

# THIS WEEK

## EDITORIALS

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## Wanted: a fair carbon tax

*Unrest in France at a rise in fuel prices highlights how the necessary transition to a clean economy must be carefully managed.*

The principles of corporate change management stress that, although transitions must start at the top, the real change needs to happen at the bottom. That's a lesson that French President Emmanuel Macron perhaps wishes he'd remembered as protestors rioted in the Paris streets over the past few weeks against a planned new green tax that would have made fuel more expensive.

The movement has some support from economists, who tend to view the blanket introduction of such green taxes as regressive: the poorer people are, the greater the proportion of their income they spend on basics such as fuel, and so the heavier they find the burden when those goods are taxed. Hence the French 'Yellow Vest' protestors have complained — with some justification — that the new fuel tax places an unfair demand on those who can least afford it.

Events in France highlight the need for the 'just transition' that environmentalists and researchers have been pushing for a long time: smart climate policies must be fair, addressing both opportunities and inequalities.

In the long term, the benefits for humanity of a societal shift away from fossil fuels and towards cleaner sources of energy will far outweigh the costs. But the transition could have severe implications for some sectors, regions and countries. Poorly managed, it could result in loss of income, opportunity and future prospects for some workers and communities. So — and this is a question being discussed at the United Nations climate talks in Poland this week — how can it be managed well?

Investment in renewable energy is making great strides and the cost of wind and solar energy is falling fast. But it is inevitable that the cost of fossil fuels in many applications will have to rise to force the pace of the transition to a cleaner economy. The surest way to do this is through some kind of carbon tax. (Global politics has turned firmly away from the other major route, a cap-and-trade system.) And one way to make a carbon tax more palatable to the taxpayers is to give them the money back.

That's essentially what Canada plans to do. Starting next year, Prime Minister Justin Trudeau's government will introduce a national 'fee and dividend' scheme that will place a levy on the carbon emissions of fuels and other products, but then refund the money to individuals and companies through tax rebates.

Most residents and businesses in Ontario, Saskatchewan, Manitoba and New Brunswick — the four provinces subject to the federal tax (other states have introduced their own versions) — will receive refunds that, the government says, will be greater than the carbon tax paid by the average family. According to the government's estimates, some 70% of people will get back more in dividends than they pay in new tax. Only those that use a lot of fuel will end up out of pocket. It's a bold move and one that will help to determine whether Trudeau remains in office after the general election scheduled for October.

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The introduction of the French tax has now been suspended for six months, to give officials more time to ponder their response. Governments and policymakers elsewhere will be watching with interest. So will environmentalists and economists. If the question for the twentieth century was about the role of people in causing climate change, the conundrum now lies in finding a politically acceptable way to persuade or compel people to take the required action to reduce emissions. ■

## Culture change

*Improvements to a conference accused of sexism are long overdue.*

The challenges and promise of artificial intelligence drew hundreds of scientists to a conference in Montreal, Canada, last week. But it was human behaviour that was the focus of much of the attention. The event and the board of trustees that oversees the conference have been in the spotlight in recent months over claims that previous gatherings had fostered a hostile environment for women.

Exhibit A is the acronym that the event commonly went by: NIPS. Although its defenders could say it merely reflected the full title of the organization — Neural Information Processing Systems — the board agreed to a last-minute change. So, this year, machine-learning researchers, software engineers and programmers arrived in Canada for the 'first' NeurIPS conference.

It's a small change, but a necessary, overdue and symbolic one. In a previous year, researchers attending a workshop for women in machine learning experienced boorish and offensive behaviour by some men who arrived wearing T-shirts emblazoned with a joke about nipples. And earlier this year, a survey of past attendees found that many respondents had experienced harassment, bullying and a lack of respect.

It is wrong that people ever experienced this behaviour, and it is sad that it has taken this long to respond, but the board deserves at least some credit for its response to the concerns raised by those in the community it represents, and for taking explicit steps to challenge and change the culture of the event.

The diversity and inclusion co-chairs of this year's organizing committee, for example, sent a strong message about the expected conduct of attendees when they discussed at the conference's opening remarks the measures in place at the event to make it more inclusive. The first invited talk also covered the necessity of diversity in technology.

It is difficult to know whether these and other actions had a measurable effect. But women who have attended in the past reported a welcome shift in the atmosphere of this year's event, and many applauded the board and organizers for their efforts to combat bad behaviour and

encourage inclusiveness. These include an updated code of conduct that forbids event sponsors from using sexualized clothing or costumes, a town-hall meeting to discuss the issues, on-site childcare and stickers that help inclusion by flagging up first-time attendees and highlighting the pronoun that people prefer to be referred to by. In addition, more specific meetings for under-represented groups ran alongside the conference than in previous years.

They are small steps down a long road. Most participants easily adopted the name NeurIPS, with only a few accidentally slipping up and mentioning NIPS. There were no offensive T-shirts at conference events and no supply of commemorative coffee mugs — at least when the conference opened — as the name change came too late to get them printed.

Too often, the burden of work involved in increasing diversity and inclusivity falls on those from under-represented groups. NeurIPS is no exception.

