

# AQ

AUSTRALIAN QUARTERLY

VOL 88 ISSUE 4 OCT-DEC 2017

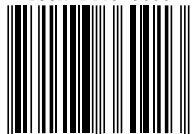


## Lawfare in Australia

### Law, Legitimacy and Activism in the Anthropocene

INCLUDING: DR COLIN SCHOLES | DR CRISTY CLARK | SEAN RYAN | CAROLINE GRAHAM & MORE

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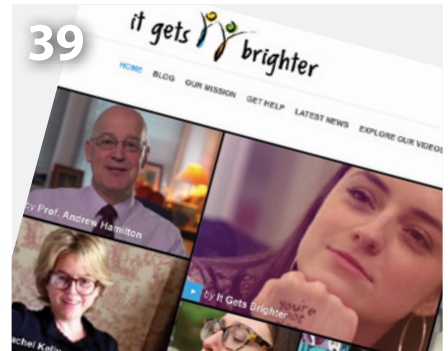


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COVER IMAGE: © Joanna Beckett Design

# A WORD

I wonder what feelings the word 'Adani' will conjure up in 10 or 20 years.

Anger? Horror? Even if the mega mine does go ahead – which seems increasingly likely thanks to the sycophantic efforts of the Queensland Labor Government – it's hard to imagine that a word associated with a 50-kilometre scar could inspire joy or a sense of empowerment in anyone.

Yet if the legal and environmental hurdles do halt the Carmichael mine, a wave of exultation will run through communities across the country. 'Adani' will stand for the power of community action in the face of overwhelming corporate - and government - accusations of 'lawfare'.

Heading up this edition we have a mini-feature on 'lawfare' in Australia; is, as numerous government Minister's have claimed, the judicial system awash with vexatious litigation from eco-terrorists? We get the opinions of academics and barristers working at the 'coal-face'.

In March 2011, the Syrian people began peacefully protesting the country's authoritarian president, Bashar al-Assad. Brutal civil war has followed, reducing one of the Middle East's most important cities to rubble. Caroline Graham takes the time to pay homage to Aleppo, a city that once rivalled Renaissance Italy as a centre of learning and art.

Dr Colin Scholes makes a welcome return to the pages of *AQ*, turning our attention to the irony facing the Pacific Islands. While many island nations will be hit hardest by rising sea-levels and increasingly intense weather, their economies remain highly dependent on fossil fuels for electricity. Yet renewable energy systems could potentially open up significant economic and development opportunities for these tiny nations.

And with the end of the year just around the corner, we're offering readers the chance to give #Science4Xmas! Just share your favourite science story of the year for the chance to win \$100 of goodies from Andy Matter's Red Bubble store. See the Xmas Comp page on our website for all the info.

And don't forget to follow *AQ* on Facebook or Twitter, to find out what readers' top science stories of 2017 have been.

**Grant Mills**  
Editor-at-large

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**Australian Quarterly**

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**DESIGN AND PRODUCTION:**  
Art Graphic Design, Canberra

**PRINTING:**  
Newstyle Printing, Adelaide

**SUBSCRIPTIONS:**  
[www.aips.net.au/aq-magazine/](http://www.aips.net.au/aq-magazine/)  
subscribe

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Facebook: [www.facebook.com/AQAustralianQuarterly](http://www.facebook.com/AQAustralianQuarterly)

ISSN 1443-3605

*AQ* (Australian Quarterly) is published by the Australian Institute of Policy and Science.

This project is supported by the Commonwealth Government through a grant-in-aid administered by the Department of Finance and Deregulation.

ACN 000 025 507

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# Law, legitimacy and activism in the Anthropocene



In the first episode of *The Handmaid's Tale*, Offred reflects on how she and her fellow Handmaids found themselves in their current predicament – living in a world where a small group of elites have rewritten the law in line with an inhumane and brutally enforced ideology.

*'When they slaughtered Congress, we didn't wake up. When they blamed terrorists, and suspended the Constitution, we didn't wake up then either. ... Nothing changes instantaneously. In a gradually heating bathtub, you'd be boiled to death before you knew it.'*

ARTICLE BY: DR CRISTY CLARK

In the real world, there's a dominant narrative that we are blindly walking down the path to catastrophic climate change. But the truth is even scarier – we are being shepherded down this path quite deliberately. We may have taken a while to wake up, but ever since we did and began to object, our governments have been making ever-increasing use of state power to silence us.

I reflected on this during a recent trip to Heron Island on the Great Barrier Reef. Heron's reef supports around 4000 turtles, while many more return to the island in spring to nest. During one afternoon snorkelling trip, I was lucky enough to see three turtles, including a small juvenile, feeding on seaweed just metres from me. As I watched, my feelings turned from wonder to horror

IMAGE: © Rob Wilson - Facebook



IMAGE: © Takver - Flickr

as it occurred to me that they are likely to see the reef die around them; gradually boiled to death.

The Great Barrier Reef is under serious threat from climate change. Already, an estimated 50 per cent of the reef – the world’s largest living organism – is dead or dying.<sup>1</sup> We came to Heron Island for a family holiday after years of promising our son we would visit the ‘reef that’s dying’. It breaks my heart to hear him call it this, but that’s nothing compared to my rising panic over the other environmental changes he and his sister will see in their lifetime.

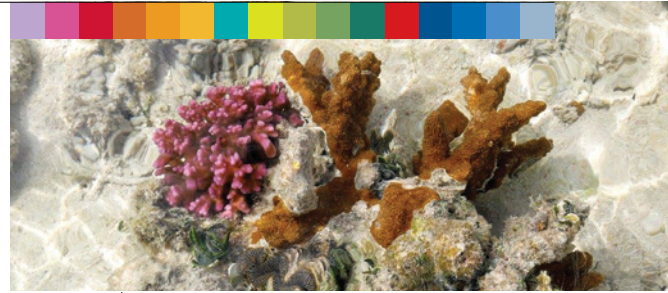
In 2013, before being defunded

**THE GOVERNMENT'S  
RESPONSE TO COMMUNITY  
RESISTANCE IS CHILLING.**

by the government, the Climate Commission warned that 80 per cent of known global fossil fuel reserves would have to stay in the ground if we hope to keep global temperature increases below 2° centigrade, and thereby potentially avoid catastrophic climate change.<sup>2</sup>

These warnings have not gone unheeded by the Australian community, with a 2013 survey finding

My feelings turned from wonder to horror as it occurred to me that they are likely to see the reef die around them; gradually boiled to death.



a majority of Australians (63 per cent) would like the government to take climate change more seriously and, particularly, to start planning to move away from coal (72 per cent).<sup>3</sup> A 2017 poll further reflected this growing concern, with 87 per cent of Australians rating climate change as a 'critical and important threat' and a majority agreeing with the statement: 'Global warming is a serious and pressing problem. We should begin taking steps now *even if this involves significant costs*.'<sup>4</sup>

Nonetheless, our government continues to approve new coalmines, including Adani's Carmichael mine, which if constructed, will be one of the largest coalmines in the world. The mining and burning of coal from the mine will generate an estimated 4.7 billion tonnes of greenhouse gas emissions.<sup>5</sup> The approval of this mine in the face of community opposition, overwhelming scientific evidence of the negative impacts, and analysis showing the mine makes little economic sense is bad enough; the government's response to community resistance is chilling.

A broad coalition of NGOs and community members object to Adani's Carmichael mine for a range of significant reasons, including: the mine's impact on the local environment; Adani's poor record on both safety and integrity; the QLD government's gift of billions of litres of precious groundwater

to Adani; the lack of consent from Traditional Owners (the Wangan and Jagalingou people); and the impact of the mine's emissions (from mining and burning the coal) on climate change – and the threat this poses to the Great Barrier Reef.<sup>6</sup>

In 2015, a local environmental NGO, the Mackay Conservation Group, was successful in having the Federal Court overturn the approval of Adani's mine after Environment Minister Greg Hunt admitted he had breached the *Environmental Protection and Biodiversity Conservation Act* ('EPBC Act') by failing to consider conservation advice provided by his own department on the impact of the proposed mine on two vulnerable species.

In the wake of the court's decision, several government Ministers took to the media to claim the litigation was part of an illegitimate coordinated strategy amongst environmental groups to use 'vigilante litigation by people... who have no legitimate interest other than to prosecute a political vendetta against development and bring massive developments... to a standstill.'<sup>7</sup> This rhetoric was echoed by Minerals Council of Australia chief executive Brendan Pearson who claimed, '[t]he inevitable dividend from continuing green sabotage is fewer jobs, lower real wages and lower living standards.'<sup>8</sup>

Within days, the government moved to pass an Amendment Bill that severely

curtailed standing under the EPBC Act. In his second reading speech, Minister Hunt explained that the Bill was explicitly designed to restrict the capacity of environmental groups to challenge major developments under Commonwealth law in order to stop them using 'green lawfare' to 'disrupt and delay key projects and infrastructure' and increase investor risk.<sup>9</sup> George Christensen MP went even further, arguing the Bill was necessary to stop 'an organised campaign by the extreme green movement to do everything they possibly can to shut down the coal industry.'<sup>10</sup> He then likened this goal to 'nothing short of treason.'

This narrative of a clash between an extremist green ideology and prosperity is not supported by the data. In discussing the Adani decision, the government and the Minerals Council made repeated mention to a loss of 10,000 jobs, despite Adani having admitted in court that the figure would be just 1,464 *direct and indirect jobs over the life of the project*.<sup>11</sup> As Adani's own economist conceded under oath, 'It's not many jobs. We can agree on that.'<sup>12</sup>

This discrepancy is also reflected in the broader estimate that the Australian mining industry is 83 per cent foreign-owned and employs just 2.3 per cent of the Australian workforce.<sup>13</sup> To put this in perspective, tourism – a key industry on the Great Barrier Reef – employs 8 per cent of the Australian workforce.<sup>14</sup>



Nor does the data support the government's claim that it needs to restrict standing to stem a flood of vexatious litigation designed to cause disruption and delay. A 2017 study found that in the period from 2000 to 2015 there were just 44 environmental citizen suits under the EPBC Act relating to just 34 actions, which account for less than 2 per cent of all decisions.<sup>15</sup> Just 23 per cent of these decisions were successful, while the majority of these were reversed or undone by subsequent executive action (as occurred just two months after the Adani decision when the Minister reapproved the Carmichael mine).<sup>16</sup>

Finally, 'only five projects over the 15½-year study period were judged to have been substantially delayed by an environmental citizen suit and only two of these were capital-intensive.'<sup>17</sup> As the authors of the study concluded: 'Contrary to popular mythology, the results suggest that the main concern about the EPBC's liberal standing rules is not a flood of citizen suit activity, but a drought.'<sup>18</sup>

So, facts aren't really the issue here. This is about rhetoric.

### A toxic war of words

The message that the government is trying to assert is that only economic interests qualify as legitimate, and any action to challenge these economic interests can be characterised as *extremist vigilantism, sabotage, legal warfare, and even treason*. This extreme rhetoric is being employed quite deliberately to silence growing community opposition to a government agenda that is centred around the economic interests of a small group of elites at the expense of the rest of us.

And it is this neoliberal agenda that represents the real extremist ideology – one that is founded not just on the principle of endless growth, but on what David Harvey so aptly terms 'accumulation by dispossession'.<sup>19</sup>

Capitalism has always accumulated through dispossession, starting with the enclosure movement,

and moving into colonialism and imperialism, but it has taken on new guises since the late 1970s and occurred through the more

technocratic means of structural adjustment, liberalisation, deregulation and privatisation. We are now witnessing its logical conclusion: the dispossession of our planet.

Neoliberal economic reforms were originally sold to us as a route to increased prosperity. We were told that through the magic of trickle-down economics a rising tide would lift all boats, and that the free market would encourage innovation, efficiency and choice. But the underbelly of this system has gradually been revealed: 35 years of rising inequality and a world in which the top 1 per cent of earners now own as much wealth as the remaining 99 per cent of us.<sup>20</sup> Not even the International Monetary Fund will defend it anymore.<sup>21</sup>

In response to growing disaffection, governments across the world have been trying to redirect our anger by pointing the finger elsewhere. Chief among these scapegoats have been immigrants (particularly asylum seekers), who have been used to distract attention from the real causes of rising unemployment, falling wages and inadequate infrastructure, but 'greenies' have also played a role in this narrative. Populist governments have also manipulated this disaffection to gain power and to push through new laws that further syphon public wealth into private hands through austerity and other measures.

