereotype, and that's definitely good news."

—David Ellis

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