One of the organizers of the Black in AI workshop at NeurIPS, Timnit Gebru, a computer-vision researcher at Stanford University, California, spoke for many of the session organizers when she told the diversity town-hall meeting that coordinating the event had reduced the time available for her research. The diversity and inclusion co-chairs, Katherine Heller and Hal Daumé, who have had to walk the fine line between a vocal research community pushing for change and a conference board that has been slow to realize the significance of its actions, also say they have seen considerable disruption to their research. Only Heller, who is at Duke University in Durham, North Carolina, has so far committed to returning to the post next year. These examples underscore the fact

that increasing diversity is a job for everyone and it is not sustainable or fair to rely on a small number of volunteers to do this important work.

The challenge should not be underestimated. The organizers of another major AI conference, the International Conference on Learning Representation, announced last month that they would hold their 2020 event in Addis Ababa in a bid to widen the pool of talent that can attend. But this well-meaning initiative is not without problems.

**“Increasing diversity is a job for everyone, it is not fair to rely on a small number of volunteers.”**

Some members of the LGBTQ+ community raised concerns about holding the meeting in a country with anti-homosexuality laws. Organizers assured them of their safety, and that many scientific conferences had been held there before.

The Canadian government has come under fire for denying entry or being slow to approve visas for many researchers invited to attend NeurIPS from overseas. More than half of the 200 people who sought visas to attend the Black in AI workshop did not receive them in time, including several who dedicated huge amounts of time to organizing the event.

There have been many high-profile criticisms of AI algorithms that mimic, and so perpetuate, the biases of wider society. That the board of an AI conference — which in October called in a diversity and inclusion consultant to assist it — has taken a stand against such discrimination within its own ranks is a necessary and overdue step. Ensuring changes are deep and lasting will take much more time and effort. Meanwhile, many more institutions and organizations need to follow. ■

# How we forget

*From pop music to tennis stars, society loses interest according to a mathematical law.*

In his enthralling 2009 collection of parables, *Sum: Forty Tales from the Afterlives*, the neuroscientist David Eagleman describes a world in which a person only truly dies when they are forgotten. After their bodies have crumbled and they leave Earth, all deceased must wait in a lobby and are allowed to pass on only after someone says their name for the last time. “The whole place looks like an infinite airport waiting area,” Eagleman writes. “But the company is terrific.”

Most people leave just as their loved ones arrive — for it was only the loved ones who were still remembering. But the truly famous have to hang around for centuries; some, keen to be off, are with an “aching heart waiting for statues to fall”.

Eagleman’s tale is an interpretation of what psychologists and social scientists call collective memory. Continued and shared attention to people and events is important because it can help to shape identity — how individuals see themselves as part of a group — and because the choice of what to commemorate, and so remember, influences the structures and priorities of society.

This week in *Nature Human Behaviour*, researchers report a surprising discovery about collective memory: the pattern of its decay follows a mathematical law (C. Candia *et al.* *Nature Hum. Behav.* <http://doi.org/cxq2>; 2018). The attention we pay to academic papers, films, pop songs and tennis players decays in two distinct stages. In theory, the findings could help those who compete for society’s continued attention — from politicians and companies to environmental campaigners — to find ways to stay in the public eye, or at least in the public’s head.

The study applies maths and a big-data approach to questions that have been studied at length in the social sciences. Using attention as a proxy for memory, the authors analysed online views of the Wikipedia profiles of around 1,700 sports stars, citations of almost

500,000 physics papers and 1.7 million patents, and online play counts of some 33,000 songs and 15,000 film trailers.

Researchers had previously thought that the decline in the popularity of such cultural objects followed a smooth, steep curve. But analysis of the new study data revealed that a better fit was a shape called a biexponential function, which has two phases. It shows that collective memory dropped quickly, but that the subsequent decline in attention slowed considerably, and went down a much gentler slope. Although the shape was the same for each feature studied, the actual length of each phase was different. Music showed the shortest and sharpest initial decline in attention (taking 6 years) and the online biographies of the sports stars the longest (20–30 years).

How come? The researchers propose an explanation. The first, steep decline phase is dominated by the process of communicative memory, which is the direct word-of-mouth transfer of information. And the second, more enduring phase relies more on cultural memory, which is sustained by the physical recording of that same information.

That requires, of course, that the information is recorded. As an accompanying News & Views article highlights, for events that are memorialized with few cultural artefacts, such as Hurricane Sandy striking New York in 2012, policymakers could look at how to extend the period for which communicative memory dominates (A. Coman *Nature Hum. Behav.* <http://doi.org/cxst>; 2018). For a short time, conversations about the damage it caused probably raised awareness of climate change as a serious threat. But as collective memory of the severity of the hurricane faded, so, too, did concern.

The model does not apply in all cases, of course. Everyone will have their own example of an enduring figure still waiting in Eagleman’s purgatorial lobby for their name to become redundant. But it’s a neat way to apply the promise of big data to a new field of study, and one that could have real-world applications. It’s also another example of how what can seem to be random and individual events when studied at a large enough scale can reveal an underlying pattern. The researchers compare their biexponential function of collective-memory decay to the more poetic description of a two-phase system from Chilean writer Pablo Neruda: “Love is so short, forgetting is so long.” Which, at the very least, should keep Neruda hanging around for a bit longer. ■

**CLARIFICATION**

The Editorial 'Culture change' (*Nature* **564**, 161–162; 2018) stated that the organizers of the International Conference on Learning Representation had sought the permission of the Ethiopian government to hold the Queer in AI event in the country in 2020. Meeting organizers asked us to clarify that some members of the LGBTQ+ community raised concerns about holding the meeting in a country with anti-homosexuality laws. The organizers had private conversations with those concerned to ensure that LGBTQ+ attendees feel safe.