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**Senator Matthew Canavan, former Minister for Industry, Innovation and Science, who posted to Facebook: ‘It has been such an honour to represent the Australian mining sector over the past year.’**

But as more and more people identify the system as the real culprit, there is an appetite for real change. Alongside the rise of populist and hard right leaders like Donald Trump and Theresa May, we saw the unexpected popularity of socialists like Bernie Sanders and Jeremy Corbyn – particularly among younger voters. Movements like Occupy and the Climate Justice Movement have been joining the dots and linking the struggles for economic and environmental justice. In Australia, we have also seen a new wave of social movements – such as Lock the Gate – that have shifted the focus of protest activity from the state to large corporations, particularly including the extractive industry.

In response to these new waves of popular resistance, the spectre of both terrorism and economic collapse is being used to stir up fear and to justify increasingly draconian laws that limit our freedom and entrench the power of the state and its corporate sponsors.<sup>22</sup> Australia is particularly vulnerable to this technique, because we lack a constitutionally entrenched Charter of Rights and do not have a strong human rights culture.

In 2016, the Human Rights Law Centre released its report, ‘Safeguarding Democracy’, which documented ‘a clear and disturbing trend of new laws and practices that are eroding ... vital foundations of Australia’s democracy.’<sup>23</sup>

These ‘efforts to avoid scrutiny, reduce transparency and limit accountability in order to expand government power, advantage political elites and advance the interests of business’<sup>24</sup> have included a toxic combination of stifling non-government organisations and environmental advocacy (through the manipulation of funding agreements and eligibility for charitable tax concessions), imposing serious criminal penalties for non-violent protest, undermining the freedom of the press, and attacking institutions that are designed to keep government power in check, such as the courts and the Australian Human Rights Commission.

These are not the actions of a government committed to democracy or freedom; these are the actions of one determined to impose its own agenda and that of its corporate sponsors. Chief among these sponsors is the mining industry, which exerts a disproportionate level of political influence in Australia through millions of dollars in electoral donations and the ‘perpetually revolving door between mining/energy companies and politicians/staffers from the major parties.’<sup>25</sup>

This influence has been used effectively for rent-seeking, with Dennis and Richardson reporting that the industry ‘pays the lowest rate of tax on profits of any industry [in Australia] ... due primarily to ... generous tax concessions.’<sup>26</sup> But it is also clear that it



IMAGE: © Gerry Machen - Flickr



those activities that have not yet been rendered unlawful – meaning that it would be impossible by definition for the law to restrict lawful protest.<sup>29</sup>

The first case under the NSW anti-protest laws took place in May this year against three members of the Mudgee District Environment Group, who were charged with ‘rendering a road useless and obstruction.’<sup>30</sup> The three community members had been peacefully protesting the expansion of Wilpinjong Coal Mine in the Upper Hunter by forming a human blockade on the road. They now face up to 7 years in prison. Meanwhile, former Greens leader, Bob Brown, is challenging the Tasmanian laws in the High Court on the grounds that they unconstitutionally breach the implied freedom of political communication.<sup>31</sup>

Other attempts to peacefully protest mining have also met with a draconian regulatory response, as Jonathan Moylan discovered in 2013 when he pranked the share market a little too successfully. On 7 January that year, Moylan issued a hoax press release on an ANZ letterhead purporting to withdraw a \$1.2 billion loan from Whitehaven’s Maules Creek mine project because the project would harm the environment and the climate.<sup>32</sup> The hoax temporarily affected Whitehaven’s share price and some investors lost money as a result. When an ABC journalist asked him about this impact, Moylan responded:

‘Well, I certainly didn’t intend any

We are on the brink of catastrophic climate change and our judicial system is more concerned with some coal mine investors losing money.

has resulted in wider regulatory capture, as recently acknowledged quite openly by Senator Matthew Canavan, former Minister for Industry, Innovation and Science, who posted to Facebook: ‘It has been such an honour to represent the Australian mining sector over the past year.’<sup>27</sup>

### If you can’t beat ‘em... move the goal posts

This regulatory capture is also clearly reflected in the legal changes discussed above. For example, the anti-protest laws introduced in Tasmania, Western Australia, NSW and Victoria (now repealed) were all explicitly designed to protect the ‘rights of business’ – particularly those of mining companies.<sup>28</sup> While the governments in each state sought to reassure the public that these new laws would ‘continue to protect the rights of lawful protest’, this neatly sidesteps the issue that the common law defines ‘lawful protest’ as

harm to shareholders in Whitehaven and, you know, for the record, I do apologise. Though I won't apologise for exposing ANZ's dirty investments in Whitehaven Coal and the process where the local community has been totally ignored ... We've written letters, we've written submissions, we've gone to planning assessment commission meetings, we've considered legal action but that avenue has been, actually, taken away from us because of the process that's been set up by the Coalition State Government ... people are going to be taking more and more risks to ensure that our rights and our environmental rights and the rights of landholders are respected and our children and grandchildren have a future.<sup>33</sup>

The Australian Securities and Investment Commission (ASIC) responded to Moylan's prank by charging him under section 1041E(1) of the *Corporations Act 2001* (NSW) – an offence that carries a penalty of up to 10 years imprisonment, a fine of \$765,000, or both. As Justice Davies recognised in his judgment, these severe penalties reflect the difficulty of detecting white collar crimes that are ordinarily undertaken for personal financial gain, whereas Moylan was motivated by sincerely held convictions around defending the environment and the community from Whitehaven's mining operations.<sup>34</sup> Nonetheless, he

This idea that law can become so illegitimate as to justify noncompliance has a long history in legal debate and is primarily founded on the principle that the legitimacy of both government and the law **depends on the consent of the governed.**

sentenced Moylan to 1 year and 8 months in prison (while releasing him immediately on a good behaviour bond) because 'the market was manipulated, vast amounts of shares were unnecessarily traded and some investors lost money'.<sup>35</sup>

We are on the brink of catastrophic climate change and our judicial system is more concerned with some coal mine investors losing money. They have little choice to be: this hierarchy of values is written into the legal system.

### The consent of the governed


Indian novelist, Amitav Ghosh, has described this phenomenon as 'the great derangement',<sup>36</sup> and legal scholars have argued that an entirely rational response is to engage in disruptive climate change activism – including civil disobedience and using the defence of necessity to challenge the lawfulness of our broken legal system.<sup>37</sup> This idea that law can become so illegitimate as to justify noncompliance has a long history in legal debate and is primarily founded on the principle that the legitimacy of both government and the law depends on the consent of the governed.<sup>38</sup>

So, what are we to do in the face of a political class that is determined to dispossess us of a liveable planet? One

option is to withdraw our consent, and then to start building an alternative system from ground up.

Indeed, this is the challenge that has been taken up across the world in protests such as Occupy Wall Street, Standing Rock, and the Bentley Blockade (in Northern NSW). In each place, community members rejected the legitimacy of our current system and jointly developed a new model for a society founded on principles of direct democracy, equality and (at least for the latter two) a deep respect for the earth.

Relevantly to the Australian context, where our current system sits at odds with the existing laws of all the Aboriginal nations who never ceded sovereignty,<sup>39</sup> the movement at Standing Rock asserted the authority of a pre-existing legal order – that of the Standing Rock Sioux Tribe, which requires them to honour their ancestors and protect their sacred sites and precious waters.<sup>40</sup> All of these movements have resonated precisely because they offer an alternative to a current system that appears to offer us no future.

The climate clock is ticking over to midnight and we are all waking up. The question is: what are we going to do about it? 



#### AUTHOR:

Dr Cristy Clark is an academic at the Southern Cross University School of Law and Justice, where she teaches human rights, and competition and consumer law. She did her PhD with the Australian Human Rights Centre at UNSW on the human right to water, with a focus on the Mazibuko water rights case in South Africa and the privatisation of Manila's water system in the Philippines. Her research continues to focus on the intersection of human rights, neoliberalism, activism and the environment.



# Battlers win when the law is fair

When the Kerrigans won their legal battle in the High Court, preventing the compulsory acquisition of the family home to expand Melbourne airport, Australians revelled in the image of the battler achieving victory against the faceless forces of big business and government.

A victory has just been achieved on Queensland's Darling Downs by the last man in Acland, Glen Beutel, which, the Court remarked, exceeded the fiction of *The Castle*.<sup>1</sup>

ARTICLE BY: **STEPHEN KEIM SC AND ALEX MCKEAN**

**A**s well as a significant win for this community, the Acland case is a real life enactment of the cherished trope of the little Aussie battler, an archetype that has been placed under significant challenge in recent years. Big mining interests and politicians have sought to recast the Kerrigans and Beutels of this world as perpetrators of 'green lawfare' – an alleged abuse of the courts to delay projects.

In Queensland, despite there being no ruling or evidence of this feared abuse, former Newman LNP Mines Minister, Andrew Cripps sought to slay this imaginary demon in September

2014 by moving midnight amendments to strip away the rights of landholders to object to large mining projects. Readers of *The Australian* may recall our article on that high point in the anti-democratic abuse of parliamentary process on 25 September 2014 (Clouds over sunshine state).<sup>2</sup>

As part of the humiliating first term defeat of the QLD LNP, the ALP was elected on a platform of restoring these community objection rights. When Labor Mines Minister, Anthony Lynham, implemented that election promise on 17 July 2015<sup>3</sup> the LNP, in opposition, continued to run a line that objection rights would enable 'anti-everything groups to frustrate' economic development.

Those industry myths were obliterated on 31 May this year when, in the first hearing triggered by those restored

It is within the Minister's discretion to ignore the recommendation that Stage 3 not go ahead and, thereby, overturn the carefully considered judgement of the neutral umpire.

objection rights, the Queensland Land Court upheld the concerns of local objectors and recommended rejection of the New Acland Stage 3 mining project on the Darling Downs.

In *New Acland Coal Pty Ltd v Ashman & Ors* (No. 4) [2017] QLC 24,<sup>4</sup> the Land Court agreed with dozens of locals who, together with Mr Beutel, objected to the expansion of the mine on the grounds of risks to groundwater and prime agricultural land, along with unacceptable levels of noise and dust.

The hearing was by far the longest in the 120-year-history of the Land Court, with 99 days of hearings and evidence from 28 expert witnesses. The result of this was that the proposal was subjected to unprecedented scrutiny.

Perhaps most telling was the finding that the principle of intergenerational equity would be offended, 'with the potential for groundwater impacts to adversely affect landholders near the mine for hundreds of years to come'.

During the hearing, the applicant miner and their lobbyists trotted out

the now tired line that it was battling 'green lawfare'<sup>5</sup> and 'activists'<sup>6</sup>.

The Court tackled that assertion head-on, stating concern about the impact of mining on groundwater

essential for carrying on agriculture did not make objectors 'anti-coal/anti-development activists'. Instead, the Court characterised them as 'landholders holding real concerns for their ability to continue their agricultural pursuits on

their properties'.

The crucial issue now for those families who have won a momentous victory in the Land Court, in their battle to protect farming land for future generations, is whether Minister Lynham will respect the recommendation of the Land Court. It is within the Minister's discretion to ignore the

recommendation that Stage 3 not go ahead and, thereby, overturn the carefully considered judgement of the neutral umpire.

Minister Lynham will have to weigh the continuation of generations of agricultural jobs against the fate of the workers at the mine that may have, perhaps, gained a dozen more years employment from the expansion. The Minister might take some note of the Land Court decision, which acknowledged the import of this factor and went on to say that the 'underlying cause for any such job losses falls squarely at the feet' of New Acland Coal.

If Minister Lynham were now to render the decision of the Land Court nugatory, it would create a dangerous precedent. It would further diminish the ability of the individual to stand up against projects which could have impacts for many generations to come.

It would trample on Labor's own heritage built by its decision to restore objection rights. It would reveal Labor's democratic virtues as insincere symbolism. It would have no place in any pool room. [AQ](#)

The LNP, in opposition, continued to run a line that objection rights would enable 'anti-everything groups to frustrate' economic development.

**AUTHORS:**  
**Stephen Keim SC** is a prominent Brisbane barrister and *The Weekend Australian's* Australian of the Year 2007. He specialises in administrative law, environmental and planning law and appeals.  
**Alex McKean** is a Sunshine Coast barrister. Alex studied at QUT and was awarded a Bachelor of Laws with Honours and a Bachelor of Arts, majoring in human rights and ethics.

# Book Review:

## *Watching Out* by Julian Burnside

REVIEW BY: **KARA SMITH**

**W**ith the exception of Lawrence Hammill – affectionately played by Bud Tingwell in every Australian’s favourite film, *The Castle* (1997) – few practitioners of our legal system are as well known or admired in our popular culture as Julian Burnside QC. A noted barrister, human rights advocate and outspoken critic of successive governments’ policy of indefinite detention of refugees, Burnside is well placed to offer an overview of our fundamental legal principles in his latest book, *Watching Out* (Scribe, 2017).

