

When it's win, win all round

Cooperation is key, **Mic Cavazzini** writes

Although the carbon tax has finally gone through parliament, many Australians are still asking themselves "Why should we pay the cost when other countries get away without sacrificing a thing?"

Throughout history, philosophers, economists and psychologists have been equally sceptical about altruistic behaviour. "Every man ought to be supposed a knave and to have no other end, in all his actions, than private interest," wrote David Hume in 1742. More recently, Richard Dawkins popularised the idea of "the selfish gene": that cooperation should only be expected between individuals that are closely related.

But people do cooperate with strangers under some circumstances, a fact that has fascinated Simon Gachter, professor of psychology at the University of Nottingham. In a study published in the *Philosophical Transactions of the Royal Society*, Gachter and colleagues used a simple experimental model called the public goods game to study the incentives for cooperative behaviour.

They recruited the favourite lab animals of psychologists, undergraduate students, and put four participants in separate cubicles networked with computers. Each player was given 20 "experimental currency units" (let's just call them dollars) and told they could contribute some of this money to a common pot at the end of each round. Whatever had been donated would get doubled and then redistributed equally among all the players. It doesn't take a professor of economics to tell you that it's in everybody's interest to chip in, right?

Wrong. Half of the people started the game by contributing values around \$7, but by round 10 their generosity had trickled off to \$2.

"Most people are what we call conditional cooperators," says Gachter. "They are willing to contribute provided others contribute as well. I think the reason why cooperation is so fragile has to do with the fact that conditional cooperators see that others are not chipping in – then they are disgruntled and this makes the whole thing collapse."

But in real life if you get caught evading a train fare you'll pay a hefty fine. Try cheating your taxes and you may well end up in jail. When the experimenters introduced a rule that allowed players to punish each other with a \$3 penalty, most players did change their tune. As uncooperative behaviour was penalised after each round,

people would respond by contributing more and more money up to an average of \$14 per person.

Just to give vengeful players some pause for thought, however, it also cost \$1 to dole out this punishment. Professor Gachter finds it bizarre that people are more inclined to spend money to punish others than they are to invest money in public purse in the first place: "If punishment influences people's behaviours . . . then punishing is itself providing a public good because others benefit. But then the question is, if people are not prepared to provide the first public good, why then are they willing to incur the cost to provide the second public good?"

This behaviour seems to be driven by a sense of fairness rather than any economic calculation. And sometimes this alone is enough to nudge people into action. In his recently published book *Fostering Sustainable Behaviour*, psychologist Doug McKenzie-Mohr reviews the impact of strong social norms on individual behaviour. Take the example of the classic red slash "No littering" sign – a wealth of psychology and marketing research shows that this is often less effective than a more positive demonstration of civic cooperation such as "Join the other users of this park by not littering". People try to avoid being singled out as antisocial players.

In the same way, Gachter and colleagues have shown that players of the public goods game judge free-riding as being morally worse when they're told that the average contribution to the public pot is high. And what if players are asked to make promises to chip in? Gachter says, "If they use the words 'I promise to contribute that much' then they are more likely to actually do it, because probably they feel guilty to break that promise."

Norms, promises, expectations and social guilt. Cooperation in this experiment and in the real world is influenced by a complex set of values – the kind of values that get taught through culture and society. Everyone is familiar with the cultural stereotypes: that the British will queue at the bus stop in single file 50 people deep while Italians will virtually climb over each other to get aboard.

Gachter's team ran the public goods game in 16 cities around the world and observed that in its simplest version the residents of Copenhagen were the most generous players, while at the stingy end of the spectrum were Nottingham, Athens, Istanbul



Many Australians are still wrestling with carbon tax issues.

and Melbourne. But the free-rider problem was found everywhere and cooperation diminished predictably over the duration of the game.

When the punishment rule was introduced, however, some remarkable trends emerged. Players in Melbourne and Nottingham responded dramatically and contributions to the public good climbed up to \$16 or so by the end of the game while players in Athens and

Turkey never chipped in more than their low initial contributions. This separation in behaviour followed cultural trends defined in the 2000 World Values Survey, which found that social values cluster around shared language or religion.

Melbourne and Nottingham fell in with Boston in the "English Speaking" group and their response to punishment was similar to that of cities in "Protestant Europe". The "Confucian" cluster also bowed to the introduction of punishment while cities from "Orthodox/ex-Communist" Europe did so to a much lesser extent. However, the "Arabic-speaking" cluster of Muscat and Riyadh were as indifferent to the punishment rule as those of "Southern Europe". In both groups contributions hovered around \$8 throughout the game and simply did not budge even when players could fine each other for uncooperative behaviour.

Gachter believes this reflects different cultural perceptions of the legitimacy of punishment: "If people don't accept the punishment, then punishment cannot work to enforce cooperation. They say, 'It's my right to a free ride – if you want to contribute then go ahead but leave me alone.'"

Individuals try to avoid being singled out as antisocial players and perhaps the same will be true of players on the international stage. The example set by Germany, Italy, France, Britain and now Australia is hopefully just the beginning, according to Gachter: "The West ought to move ahead by showing that they are doing something . . . and then maybe they can convince the developing countries in a few years."

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1. How is monotreme reproduction different to other mammals?
2. What layer of the Earth lies beneath the crust?
3. Which has the higher atomic number: aluminium or magnesium?
4. Which body in our solar system are the GRAIL spacecraft investigating?
5. What are Psittaciformes more commonly known as?

Answers

1. Monotremes don't give birth to live young – they lay eggs.
2. The mantle is the layer beneath the Earth's crust.
3. Aluminium, which has an atomic number of 13. Magnesium's atomic number is 12.
4. The GRAIL spacecraft are investigating the Moon.
5. Psittaciformes is the name of the order that is made up of parrots and cockatoos. Some species of black cockatoos in Western Australia are under threat of extinction due to habitat destruction.

ASK FUZZY

Q What happens to the mass you lose through exercise?
Mike Stracey

A I talked to a few people about this, and they thought your mass is being converted into energy. It's easy to see why this sounds right. To exercise you need energy, and powering that is the mass you take in by eating. For many of us we thereby hope to lose weight.

Of course, we need food to provide energy, but the problem is this confuses the mechanism by which we extract energy from food.

In nature there are a few ways of storing and converting energy, and we'll start out with the ones which don't apply. It's not mechanical energy. If it were, we'd be like grandfather's clock, using a device such as a coil spring. Every so often somebody would have to wind us up before we stop.

We do use mechanical energy, but only for a brief moment such as when sprinting up stairs our calf muscles store and release tension, helping us – literally – to bound up the next step.

The energy that powers us is derived from chemical reactions. In simplistic terms, we burn sugars. We harness the energy generated by converting them from higher to lower energy states. We capture the energy from this to grow tissue and twitch muscles.

Exercise requires energy which your body preferentially acquires from fat. If you lose weight, it will be from the breakdown products which you then excrete.

The problem is, if you're looking to lose weight, your body responds to additional exercise by building more muscle. You'll be fitter and stronger, but likely to weigh much the same.

Ultimately, it's the whole package that counts, and where we put that last slice of cake.

Rod Taylor, Fuzzy Logic

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