Like Malcolm Gladwell’s explorations of popular sociology, Burnside digs into the past, present and future of justice (and its frequent subversion) through short essays, autobiographical

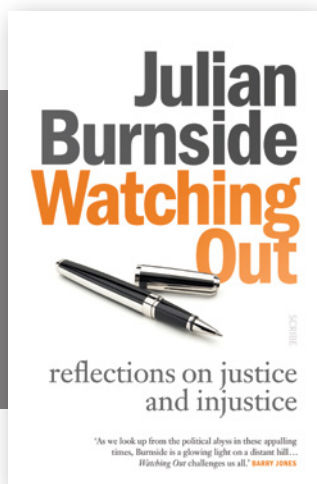
anecdotes, and evocative case studies. His passion for the subject matter and the succinct yet conversational tone make reading *Watching Out* akin to sharing dinner with an older and much wiser friend.

Several extended case studies centre the conversation on those topics closest to Burnside’s liberal heart. From reasonable reparations for Australia’s stolen generations, to the rational case for voluntary euthanasia, Burnside outlines compelling arguments backed by points of law and clear judicial precedent.

At a time when Australia’s immigration minister is calling on lawyers to end their “social justice agenda” of offering pro bono representation to refugees, a book like *Watching Out* is especially vital. In reflecting upon the

foundational principles of our legal system – the presumption of innocence and the right to representation chief among them – Burnside reminds us that seemingly small injustices are often “a warning of worse things to come.”

Like his fictional counterpart in *The Castle*, Burnside uses his legal acumen to appeal to Australians’ “strong instinct for giving people a fair go”. Unjust laws are not a modern phenomenon, and human rights cannot be arbitrarily suspended; from Sophocles to the Magna Carta to the indefinite detention of people seeking asylum, we have always wrestled with concepts of what is right and fair. *Watching Out* is a helpful primer for those interested in preserving and defending these institutions. **AQ**



**WATCHING OUT**  
(SCRIBE) IS AVAILABLE  
AS AN E-BOOK OR  
PAPERBACK FROM  
**SCRIBEPUBLICATIONS.COM.AU**  
AND BOOKSTORES.

Kara Smith writes about animals, womanhood, social justice and inclusion from her home in Adelaide.

Find more book recommendations  
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# Under-mining public trust

## The rhetoric of lawfare

Access to justice is an important contributor to the trust citizens have in their governments.<sup>1</sup> And like most OECD countries, levels of trust in Australia's national government have declined since 2007.<sup>2</sup> In a modern democracy such as

Australia the separation of powers enables the judiciary to be a check and balance on government decisions, to ensure they stay within the bounds of the laws passed by parliament. This ability to challenge government decisions before independent and impartial arbiters enhances public trust and confidence in the system overall.

Yet the 'lawfare' rhetoric being utilised by industry lobbyists is a dangerous attempt to erode public access to the courts, which further risks undermining public trust in government decisions.

ARTICLE BY: **SEAN RYAN**

Certainly, there is a risk that some may seek to abuse the judicial system. In the context of planning and environmental law, for example, commercial competitors may seek to initiate legal proceedings without legal merit to delay their competitor's project and gain some collateral commercial advantage.

It is these sorts of abuses – frivolous and vexatious proceedings brought merely to delay and obstruct – that the term 'lawfare' would, on its face, appear to connote.

Of course, there are many safeguards in place in the legal system to prevent

IMAGE: © Lock the Gate Alliance-Flickr



IMAGE: © Dept of the Prime Minister and Cabinet

## MAINTAINING A HEALTHY SYSTEM

The right to challenge the merits of a government decision in court:

- a) safeguards against corruption;<sup>5</sup>
- b) ensures greater transparency and accountability within the decision-making process;<sup>6</sup>
- c) 'facilitates the rigorous analysis that is fundamental to the making of sound decisions';<sup>7</sup>
- d) 'gives a level of confidence to members of the public that the decision has been reached through a process which has openly examined and scrutinised all of the available evidence - whether or not the result is universally accepted';<sup>8</sup>
- e) ensures the process of environmental planning and assessment is effective;<sup>9</sup>
- f) allows multiple views and concerns to be expressed and 'provide[s] a forum where collective rights and concerns can be weighed against the rights and concerns of the individual';<sup>10</sup>
- g) recognises that third parties can bring detailed local or specialist knowledge, not necessarily held by the designated decision maker;<sup>11</sup>
- h) allows for the development of environmental jurisprudence, clarifying the meaning of legislation;<sup>12</sup>
- i) enhances the quality of decision-making, including the quality of reasons for decisions;<sup>13</sup> and
- j) focuses attention on the accuracy and quality of policy documents, guidelines and legislative instruments and highlight problems that should be addressed by law and policy reform.<sup>14</sup>

such abuse, including:

1. the courts' powers to strike out frivolous and vexatious proceedings, and award costs against frivolous and vexatious litigants;
2. in Queensland, the Government's power under the *Vexatious Proceedings Act 2005* (Qld) to apply to a court for a vexatious proceedings order to prohibit a person from continuing or instituting proceedings of a particular type; and
3. the paramount duty on legal practitioners to the court and the administration of justice.

Unfortunately, the use of the term 'lawfare' by industry lobbyists and politicians appears not to be for commercial competitors or the adequacy of existing safeguards, but rather reserved for landholders and communities that have the temerity to access their rights to a healthy environment through the court system.<sup>3</sup> The solution advocated to this 'problem' is the removal of community objection and appeal rights, which risks a far more corrosive effect on the system.

To be clear, community objection rights are the rights of you, me and those around us, to challenge decisions which affect our shared environment - our clean air and water, our safe climate and our native wildlife, and resources that our government holds in trust for our common benefit.

Not only are objection rights an



The use of the term ‘lawfare’ by industry lobbyists and politicians appears not to be for commercial competitors or the adequacy of existing safeguards, but rather reserved for landholders and communities that have the temerity to **access their rights to a healthy environment through the court system.**

IMAGE: © Phil Roeder-Flickr

expression of individual rights to be involved in decisions which affect us, community objection rights also improve government decision making and public trust in government.<sup>4</sup>

The benefits of having the ability to challenge a development in the courts are plentiful. In essence, they allow the community to hold government and industry to account, as well as have the costs and benefits of major projects that impact us, scrutinised by an independent umpire. The mere existence of the right to challenge decisions before an independent arbiter gives the public confidence that the decision-making process has integrity rather than taking place behind closed doors.

### Spurious litigation or spurious accusation?

So let’s ask the question, have these valuable community rights been so abused by frivolous and vexatious litigation as to warrant their removal, as premised by the ‘lawfare’ lobby?

The most common accusation of ‘lawfare’ is in respect to the communities challenging coal mines in Queensland, such as the Alpha and Carmichael coal mines in the Galilee Basin or the New Acland coal mine on the Darling Downs.

The challenges in the Federal Court under the *Environmental Protection Biodiversity Conservation Act 1999* (Cth),

and proposals to amend section 487, have been well considered elsewhere.<sup>15</sup>

The other significant forum for these community challenges, and accusations of ‘lawfare’, has been the Queensland Land Court under the *Environmental Protection Act 1994* (Qld).

However there is not a single instance where a community objector to the Land Court has been either:

- a) found by the Land Court to be ‘frivolous or vexatious’; or
- b) the subject of an order under the *Vexatious Proceedings Act 2005*.

It appears the only objector found to be vexatious in the Land Court was a commercial competitor.<sup>16</sup>

In September 2014 the report by the Queensland Agriculture, Resources and Environment Parliamentary Committee on the *Mineral and Energy Resources (Common Provisions) Bill 2014*, stated that:<sup>17</sup>

“The Land Court further confirmed that, in its experience, there was no evidence to suggest that the courts [sic] processes were being used to delay project approvals:

In the court’s experience, there have not really been a lot of stalling tactics. If there is, it generally comes from both sides. It is not just landowners or objectors who generally

are not ready to proceed; it is also often the mining companies that are not ready.”

This position was more recently supported by the Queensland Infrastructure, Planning and Natural Resources Parliamentary Committee, when considering the *Mineral and Other Legislation Amendment Bill 2016*, who noted in their committee report that:

“the majority of the committee notes that only a small number of appeals against mining leases are lodged in the Land Court each year by environmental groups, and the Minister is not bound by a recommendation of the Court.

*Despite mining stakeholders’ claims that frivolous or vexatious cases are extensively used by landholders and other groups, the majority of the committee was unable to find evidence to support this view.*”<sup>18</sup>

(Emphasis added)



Far from being found to be frivolous and vexatious, the concerns of the landholders were substantiated to the degree **the Court issued its first ever recommendation of outright refusal of a mine.**



IMAGE: © Richard Ling-Flicker

These findings are a resounding ‘No’ to the question of whether community objections brought to the Land Court in mining matters have been frivolous or vexatious.

On the contrary, the Land Court has on occasion found an environmental objector to be acting in the public interest, motivated solely by environmental or community concerns and clarifying important principles of law.<sup>19</sup>

A timely example is the recent decision in *New Acland Coal Pty Ltd v Ashman & Ors and Chief Executive, Department of Environment and Heritage Protection (No. 4)* [2017] QLC 24 (currently under judicial review). The objection by local landholders was described by those in industry as ‘green lawfare’,<sup>20</sup> yet far from being found to be frivolous and vexatious, the concerns of the landholders were substantiated to the degree the Court issued its first ever recommendation of outright refusal of a mine following a contested hearing.

In particular the Land Court found:

It is beyond doubt that the mining proposed by NAC [New Acland Coal] in revised Stage 3 will cause disruptions to aquifers in the Acland region which will have an impact on nearby landholders, even though the state of the groundwater evidence is such, and the modelling in my view so imprecise, that the actual impact likely to occur to those



nearby landholders cannot at this time be accurately forecast. I have indicated that I am not satisfied with the groundwater modelling undertaken by NAC to date. I have also indicated that I am not satisfied that the operations proposed by NAC meet all the objectors[sic] and principles of intergenerational equity. Further, I am not satisfied that the noise limits proposed by the CG [Coordinator General] for evening and night time operations of the revised Stage 3 are appropriate, causing me to recommend that the MLA [Mining Lease Area] not be granted as I am unable to recommended conditions inconsistent with the CG conditions. <sup>21</sup>

In relation to the characterisation of objectors, the Land Court findings included the following:

Again, it is hardly a stretch to understand why a neighbouring property, reliant on bore water such as is the case for Mr Wieck for his multi-million dollar automated dairying operation, would be concerned. It is also hardly surprising that those concerns would cause Mr Wieck and other local landholders to lodge objections. That however does not necessarily make them anti-coal/anti-development activists. In simple terms, I consider it more

appropriate to collectively refer to the surrounding landholder objectors and members OCAA as landholders holding real concerns for their ability to continue their agricultural pursuits on their properties, both in the short term and from an intergenerational perspective, should revised Stage 3 proceed. <sup>22</sup>

The mining company has sought judicial review of the Land Court decision, with the review decision not expected until 2018.

Regardless of the outcome of the review, the fact remains that community objection rights have not been abused. They have been used for their intended purpose of allowing community to hold government and industry to account by a careful testing of the evidence of the costs and benefits of projects.

The ‘lawfare’ rhetoric is in truth a more fundamental attack on members of the community exercising their legal rights to protect their families, homes and a clean and healthy environment for all of us. If these community rights are removed, it would only serve to further undermine public trust and confidence in government decisions at a time when governments sorely need to regain this trust. <sup>ACQ</sup>

The ‘lawfare’ rhetoric is in truth a more fundamental attack on members of the community exercising their legal rights to protect their families, homes and a clean and healthy environment for all of us.



**AUTHOR:**

Sean Ryan, BSc, LLB, LLM, has worked in government, consultancy and private law firms for clients in the public, private and community sector. For the last 12 years he has been a litigator on planning and environment matters including litigating climate change for the last 6 years for community groups at community legal centre, Environmental Defenders Office Qld.

# BETWEEN THE CRACKS

Science and SciComm with **ANDY MATTER**

## 2017 in Science: The most important science story of the year?

Every year, 2.5 million scientific papers are published; each one incrementally adding to the pool of human knowledge. Good luck wrapping your head around that. For scientists, even keeping up to date with the most important findings in their field is a massive pain in the arse.

ARTICLE BY: **ANDREW STAPLETON**

**S**o we can hardly blame non-scientists for getting a little bit confused when this mountain of data is cherry-picked, misrepresented, or drips intermittently across their newsfeed.

Science has the potential to provide solutions to the world's most pressing problems: Will the gene editing tool Crispr/Cas9 cure or kill us? Why should I care about dark matter? Is global warming inevitable? And a question that personally keeps me up at night: Why is Alan Duffy always on my TV?

The truth is out there but sometimes the facts can get lost in this tsunami of science.

To ease your existential worry that you'll never be the 'suppository of all wisdom', I have collated the thoughts of some of the world's greatest minds on

the year's most important discoveries in their fields, so you don't have to.

It's OK, you can thank me later.

### A Climatologist – Dr Linden Ashcroft



Earlier this year, CSIRO sacked 350 climate scientists. A move that was described as "political vandalism" by scientists.<sup>1</sup>

Nonetheless, science stops for no man, including Malcolm Turnbull, and according to Dr Linden

Ashcroft, from Australia's own Bureau of Meteorology, there's one publication that stands head and shoulders above the rest.

"One publication that has really stuck with me this year is a study by Hawkins et al. from the *Bulletin of the American Meteorological Society* about defining the 'pre-industrial' period," said Ashcroft.<sup>2</sup>

IMAGE: © Robert Friedrich Stieler (1847–1908)

Earlier this year, CSIRO sacked 350 climate scientists. A move that was described as “political vandalism” by scientists.

“This paper is significant in my opinion because it uses a range of sources and methods to come to a conclusion that is useful scientifically, and also relevant for global climate change decision-making.”

Policy targets and changes in the climate are often measured in relation to a ‘pre-climate change’ time. That is, when the climate is thought to only be influenced by natural factors.

The problem is that there is no clear definition on what ‘pre-industrial’ means – different periods are used in different studies. For example, the Intergovernmental Panel on Climate Change (IPCC) uses 1850-1900 as its preindustrial climate date range. This new study concludes that the best time span to use is 1720 – 1800.

It may seem like semantics, especially when you consider that there are very few instrumental weather records (particularly in the Southern Hemisphere), but it means that there are lots of sources of uncertainty when comparing today’s climate with this new pre-industrial time.

Having a new definition of the pre-industrial period has implications

for climate policies, for the timing of different temperature thresholds, and for our understanding of global climate sensitivity.

Given that climate science moves so quickly how can you be assured that all your climate science information is up to date? Dr Ashcroft has the secret:

“...a good source of accurate climate information is Climate Feedback: <https://climatefeedback.org/>. Climate Feedback has been developed by the University of California Merced’s Centre for Climate Communication, and is a platform where climate scientists from across the globe can review news stories about climate”.

“The scientists use an annotation plug-in on their browser to comment on various sections of a climate-related

news article, and the article is given a credibility score from -2 (very low) to +2 (very high). As a reader, you can see all of that, which adds a new critical layer to your climate change news.”

And what does Dr Ashcroft want to see in the coming year?

“One area where we really need more information is the Southern Hemisphere, particularly in the high latitudes around Antarctica. There’s still so much we don’t know about how and when Antarctica will respond to a warming climate. I hope that in the next 12 months more historical records from ships and expeditions can be found for the high southern latitudes, to shed some more light on what’s going on down there.”



**CHRISTMAS COMPETITION**  
**#Science4xmas**

What was your favourite science story of the year? Share it on Facebook or Twitter for a chance to win \$100 of goodies from Andy Matter’s Red Bubble store!

**GETTING IN THE DRAW IS EASY:**

- ★ Just like the AQ Facebook page (@AQAustralianQuarterly) or follow AQ on Twitter (@AQjournal) if you haven’t already.
- ★ Share your favourite science story with the hashtags #Science4Xmas #AQjournal
- ★ You’re in the draw!

See the AQ website for more information  
[www.aips.net.au/aq-magazine/science4xmas/](http://www.aips.net.au/aq-magazine/science4xmas/)

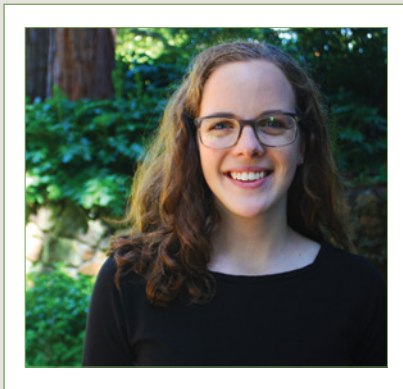
Entries close  
**15 NOV 2017!**

# BETWEEN THE CRACKS

Science and SciComm with **ANDY MATTER**

A team of scientists used gene-editing to eliminate HIV DNA from the genomes of three different animal models to ensure that replication of the virus was completely shut down.

An infectious disease scientist – Allison Terbush



Allison Terbush is a 5<sup>th</sup> year PhD student at Coscoy Lab at University of California, Berkeley.

The Coscoy Lab investigates the interactions between herpesviruses and the immune response of their host and allows them to gain insights into the molecular mechanisms of viral pathogenesis, immunology as well as cell biology and cancer.

Allison was taken aback by one paper in particular.

“One of the most significant papers of the year so far is certainly *In Vivo Excision of HIV-1 Provirus by saCas9 and Multiplex Single-Guide RNAs in Animal Models*.<sup>3</sup>”

In this research, a team of scientists used gene-editing to eliminate HIV DNA from the genomes of three different animal models to ensure that replication of the virus was completely shut down.

The technique was demonstrated in animals with both acute and latent HIV, and was successful in human immune cells transplanted into mice. It was described as a “significant step” towards human clinical trials.

CRISPR-Cas9 is a gene editing technology and, since its invention in 2012, it has been put to good use by scientists combating HIV infection. The paper builds on previous work from the research team and improves the efficiency of cleaving HIV proviruses to mitigate the risk of viral escape by targeting several sites at once.

What did Allison think of how well media teams covered the science?

“In my opinion, the coverage was more sensational from bigger, broader news outlets. Many of the stories

misreported that mice had been “cured,” or that the virus had been “completely obliterated” from the animals.”

“While it might make for more clicks, exaggerating results for the non-technical audience like this is reckless and lazy. Scientific news outlets did a much better job handling this story,” she added.

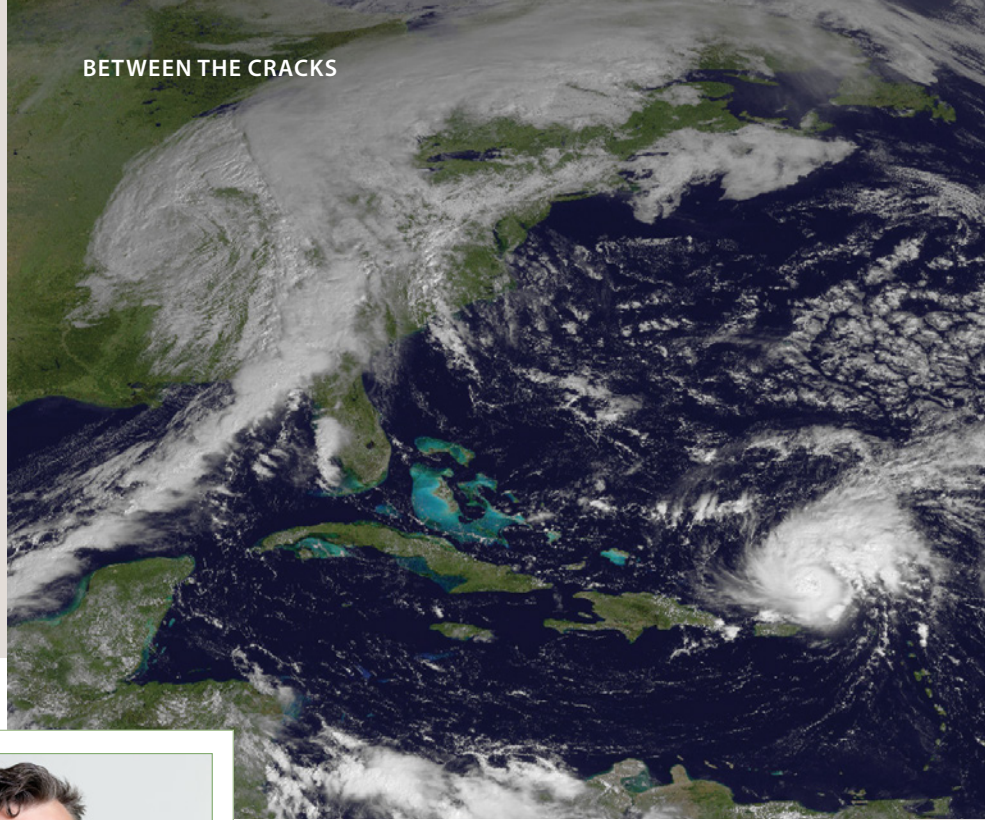
And what does Alison hope for the coming year?

“For next year, I’d like to see more follow-ups to this research from other groups and in primate models. I’m also keeping an eye out for new research on the Zika-microcephaly connection and multidrug resistant TB.”

Unfortunately, it’s far from plain sailing from here; research published last year found that HIV could outmanoeuvre certain CRISPR/Cas9 techniques - so lots more verification and replication is needed before we know if the strategy can hold up long-term.

“The technology still has a long, long, long way to go but this study is an important proof of principle for this type of treatment,” said Allison.

IMAGE: © NOAA - Flickr



## An Astrophysicist – Prof Geraint Lewis

At the beginning of time, the universe was compressed into a single point and, about 13.8 billion years ago, that tiny speck of everything exploded and formed the universe we live into today.

According to Dr Lewis, from the University of Sydney, one of the most significant things to happen in 2017 is the unprecedented accuracy that we've been able to measure the Hubble constant – a value of how fast the universe is expanding.

"We are now in the age of 'precision cosmology' and this 'local' measure of the expansion of the universe is significantly different to the global measurement by Planck," Lewis said.

An international team of scientists lead by Johns Hopkins University, Baltimore, found that the universe is expanding five to nine times faster than expected and measured it to within a



2.4 percent accuracy.

The team made their conclusions after measuring about 2,400 Cepheid stars in 19

galaxies and, comparing the observed brightness of both types of stars, they accurately measured their true brightness.

The improved Hubble constant value is 73.2 kilometres per second per megaparsec - a megaparsec equals 3.26 million light-years. The new value means the distance between cosmic objects will double in another 9.8 billion years.

Although this is some big news, we need to be careful when reporting the results since the refined calibration does not quite match the expansion rate predicted for the universe from its trajectory

seen shortly after the Big Bang.

"This is quite possibly a miscalibration somewhere in the analysis – but it could be indicating something we don't understand about cosmology – that we are living in a void, or that dark energy has changed its spots, or possibly any number of speculative ideas," said Lewis.

Uncertainty is an important concept in cosmology and, according to Lewis "some of the most hacks-of-science stories make me roll my eyes with a misrepresentation of the results etc. Stories like [recent reports on Dark Matter] don't help as they do not differentiate robust science from rubbery speculation," says Lewis.

And what does Dr Lewis hope from his cosmic colleagues in the future?

"Continually better accuracy in the observations – I really hope the difference is real as it will point to something interesting, although we will probably have to wade through a mountain of speculative bull dust to get to the answer!"

**We are now in the age of 'precision cosmology'** and this 'local' measure of the expansion of the universe is significantly different to the global measurement by Planck.

# BETWEEN THE CRACKS

Science and SciComm with **ANDY MATTER**

## The Big Science Awards

### The AQ Editor Pick for Most Exciting News of 2017:

The creation of 'Liquid Light' at room temperature – the 5th state of matter – written up by our very own Andrew Stapleton for ScienceAlert

[www.sciencealert.com/fifth-state-of-matter-liquid-light](http://www.sciencealert.com/fifth-state-of-matter-liquid-light)

Also keep your eyes on the 27th annual Ig Nobel Awards for science 'achievements that first make people laugh, and then make them think.' Sept 14th 2017.

[www.improbable.com](http://www.improbable.com)

And then the big guns with the Nobel Prizes starting on the 2nd Oct

<https://www.nobelprize.org/>

## The top science news item was a study that a bald man conducted to **make himself feel better.**

A bunch of people you've never met.

We've heard from the experts, so what do the general public have to say on all things science?

I used an online comparison tool to look at all the biggest science stories from 2017 and ranked them in order of shares on social media.

There's some good news and there's some bad news...

Ranking at number one, with a total of 925 K shares across twitter, Facebook and LinkedIn is a study about bald men, conducted by a bald man.

Scientist Albert E. Mannes conducted a study with 59 subjects to find out how people reacted to men with shaved heads by showing them a series of pictures.

The study involved showing each

photo to the participants twice, once of a man with a full head of hair and once of the same man with his hair shaved off. The subjects reported that they thought the bald men were more dominant, bigger and stronger.

There was an interesting caveat to this conclusion: The men had to be completely bald. Bald patches or pattern baldness was seen as less attractive and weaker.

After a moment of despair upon realising that the top science news item was a study that a bald man conducted to make himself feel better, there was a glimmer of hope – like the sun reflecting of a newly polished scalp – that some important science messages are making it on to

people's devices.

Hidden in the top five stories for the year was one about climate change







**AUTHOR:**

Andrew Stapleton is a scientist and science communicator based in Adelaide. He is a presenter and producer of the popular podcast *Publish, Perish or Podcast*, posts weekly science articles on his website and has written for *Australasian Science*, *Cosmos Magazine* and *RiAus*.

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which highlighted the biggest threats humans would face – unbreathable air, climate plagues, perpetual war, permanent economic collapse, poisoned oceans and heat death.<sup>4</sup>

You know, all the best speed-dating conversation starters.

As for me, I'm a sucker for weird science that involves bodily fluids and my favourite news story for the year reveals exactly how many people think

they can get away with a little pee in the pool – apparently, it's loads of you.

Researchers created a new method and estimated that swimmers released more than 75 litres of urine in a pool

one-third the size of an Olympic-size pool.<sup>5</sup>

Sometimes there are things you really don't need to find out – thanks science – I guess. [AQ](#)

# Share your favourite 2017 Science Story to WIN!

1. Like AQ: Australian Quarterly on Facebook or follow us on Twitter.
2. Share your favourite science story of 2017 with the hashtags [#Science4Xmas](#) [#AQjournal](#)
3. Automatically go in the draw to win \$100 to spend on Andy Matter's Redbubble store

FOR MORE INFO [www.aips.net.au/aq-magazine/science4xmas](http://www.aips.net.au/aq-magazine/science4xmas)





IMAGE: © Alex Watson-Flickr

# The Lost City: Homage to Aleppo

One day we'll go back to Aleppo, you said.  
You don't mean it literally.  
Darling, four years ago we shouted for change  
And now we are citizens of border towns.  
We go from Turkey, to Lebanon, to Egypt,  
But we don't find Aleppo ...  
And I don't write poetry any more.

From *'After Aleppo'*, Jehan Bseiso, 14.1.15

There is no greater nor more harrowing drama on our watch,  
than the slow death of the great city of Aleppo.

Jan Egeland, Norwegian Refugee Council, 2015

ARTICLE BY: **CAROLINE GRAHAM**

In the hills around Aleppo the wild grasses that *homo sapiens* first cultivated twelve millennia ago still bear seed; except now they're springing up amongst the rubble of a fallen city. According to Francesca Borri, a journalist who lived through two years of relentless bombardment: 'Aleppo is nothing but rubble.'<sup>1</sup>

One of the earliest of human settlements on the River Queiq, the city we know as Aleppo expanded into

Aleppo is nothing but rubble. **LEFT:** Aleppo before

a major trading centre thanks to its commanding position on the old Silk Road. In Arabic, its name is Halab, meaning 'milk' – here, so legend goes, the patriarch Abraham gave milk from his cow to needy locals. Remains of a structure dating back to 3000 BCE, possibly a temple for the storm god Hadad, have been unearthed on Aleppo's Citadel Hill, older than other ruins dating back to the era of Greek occupation, following Alexander's conquest in 333 BCE.

Aleppo's ancient monuments have been heritage listed: the old city became a UNESCO World Heritage Site in 1986. But now, after the years of war and aerial bombing, with no heed taken of UNESCO's warnings, most have been destroyed.

Thousands of ordinary homes are also lost: unit blocks, hostels and boarding houses, and traditional dwellings which typified the 'elegance of a Syrian home, the carpets, the rose-filled courtyards and pastel painted tiles, the wrought iron lamps – you have to have seen all that, of which nothing remains but photographs on cell phones ... to understand the hopelessness of this regression to the Stone Age.'<sup>2</sup>

No words of sympathy can be adequate; there is no earthly way to console those who mourn Aleppo and

its people. But there should at least be a pause to honour the lost city and its splendid past; to celebrate its glory days and remember its character. This brief epitaph can't do justice to a history which includes occupation over the millennia by Hittites, Assyrians, Persians, Greeks, Romans, Armenians, Byzantines, Arabs and Turks, but it might suggest the value of what's lost; losses both spiritual and material.

Following the Arab conquest in 637, the city's golden age of creativity and culture flowered from 944 AD, when Aleppo became the chosen capital of an independent emirate ruled by the charismatic Arab prince Sayf al-Dawla. He lavished attention on the city, expanding the palatial dwellings and bathhouses on Citadel Hill, and building aqueducts and fortifications. When Sayf al-Dawla was not warring with Byzantine armies he presided over a brilliant court at his limestone castle, attracting an A-list of philosophers,

astronomers, historians, poets, musicians and theologians. In his time Aleppo 'could certainly have held its own with any court in Renaissance Italy.'<sup>3</sup>

In 1896 a British antiquarian described Citadel Hill as 'by far the most interesting and remarkable place in town.' Gertrude Bell, the British administrator in Iraq, visiting in 1909, commented that 'Aleppo wears a towered crown ... the castle is the best example of 12th century Arab workmanship in all Syria.'

The greatest of all classical Arabic poets, known as al-Mutanabbi, was a court favourite and his panegyrics to Sayf al-Dawla helped spread the influence of his prince far and wide. They rode into battle together, but after a falling out the poet penned the memorable epigram: 'When the lion bares his teeth do not imagine / that the lion is showing you a smile.'

Al Ma-arii, another great classical

**RIGHT:** Aleppo now



Travellers were amazed at the size and the lavish decorations of some of these establishments. The grandest could seat hundreds of patrons, playing chess or backgammon and listening to music, poetry and song.

poet, was born near Aleppo in 973, and studied there. He rejected all religious dogma and tales of divine revelation, proclaiming reason to be the only worthwhile moral guide, thus pre-empting Europe's Enlightenment by several centuries. He denounced religion as 'a fable invented by the ancients.' He was a pacifist, and a vegan (cows produce milk for their babies, he said, not for humans to exploit), and he espoused social justice: extraordinarily progressive for this or any era. He wrote:

*'Faith, disbelief, rumours spread,  
Koran, Torah, Gospels prescribe  
their laws*

*Lies in every generation.*

*Will a generation distinguish itself  
one day*

*By pursuing the truth?*

*The inhabitants of this earth are of  
two kinds –*

*One has brains but no religion*

*The other has religion but no brains.<sup>4</sup>*

In 2013 al-Mari's outspoken atheism was punished in absentia when jihadis from the Jabhat al-Nusra Front spitefully beheaded his statue.

Aleppo, known as the cradle of Arab music<sup>5</sup>, produced great musicians as well as poets and philosophers. They performed at the city's many cafes, after the coffee drinking fashion spread from Yemen in the 16th century. Travellers were amazed at the size and the lavish decorations of some of these establishments. The grandest could seat hundreds of patrons, playing chess or backgammon and listening to music, poetry and song. Dancers and puppet shows were featured (the latter were shut down when deemed too bawdy).<sup>6</sup> The city also boasted around fifty bathhouses, some very elegant, and open to all ranks; where friends could meet and spend half the day gossiping, having massages, and bathing.

Aleppo had its share of political activists from early times, with lively debates in the mosques, the souk, bathhouses and private homes. One was the remarkable Ibn al-Khashab, a 12th century *qadi* (religious judge) from an eminent family. In his time, Aleppo's ruler had bowed to the Crusaders' insulting demand for a Christian cross to be placed on the minaret of Aleppo's Great Mosque. A furious al-Khashab led a delegation of dignitaries to arouse the Caliph in Baghdad, and after a rowdy protest the cross was removed.



## THE BAZAARS OF ALEPPO ARE AN UNENDING JOY

Al-Khashab went on to lead an army against the Crusaders in 1119. It wasn't customary for a cleric to take up arms, and he was mocked by the soldiers: 'Are we to be led into battle by someone wearing a turban?' But the Aleppans won, the Crusaders' leader Count Roger of Antioch was killed, and the city celebrated for days.

The ruler, anticipating a revenge attack, hastily left for the countryside and so Al-Khashab once again organised the resistance, sealing an alliance with the nearby city of Mosul, causing the Crusaders to back off. Unfortunately al-Khashab was later murdered by the notorious Assassins... but that's another story.

As trade on the Silk Road expanded, an influx of merchants and consuls took up residence, and Aleppo was famous for its markets. The Souk al-Medina, built in the 14th century, was undercover, stretching for kilometres in all directions. The English archaeologist Leonard Woolley, visiting often in 1912-14, wrote:

*'The bazaars of Aleppo are an unending joy ... pass under a massive archway with iron-studded doors and you will find yourself in a maze of cobbled lanes bordered with booths and roofed with vaults of stone ... flashes of red and green and gold as the broken sunbeams chance on piles of silk or carpets,*

*fresh garden stuff, hammered copperware or jars of spices ... gold and silver trinkets gleam with flashes caught from the live coals of the goldsmith's brazier ... crates of oranges, grapes and melons and apricots ... cook-shops where the counter is spread with sesame-cakes steeped in honey, and cavernous restaurants where many-coloured sherbets are served to you in tumblers filled with snow ... You can wander literally for miles through these vaulted alleys.'*<sup>7</sup>

For centuries Aleppo was also the main market for the Arabian horses from the desert, so prized in Europe. Horse traders could recite a horse's pedigree, stretching back hundreds of years: 'Proofs of nobility that many nobles in France could not produce,' as a French consul in Aleppo remarked. Allah, it was said, had created the 'drinkers of the wind' as one of the glories of the earth. Bred for speed, stamina and intelligence by

the Bedouin, who cherished the 'asil' or purebred, and forbade cross-breeding, all Arabian horses were said to be descended from the five special mares – 'al-Khamsa' – favoured by the Prophet Mohammed.

In 1704 the English consul in Aleppo, Thomas Darley, sent a fine stallion, the 'Darley Arabian' to his brother in England, to become one of the three Arabian 'foundation sires' of all thoroughbred horses racing today. Darley exchanged the stallion for a shipment of rifles: possibly the first arms deal in the Middle East. In 2003 the Emir of Dubai set up two of his

global network of horse studs in Australia, named the Darley Studs in honour of the famous stallion.<sup>8</sup>

Australian troops occupied Aleppo briefly in both World Wars, and these Arabian horses were admired by the horsemen from the bush.

Towards the end of WW1 Australian General Harry Chauvel, with his 2500 Light Horsemen, moved his HQ to Aleppo to drive the Turks back over the border. On the

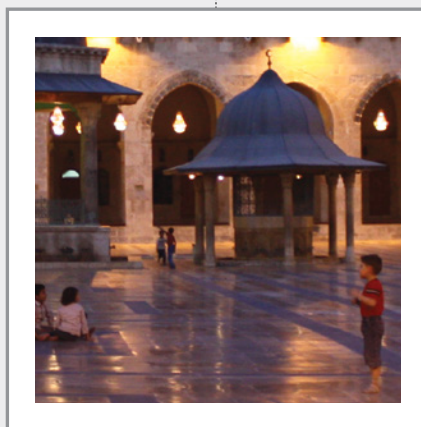


IMAGE: © Arian Zwegers-Flickr



## Aleppo's vitality was due to a combination of diversity, tolerance and affluence.

ride to Aleppo they shot dead an 'Arab sheik' who was riding 'a most beautiful Arab mare ... a pure-bred Mare of the Prophet.' Chauvel hoped to smuggle her back to Australia and so his aides tried to disguise her, dyeing her with Condy's crystals and replacing her 'silver Arab slippers' with 'heavy army shoes.' This caused the mare to go lame and she had to be left behind, to Chauvel's eternal regret.<sup>9</sup>

The Australians went on to hunt Turkish leader Mustafa Kemal out of his last Syrian bastion: a top-floor suite in Aleppo's famous Baron Hotel, the 'Unique hôtel de Première classe à Alep,' patronised by celebrities like Agatha Christie (Hercule Poirot left from Aleppo on the Orient Express), Lawrence of Arabia (his unpaid bar bill was later on display) and Egypt's President Nasser.<sup>10</sup> The Armenian owners were non-partisan: German generals treated their Turkish allies to banquets here.

In WW2 Australian troops again briefly occupied Aleppo. At the time of the Armistice in 1941 'the army occupying most of Syria was primarily Australian, led by an Australian General [Lt- General John Lavarack].<sup>11</sup> The Free French forces tried and failed to reclaim the country for France, and so in an indirect way Australia played a role in the winning of Syrian independence in 1946.

It's also worth a mention that the state of New South Wales has now

elected a Premier from an Aleppan family. Gladys Berejiklian's mother is from Aleppo; her grandparents had been orphaned in the Armenian genocide of 1915, and found refuge in Aleppo, where the large and prosperous Armenian community sheltered thousands. Her father is from Jerusalem; Gladys did not speak English until she attended primary school in Sydney.<sup>12</sup> As Premier, she is competent, unassuming and widely respected.

Aleppo's vitality was due to a combination of diversity, tolerance and affluence. An English merchant commented in 1586 that '... hither resort Jewes, Tartarians, Persians, Armenians, Egyptians, Indians and many sorts of Christians, and enjoy freedom of their consciences and bring thither many kinds of rich merchandises.'<sup>13</sup> This at a time when freedom of religion was unknown in most European cities.

A 17th century French diplomat described Aleppans as 'the gentlest, the least kenniving, and the most accommodating in this vast Empire.'<sup>14</sup> A century later a Scottish doctor, who practised in Aleppo for fifteen years (1740-1754), wrote that although Aleppans might argue and quarrel they seldom came to blows: 'none are less guilty of fighting... in many years you may perhaps never see one blow struck.'<sup>15</sup>

Over sixty years later an English traveller wrote that 'Aleppo was by far

IMAGES: © Charles\_Hajji-Wiki

the most cheerful place in Syria.' He had a positive opinion of the Muslim majority, commenting that a Dutch consul there mixed more 'with the higher classes of the Mahometan inhabitants than Franks in general are in the habit of doing; he wore their dress, and had acquired much of their tranquil philosophy and their dignity of appearance and manners.'<sup>16</sup>

Muslim Arab rule lasted for seven centuries, and Ottoman rule for a further five. At the end of the latter period T.E. Lawrence found that Aleppo was as convivial as ever: '... the races, creeds, and tongues of the Ottoman Empire met and knew each other in a spirit of compromise ... It was typical of Aleppo that in it, while yet Mohammedan feeling ran high, more fellowship should rule between Christian and Mohammedan, Armenian, Arab, Turk, Kurd and Jew, than in perhaps any other great city of the Ottoman Empire.'<sup>17</sup>

Lawrence's friend Gertrude Bell wrote that: 'a virile population, a splendid architecture, the quickening sense of a fine Arab tradition have combined to give the town an individuality sharply cut, and more than any other Syrian city she seems instinct with an inherent vitality.'<sup>18</sup>

Along with the cleanliness of the city and the safety maintained within its boundaries, the good manners of Aleppans were often noted: the saying



goes that they were even taught to address their dogs as 'sir'. According to a recent publication, *My Aleppo* (2011), they are still praised for 'hospitality, friendliness, and gentleness.'

There are many accounts of kindness, such as the custom whereby residents filled marble troughs outside their homes with fresh water, providing drinking utensils for passers-by. There was also kindness to animals, with the observation that Aleppans often looked after stray puppies or sick dogs; and there was the 'rich, cat-loving Mussulman' who founded a large Hospital for Cats. When witnessed by an American journalist in 1854 this was 'one of the best endowed institutions in the city,' employing many staff to look after several hundred cats: old cats, sick cats and homeless cats were given food,

shelter and medical attention. 'It is quite a sight,' the American punned, 'here one with a bruised limb is receiving a cataplasm; there, a cataleptic patient is tenderly cared for; and so on, through the long concatenation of feline diseases.'<sup>19</sup>

In 2015 starvation was such that the imams authorised the cooking of stray cats.<sup>20</sup> Even so, an Aleppan cat lover is still doing rescue work. Hundreds of cats abandoned by fleeing owners are looked after in a sanctuary established by ambulance driver Mohammad Alaa Aljaleel. His first shelter was gassed and bombed but, with international support, he's opened another one in the ruins and so 'The Catman of Aleppo' continues his work.

Those Aleppans who could pay the \$150 for transport to the Turkish

In 2015 starvation was such that the imams authorised the cooking of stray cats.

Unknown thousands have been killed, some by bullets and bombs, others by typhus, black fever or malnutrition. The UN stopped counting the dead a few years ago.

border fled long ago – as Robert Fisk wrote in 2012: 'the rich have already left ... and the poor suffer.'<sup>21</sup> Out of two million former residents, an estimated 800,000 try to survive in the ruins. Out of the million or so who left, many may never return. Unknown thousands have been killed, some by bullets and bombs, others by typhus, black fever or malnutrition. The UN stopped counting the dead a few years ago; the city was

too dangerous to access.<sup>22</sup>

'Dozens of children, barefoot, ragged, and disfigured by the scars of leishmaniasis, tag after emaciated mothers, also barefoot and completely in black, fully covered, all with bowl in hand, in search of a mosque where bread is distributed, yellow with typhus,' wrote Francesca Borri in 2015. She noted a young doctor, operating without anaesthetics or antibiotics, with no idea how to go

IMAGE: © Voice of America News - Scott Bobb - Wiki

on treating his patients. Aleppo once had about five thousand doctors, but now there were only thirty-six. Only one hospital was left.

The Syrian Arab Red Crescent, along with the International Committee of the Red Cross, have been on the ground in Syria since the beginning of the conflict. Many of their staff have lost their lives in the line of duty. Other help for the wounded came from the volunteers known as the White Helmets of Aleppo, the local branch of the Syrian Civil Defence units, who defied snipers and bombs to rescue victims trapped in the streets or under the rubble. The White Helmets have around 3000 volunteers from all walks of life operating in Syrian centres. 159 have been killed so far while carrying out the dangerous humanitarian work.<sup>23</sup> As recently as August, seven White Helmets were shot dead by unidentified gunmen, in an attack on their volunteer office in the city of Sarmin.

In April 2013, Aleppo's 11th century minaret crashed to the ground under fire, totally destroyed; the Great Mosque, founded in the 8th century, is seriously damaged. The famous souk was engulfed in fire: 'all that remains of Aleppo's ancient souk, the bazaar – the most enchanting place, the iconic picture postcard of Syria with its tumult of voices, its stories and colours, the flurry of life – all that remains is this: rubble. Your feet sink up to your ankles





Your feet sink up to your ankles in twisted spikes of rusty iron, glass, metal. The shutters are ripped open and riddled with bullets. Dust and stones. Nothing more.

in twisted spikes of rusty iron, glass, metal. The shutters are ripped open and riddled with bullets. Dust and stones. Nothing more.<sup>24</sup>

Syrian government soldiers used Citadel Hill and its ancient fortifications as a military base and the priceless remains of Sayf al-Dawla's palace are damaged beyond repair. Aleppo's cafes and bathhouses are closed; the music and song are gone. Night-time satellite imagery shows a darkened city. The poet Fouad Mohammed Fouad surveyed it in despair:

*'Aleppo spread before me,  
black and deserted ...*

*No sound but sporadic gunfire ...*

*No oudh plucked.*

*No swaying dancers.*

IMAGE: © Joshua Tabti-Flicker



Support the work of the Red Cross and Red Crescent by donating:  
[www.redcross.org.au/campaigns/syria-crisis-appeal.aspx](http://www.redcross.org.au/campaigns/syria-crisis-appeal.aspx)

You can also support the work of the White Helmets by donating at:  
[www.whitehelmets.org](http://www.whitehelmets.org)

*No drinks in 'The Nightingale.'  
No drinkers. No song.*

*One by one they awaken the beasts  
of darkness.*<sup>25</sup>

Aleppo has survived sacking and looting over the centuries by Mongol, Timur (Tamberlaine) and Byzantine Christian armies, but none of these invaders were able to cause the degree of destruction now witnessed.

All of the losses – the people, the buildings, the social networks – must cause an unfathomable level of grief for Aleppans. How can more than

thirty thousand dead be adequately mourned?<sup>26</sup> A tightly knit society was attacked, broken and scattered – will the survivors ever be able to mend the web of their tolerant and gentle way of life?

Al Ma'rii, the tenth century poet, wrote of his suffering people:

*'Fate smashes us as though we were  
made of glass*

*And never are our shards put  
together again...'*<sup>27</sup>

AQ

#### AUTHOR:

Caroline Graham is a former book reviewer, then columnist, for *The Australian*. She has been a feature writer for *Nation Review*, a tutor in the Government Department of The University of Sydney, President of the Australasian Middle East Studies Association, and a lecturer in the Faculty of Humanities, UTS. She retired as Senior Lecturer in International Politics in 1998.



# Sun, wind and fire

## Renewable energy in the Pacific

One of the ironies of anthropogenic climate change is that Pacific Islands threatened by rising sea levels are also highly dependent on carbon-emitting fossil fuels for their energy needs. So as the Pacific Island nations plead for the major nations to reduce their reliance on carbon-emitting fuels and save these island paradises, action is also urgently needed to reduce the Pacific Islanders' carbon dependence.

ARTICLE BY: **DR COLIN A. SCHOLES AND DR BRENDAN DUFFY**

**H**alf of Fiji's electricity supply is provided through diesel power stations spread across the three main islands, with Vanua Levu – the second largest island – entirely dependent on diesel. In Samoa, over two thirds of electricity demand is met through diesel generators, with

IMAGE: © victoria white2010 - Flickr

## In the Cook Islands, importation of diesel costs as much as 28% of GDP

the largest island of Savai'i also entirely powered by diesel.

For the smaller island nations, Tonga is almost exclusively dependent on diesel for power generation. Similarly, the Cook Islands electricity grid is based on 9 diesel generators, primarily situated on the main island of Rarotonga, while Vanuatu is dependent on diesel generators for over 80% of the archipelago's electricity. This diesel dependency also exists in the USA territory of American Samoa, as demonstrated in 2009 when a tsunami damaged the Satala diesel power plant in Pago Pago. This withdrew 23 MW of generation capacity, approximately 60% of the territory's total capacity. Unfortunately, rather than promote renewable energy resources, the power plant was merely replaced with more efficient diesel generators.

The use of diesel power is not restricted to the developing countries of the Pacific. The USA state of Hawaii generates over 90% of its energy from diesel and coal. Hawaii has no fossil fuel reserves and so this fuel needs to be imported, which makes electricity prices in Hawaii the highest in the USA, generally over double the price in continental USA.

A perfect demonstration of this occurred during the 2000 California energy crisis, where electricity prices spiked on the west coast of the USA because of the removal of generator

capacity and market manipulation by the now bankrupt Enron. However, at the same time the outer Hawaiian island of Kauai, isolated from the crisis, had electricity price on average higher than California during the crisis, because of its dependence on imported diesel and old, less efficient, power generators.

The large dependency on diesel for power does not translate into Pacific Islanders having a large carbon footprint, with the average Fijian only producing 0.61 tonnes per year; in comparison, the average Australian produces 18.3 tonnes of carbon per year. This low carbon footprint is due to a lack of heavy industry in the Pacific, a small transport sector, an electrical grid limited to the major urban areas, a spread of population across isolated communities on numerous islands and the low energy demand in these isolated communities.

For all the dependence the Pacific countries have on diesel, there are no fossil fuel reserves within Polynesia, Micronesia and only small deposits within Melanesia. Hence, all of the diesel must be imported. This exposes Pacific countries to risks associated with foreign exchange fluctuations and fuel price increases. This is believed to be partly responsible for low economic growth in the Pacific. For example, in the Cook Islands, importation of diesel



The use of diesel power is not restricted to the developing countries of the Pacific. The USA state of Hawaii generates over 90% of its energy from diesel and coal.

## Samoa aims to have 20% of its power needs met by renewable energy in 2030. Hawaii has an aggressive renewable policy, aiming for 100% renewables by 2045.

costs as much as 28% of GDP.

The Pacific's dependency on diesel has been built up over decades through domestic and foreign investment as well as foreign aid, especially when oil prices were low. Hence, there is urgent need for the Pacific to develop renewable energy based on indigenous resources. This will enable the region to become energy independent, improve regional security and is also expected to improve economic development in the Pacific through lower energy prices promoting investment.

### Harnessing the Future

There are some limited renewable projects currently underway in the Pacific. For example, in the Kingdom of Tonga a solar facility provides 1.4 MW to the island of Tongatapu, while the Maama Mai solar facility was commissioned in 2012. This solar installation consists of 5,760 photovoltaic panels and was funded by the New Zealand Government. The Maama Mai facility saves Tonga almost 500,000 litres of diesel per annum. There are also much smaller solar power facilities



on outer islands powering isolated communities.

In the Cook Islands there is renewable energy in the form of both solar and wind, but is currently only limited to 40 kW. Fiji and Samoa, consisting of mountainous islands, have some hydroelectric generation. On Viti Levu, Fiji, there are the Monasavu and Nadarivatu hydroelectric schemes based on the fast flowing rivers from the island's interior. Monasavu was commissioned in 1983 with a generation capacity of 80 MW, while the Nadarivatu scheme was commissioned in 2012 with half that capacity.

In Samoa, on the main island of Upolu, 11.5 MW is generated by hydroelectric. There is also wind generation capacity, with Fiji having

over 37 turbines producing a combined output of 10 MW, this saves the island nation 8000 tonnes of diesel per year, which is calculated to also reduce 25,000 tonnes of carbon dioxide from being released into the atmosphere per year.

Most solar and wind generation capacity is primarily for individual consumers usage and not associated with national electricity grids. This is clearly evident in the holiday resorts scattered throughout the Pacific nations, where utilities are generated and consumed in-house; rarely are they connected to the local grid.

Pacific nations do have renewable energy targets, with Tonga setting the ambitious objective of reducing their reliance on fossil fuel for electricity generation by 50% by 2020, and Samoa aims to have 20% of its power needs met by renewable energy in 2030. Hawaii has an aggressive renewable policy, aiming for 100% renewables by 2045, and is a signatory to the Paris Agreement. In comparison, Australia has a renewable energy target of achieving 23% by 2020.

These targets will be met by replacing existing diesel generation capacity with renewable, as well as building new renewable capacity to meet the island nations' growing demand. The good news is that the Pacific islands have some exciting opportunities for renewable energy, and the Melbourne Energy Institute at the University

IMAGE: © NOAA



of Melbourne is in the process of determining the renewable generation capacity available, the infrastructure and financial support needed to develop these projects, as well as setting out the roadmap to provide assistance to Pacific nations to meet their renewable targets.

Solar energy is the most obvious renewable in the Pacific, given the islands are tropical paradises. There is outstanding solar potential in all Pacific nations and when coupled with battery storage will be able to provide essentially all of the region's current and future power demand. To date, the majority of solar generation capacity is limited to tourist resorts, small scale installations in rural communities and isolated islands. These facilities

clearly demonstrate the success of solar and, given the relatively high cost of imported diesel, means that solar energy is economically competitive.

However, to achieve wide uptake of solar power there needs to be substantial investment in solar panel infrastructure as well as adapting and building each country's electricity distribution grid. This has been demonstrated on Ta'u in American Samoa, where 5000 solar panels and 60 Tesla power packs have been installed, which has completely decoupled the island from diesel.

The investment for solar power has been estimated to cost hundreds of thousands to tens of millions of dollars, depending on an island's size

In American Samoa...

5000 solar panels and 60

Tesla power packs have

been installed, **which has completely decoupled the island from diesel.**

## The geothermal reserves available have the potential to power major centres in the Pacific, for example the geothermal springs of Efate could power Port Vila.

and population. This is a substantial investment, which will most likely take the form of foreign aid as Pacific islands' energy needs are small compared to global demand, meaning large multinational energy providers are unlikely to find the Pacific an attractive market to enter. This aid investment has already been demonstrated by Non-Governmental Organisations (NGOs) who are installing small-scale solar facilities in rural and isolated communities to provide lighting, localised electricity and power essential services.

Wind is another viable renewable, with trade winds blowing across the majority of the islands of the Pacific. There is already limited wind capacity on many islands, where small scale turbines are used for individual residential consumers. This form of renewable is ideally suited for small and isolated islands because of the ability to locate generation near consumers without the need for long distance transmission lines. Indeed, for many small communities wind generation is more viable than solar, because of the consistency of the wind source day and

night. However, these small scale wind farms will not generate the large scale power needed for significant economic growth. Large scale wind generation is currently limited to Fiji.

The ability to grow wind generation capacity in the Pacific is again strongly dependent on foreign investment and will require foreign aid. NGOs are also active in wind energy on the local level, providing isolated communities with small scale wind facilities that can offset their reliance on diesel. It is important to point out that the availability of wind is not equal in the Pacific. Kiribati's main archipelagos are located at the equator, meaning the islands lie in the 'doldrums'. Here the prevailing winds are calm and hence wind generation is extremely limited in comparison to the island chains further south.

Geothermal is a renewable that can provide cheap base load power in substantial quantity to a number of Pacific countries. Papua New Guinea and Fiji have the highest potential for geothermal, followed by Vanuatu, Solomon Islands, Samoa and Tonga. The electricity is generated from superheated water powered by volcanic sources deep underground. On the island of Efate in Vanuatu, such hot water takes the form of natural springs that are a local tourist attraction, where the source reservoir deep underground has a temperature greater than 160°C. Directly accessing this deep hot water

## Timor-Leste

Timor-Leste, located in the Indonesian archipelago, shares many of the energy challenges facing the Pacific island nations. Timor-Leste does have the advantage that it is relatively rich in hydrocarbon resources, such as the Greater Sunrise gas field, and the provision for large-scale energy infrastructure are core components of Timorese development strategies. This provides a greater scope for Timor-Leste to drive its own economic growth than is found in the Pacific region. There are also smaller-scale opportunities for localised power generation associated with natural methane seeps, which are located along the relatively remote south coast.

The Melbourne Energy Institute is actively investigating the potential of gas seep harvesting in Timor-Leste, which has previously attracted World Bank support. These natural gas seeps, many of which are strong enough to sustain flame, provide a potential opportunity to achieve a development trifecta by diversifying the economy, abating greenhouse gas emissions and improving power security in remote regional areas.

The Institute is using its expertise and capacity to carry out assessments of the geological context, distribution, source and flux of the methane along the extended seep corridors on the south coast. This information will provide the feasibility for localised power generation. Such projects are attractive for their eligibility for Australian Carbon Offset Credits for methane abatement.

IMAGE: © Hawaii National Park Service

and bringing it to the surface as steam to generate power, is achievable with technology already implemented in Iceland.

The geothermal reserves available have the potential to power major centres in the Pacific, for example the geothermal springs of Efate could power Port Vila, the capital of Vanuatu. The development of geothermal energy in the Pacific is a very active area. A number of small to medium-sized energy companies are actively pursuing a range of potential projects. However, while governmental approvals have been given to investigate the feasibility and develop business cases, no project has been given the green light.

A significant issue with geothermal power generation in the Pacific is the social license needed to construct the power stations, with many of the volcanoes and associated geologically active areas holding strong reverence in the various island cultures. Hence, there will be strong objections to the drilling of geothermal wells and the removal of spring water from the ground, and in many situations it is likely that this social objection will not be overcome.

The ocean can also provide a source of renewable energy, associated with tidal and wave power. In the Pacific, tidal flows are greatest around Vanuatu and the Solomon Islands as well as the Mariana Islands. This is because the flow of the tides is constricted in the

straits between the numerous islands resulting in a rapid movement of water that can be used to spin turbines. On the larger islands of Fiji and Samoa, tidal energy is less favorable because the tidal movement is smaller, and power generation in these locations will require a substantial number of tidal turbines, which make the economics unattractive.

Wave energy is another renewable



energy option, but is strongly dependent on geographical location. The strongest wave energies are associated with the temperate and polar oceans, while the tropics generally have calmer water. Viable wave energy of 20 kilowatts per metre or above are accessible for islands located south of latitude 20°, with the Cook Islands, Tonga and New Caledonia the best candidates. The ability to convert wave energy into power is the most problematic of renewable energy options, because wave energy

converters are an immature technology, with three viable but different designs currently being tested worldwide. No commercial wave-farms currently exist globally, and it is doubtful such wave power stations will be built within a reasonable timeframe.

Bioenergy from biomass is currently limited to rural residential demand for cooking. In Kiribati this takes the form

of coconut husks and shells as well as coconut fronds and mangrove wood. This is able to meet the small demand need in these households, but is not viable for large scale electricity production. There is limited energy generation from

biomass in Samoa, associated with the coconut hulks waste from the local coconut industry and similar schemes are present in the islands of Vanuatu.

These biomass processes are not efficient but do consume a waste product from an export industry. Expanding these biomass schemes for base load power generation is possible, but the issue for the majority of the Pacific nations is that they do not generate enough biomass to support large-scale sustainable bioenergy. The alternative would be to use native

**These biomass processes are not efficient but do consume a waste product from an export industry.**

## Education and training must be an important aspect of all renewable energy projects.

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Dr Scholes expertise is in developing clean energy technology solutions for a range of global issues, such as climate change, associated with the Melbourne Energy Institute. He is also heavily involved in science and engineering aid development programs in the Asia-Pacific region.

**Dr Brendan Duffy** is a Lecturer in Applied Geoscience in the School of Earth Sciences at the University of Melbourne.

Dr Duffy is a committed geoscience teacher with expertise in the tectonics of Eastern Indonesia and the South Island of New Zealand, including the Canterbury earthquake. In association with the Melbourne Energy Institute, Dr Duffy is developing capacity in the Timor-Leste program.

vegetation, but such an industry could not be considered sustainable, because of the lack of land area and vegetation growth rates. Hence, there is only a limited scope for expanding the bioenergy from biomass sector in the Pacific.

### Challenges

There are some location specific issues for developing renewable energy in the Pacific, compared to the rest of the world. The geographical isolation of islands and communities means that a central generation source with a wide distribution electrical grid is not viable except for the larger islands of Fiji and Samoa. This favours certain renewable sources over others, such as solar and wind which can be constructed and installed at various sizes and easily enlarged through their modular nature.

In contrast, geothermal and biomass power generation is only viable on a large scale. The isolated nature of communities also impacts electricity distribution. In Vanuatu, the main centres of Port Vila and Luganville have 75% of households connected to the grid, but drops to less than 28% in outlying communities. This isolation means economy of scale cannot assist in keeping energy prices low and reduce investment risk. It also means a larger investment in the distribution

grid per generation capacity than is common in OECD countries. This isolation therefore strongly favors small scale generation capacity on a community level, and hence requires support on a local community level to ensure continual operation.

This will necessitate the development of a skilled labour force to support the renewable energy infrastructure. The ability to teach these skills and educate communities is currently limited in the Pacific, as demonstrated in other aid development projects; where critical infrastructure such as freshwater production and sewerage treatment are wasted because the locals are not adequately skilled to provide the necessary regular maintenance. Hence, education and training must be an important aspect of all renewable energy projects.

The nations of the Pacific have a challenging and exciting future ahead in developing renewable energy options to reduce their dependence on imported fossil fuels. Many of these challenges are specific for the region, and will require engineering, regulatory and community solutions that involve a wide range of stakeholders. Developing renewable energy in the Pacific, and importantly getting it right, may become the template for improving energy infrastructure in other developing regions globally. [AQ](#)





**HOMETOWN:**

Adelaide

**CURRENTLY LIVING:**

Oxford

**RESEARCH:**

Cognitive and Computational Neuroscience

“The first project for my PhD explored how we make decisions when we are missing information, and how this uncertainty influences our choices.”

## Student Edition

**Where in the world are you and what are you doing?**

I am in Oxford, UK. Right now, I am sitting in my bed with my laptop propped on a pillow, as my room is too small for a desk. I have Spotify cranking and some hot rooibos beside me. More generally though, I am in the last few months of my PhD in Clinical Neuroscience. I am trying to begin data collection for my second experiment, complete the analysis for my first, and to write up my thesis.

I also work on It Gets Brighter, a mental health charity to support young people struggling with mental health issues.

**Can you sum up your research in a sentence?**

...No.

My research is in “cognitive and computational neuroscience”. My current lab is generally interested in understanding how our brain performs cognitive functions such as learning, using and updating ‘models of the world’. To explore the mechanisms for this in the brain, we use functional magnetic resonance imaging (fMRI) to record brain activity while people perform tasks. We then can model their brain activity and behaviour, and use general linear models or machine learning approaches to look at what their brain is representing at particular times during the task.

The first project for my PhD explored how we make decisions when we are missing information, and how this uncertainty influences our choices. In particular, we were interested in how

a tendency to experience high anxiety is related to an altered response to missing information in both neural representations and behaviour.

For the second project of my PhD I am exploring mechanisms underlying attention. Specifically, how frontal regions in our brain represent what features of the environment we should be paying attention to (strategy), based on how reliably these features lead to a goal. We are interested in what happens when we switch strategies, and the changes in representation of the associated environmental features in sensory regions of the brain.

**Has studying overseas given you opportunities that you wouldn't have received in Australia?**

Yeah. The biggest benefit, I think, is actually not academic, but has been being a part of the incredible and very international community of graduate students in Oxford. The friendships, conversations and ideas I have been exposed to has pushed, challenged and shaped my perspectives on life both academically, and in a broader sense. I think being somewhere like Oxford shapes what is ‘normal’. There is still a ‘tall poppy syndrome’ in Australian culture, which does not exist in Oxford, which is refreshing.

Academically, I certainly have been privileged to be taught by some of the leading experts in neuroscience. I can regularly attend lectures or have a chat at lunch with people who are the best in the world at what they do. There are many such incredibly accomplished people in Australia too, but they



It brings to mind the words of Tim Minchin, “We must think critically, and not just about the ideas of others. Be hard on your beliefs. Take them out onto the verandah and beat them with a cricket bat.

for my viewpoints and examine their origins more carefully.

It brings to mind the words of Tim Minchin, “We must think critically, and not just about the ideas of others. Be hard on your beliefs. Take them out onto the verandah and beat them with a cricket bat. Be intellectually rigorous. Identify your biases, your prejudices, your privilege.” This is what my overseas experience has pushed me to do.

#### Has it been an obvious or straight path to where you are now?

Not at all!!! I studied chemistry and physics as an undergrad, and even choosing that double major was tricky when I loved the humanities subjects at school, and had always imagined I

would be an author or a vet!

I worked in several jobs before studying science communication and travelling around Australia in a science circus.

Neuroscience was appealing because of its interdisciplinary nature, its applicability to addressing issues I care about, such as mental illness, and because it's inherently fascinating to learn about the organ that makes us who we are!

#### What do you see as the future of your research area?

Computational neuroscience is leading a revolution in the way we understand how brains construct and interact with their reality. The interaction between computer science, artificial intelligence and neuroscience (such as the work of neuroscientists in Google's DeepMind) will allow us to better understand some of the fundamental principles of brain function. This will then allow us to determine what is different in mental illness.

In computational psychiatry the inclusion of “big data”, working across species, and computational

modelling, will give us much more power to understand the interplay between biology and the behavioural and subjective symptoms of psychiatric disorders.

I also think we will see more and more understanding of the influence of factors outside of what we traditionally think of as ‘neuroscience’, with the brain's inter-relationship with various systems such as the gut and immune system being increasingly recognised.

#### If you could make one landmark science discovery tomorrow, what would it be? Why?

A great question for any researcher to ponder! And surprisingly tough to answer—this ignited a great discussion amongst some fellow students! One of the first answers was: ‘How does a nervous system generate the subjective feeling or awareness of experience we call consciousness’. Though ‘consciousness’, and what that really means is highly contentious. Related to this I would like to better understand what the subjective experience of animals must be like.

I would like to discover how our understanding of the properties of the world are stored in networks in our brain, and what are the clever algorithms and the corresponding neural mechanisms that allow us to plan and make decisions.

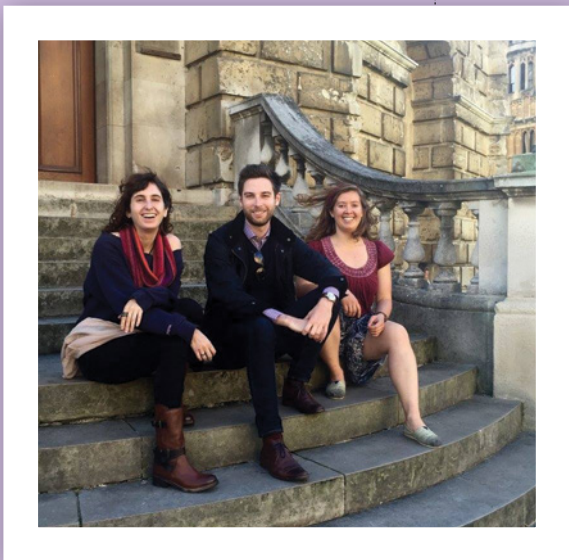


IMAGE: © The team from It Gets Brighter

Early interventions in communities to equip them with the skills they need to support their own, and others', mental health is a powerful, cost effective, and neglected solution.



**EMMA LAWRANCE ON TEDx**

<https://www.youtube.com/watch?v=OK1SScKbn48>

**This year you gave a wonderful TEDx talk on mental health; what was the message?**

Too often we see mental illness as a character weakness, and something an individual needs to solve alone. But recovery and management of any illness is made so much easier with a community of support, where there can be openness and no shame or stigma associated. Mental illness is an epidemic.

Early interventions in communities to equip them with the skills they need to support their own, and others', mental health is a powerful, cost effective, and neglected solution. We need to equip people with a better understanding of how we can look after our brains, but also what can go wrong, through no personal fault.

We need to be able to express our experiences, to be vulnerable, to support, to know how to stay and listen when it gets uncomfortable, and where to turn for further help. We need people to know they are not alone in their experiences, and that it is worth

fighting, as there is genuine cause for hope.

Building that open community of discussion is what It Gets Brighter is trying to achieve.

**Does an academic understanding of mental illness help with the reality of it?**

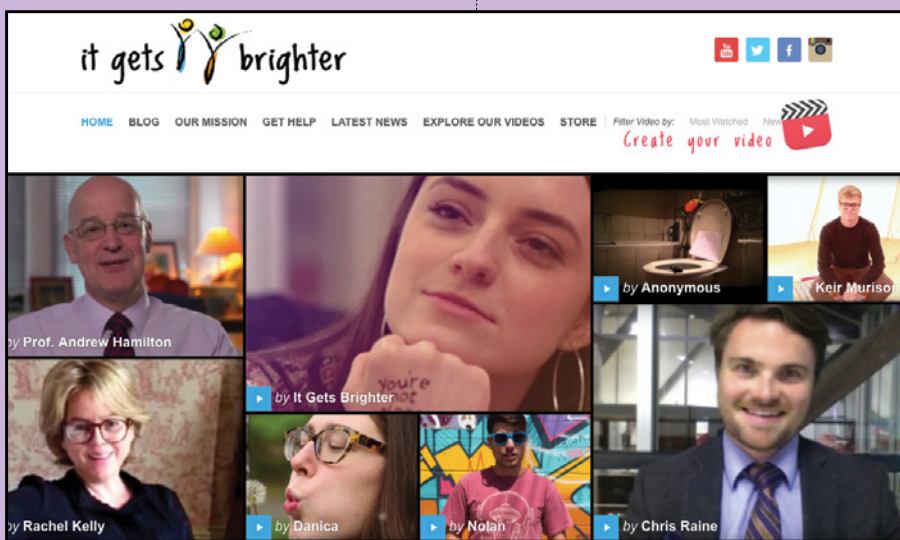
One of the many reasons that I wanted to study neuroscience was indeed to better understand what goes wrong in mental illness. I always struggled to have language to express what was happening, and to explain it to myself. Or indeed to explain why certain treatments worked, and what all of these experiences, and my response to them, meant about who I was.

Having an academic understanding of the brain and mental illness has provided me with a toolkit of language and concepts to be able to explain some of these experiences. Understanding and awareness comes with realising there is no one at 'fault' (and indeed who 'we' are is always changing).

Having an academic understanding doesn't mean you can necessarily cure anything in yourself, but it provides a framework to understand how we construct reality, and what can go wrong in that process.

**Has studying the brain given you any insights into how we as a society can better deal with mental illness?**

Having experienced mental illness when I was younger I realised how little control we sometimes have over our behaviour, and how scary it can be. As horrible as it was, it also made me



**At the moment, we cluster symptoms and slap on a diagnostic label. But the underlying causes are likely heterogeneous, and we need to understand the links between different biological causes and different systems.**

realise you never know what others are going through, and how we should be careful to judge people on their actions when you don't know what's driving them. This has been reinforced by studying neuroscience.

From a scientific perspective, I think we need to treat the whole person more – we are realising the interdependence between the gut and the brain, between the immune system and the brain... there are a lot of new avenues for exploring treatment options.

At the moment, we cluster symptoms and slap on a diagnostic label. But the underlying causes are likely heterogeneous, and we need to understand the links between different biological causes and different systems.

We are also social creatures, and disconnection is bad for our mental health. We need to have more early interventions, to equip young people with the tools to understand their own, and others', mental health and to be able to express their thoughts and feelings in healthy ways.

#### **If you were a science superhero, what would your powers be?**

Oooh, interesting question! I am always the one asking questions in lab meetings, and I have been told it is one of my strengths, to have the courage to ask the questions and try to get to the heart of an idea. Sometimes I even

manage to ask something insightful! I have always been driven by a desire to understand and to learn more, so I think curiosity may be my superpower.

However, there are lots of other superpowers I would desire! The power to remember everything I read and learn, the power of deep insight and understanding, the power of exceptional creativity, powers of design, coding, writing, project management... to be an exceptional scientist requires a lot of different skills. It is a general misconception that the life of a scientist only hones a specific computational skillset.

#### **If you could give 1st year Emma some advice, what would it be?**

- Learn! In first year, PhDs can feel like they will go on forever, while also feeling like working on anything that doesn't directly advance the PhD is a waste of time. It's not!! Use periods of downtime early on to read more, to take online courses, to pursue your interests.
- A PhD is for you, so try to tailor the research to your interests, rather than just your supervisors'.
- Ask for help when you need it! There is something to be said for 'banging your head against the wall' (metaphorically of course!) to learn how to figure things out for yourself, but learning when to ask for help can improve your skills beyond what you



It Gets Brighter collects and features short video messages of hope from those living with a mental health issue, and those who support them. Their mission is to give those struggling, the hope that it gets brighter. Join them in ending the silence and empowering young people to seek out the help and support that can lead to recovery.

You can donate or contribute videos at:  
[www.ItGetsBrighter.org](http://www.ItGetsBrighter.org)

And show your support for the cause by following It Gets Brighter on:

Facebook: [@itgetsbrighter](https://www.facebook.com/itgetsbrighter)

Twitter: [@itgetsbrighter](https://twitter.com/itgetsbrighter)

Instagram: [It Gets Brighter](https://www.instagram.com/ItGetsBrighter)

Youtube: [ItGetsBrighter](https://www.youtube.com/ItGetsBrighter)

could achieve working in isolation.

- Structure your time! You will be more productive overall if you work hard when at work, but take weekends off and remember to take holidays.
- Talk to people about how you are feeling as much as possible. Increasingly, research is showing how bad PhDs can be for mental health. Imposter syndrome, isolation, bad supervision, and never being able to switch off are some big contributors. It is easy to think it's just you, or that it is your fault – 'If only you were more (insert here...)'! But it's not just you. [AQ](#)

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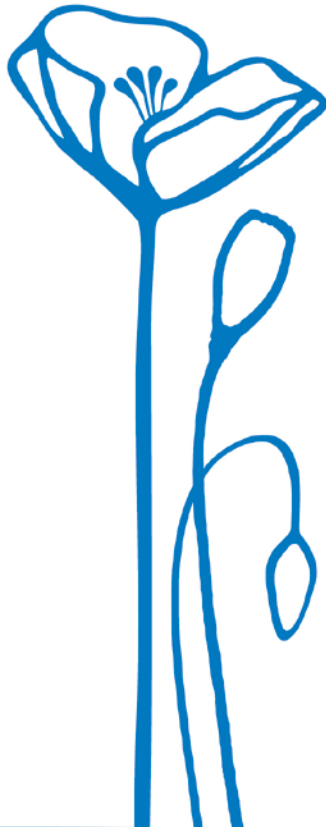
# Tall Poppy Campaign

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## Law, Legitimacy and Activism in the Anthropocene

There's a growing narrative that we are blindly walking down the path to catastrophic climate change. But the truth is even scarier – we are being shepherded down this path quite deliberately, by governments and vested corporate interests. Yet when confronted with legal interventions by communities and landowners, governments have been making ever-increasing use of state power to silence opposition. The climate clock is ticking over to midnight and we are all waking up. The question is: what are we going to do about it?

CRISTY CLARK

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## The Lost City: Homage to Aleppo

In the hills around Aleppo the wild grasses that *Homo sapiens* first cultivated twelve millennia ago still bear seed; except now they're springing up amongst the rubble of a fallen city. Once a rich court of philosophers, poets, historians and musicians, Aleppo has survived sacking and looting by Mongol and Byzantine Christian armies, but none of these invaders were able to cause the degree of destruction now witnessed. There is no earthly way to console those who mourn Aleppo and its people but there should at least be a pause to honour the lost city and its splendid past.

CAROLINE GRAHAM

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## Under-Mining Public Trust – The Rhetoric of Lawfare

Access to justice underpins the trust citizens have in their governments. And like most OECD countries, levels of trust in Australia's national government have been declining for a decade. Under our democratic system the separation of powers enables the judiciary to be a check and balance on government decisions. Yet the 'lawfare' rhetoric being utilised by ministers and industry lobbyists is a dangerous attempt to erode public access to the courts, further undermining public trust in government decisions.

SEAN RYAN

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## Sun, Wind and Fire – Renewable Energy in the Pacific

One of the ironies of anthropogenic climate change is that Pacific Islands threatened by rising sea levels are also highly dependent on carbon-emitting fossil fuels for their energy needs. So as the Pacific Island nations plead for the major nations to reduce their reliance on carbon-emitting fuels to save these island paradises, action is also urgently needed to reduce the Pacific Islanders' carbon dependence. By uncoupling these islands from expensive fossil fuel imports there could be wide-ranging economic benefits, and provide a test case for improving energy infrastructure in developing countries around the world.

COLIN SCHOLES AND BRENDAN DUFFY

