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## 29 A new season for climate change science and praxis?

### Introduction

I write these reflections at the end of the 27<sup>th</sup> Conference of Parties meeting of governments (COP27), held in Egypt in November 2022, at which governments sought to progress climate action. COP27 was informed by the Sixth Assessment Report (AR6) by the Intergovernmental Panel on Climate Change (IPCC). Established in 1988, the IPCC provides UN member nations with comprehensive assessments of the state of climate change science and its implications.

I spent much of 2017–2022 devoted to AR6. I was a Coordinating Lead Author of the chapter on sea-level rise in the IPCC's *Special Report on the Ocean and Cryosphere in a Changing Climate* (1), Lead Author of the chapter on Climate Resilient Development, and co-lead for the Cross-Chapter Paper on Cities and Settlements by the Sea, in the Working Group II report (2). How can I convey the gravitas of the climate predicament outlined in AR6? Moreover, where do we stand now – after more than three decades of intensive climate change science-policy interactions? What does this portend for climate change scientists, policy advisors and elected politicians? What does it mean for you and I? And how might answers to these questions inform our understanding about seasons; and how we might navigate impending dangerous climate change?

### Heading towards an epochal winter for the climate science-policy-praxis nexus

The notion of epochal seasons is apt because the nexus of climate change science, policy and praxis dates back well over three decades. One could say that the IPCC's First and Second Assessment Reports marked spring with the 'birth' of the IPCC and COP meetings. The Third, Fourth and Fifth Assessment Reports were the summer for the climate science-policy-praxis nexus. Global awareness and climate action came to full bloom. The 2015 COP meeting in Paris was noteworthy for agreement to limit global warming to below two degrees Celsius (above pre-industrial levels), aiming for a rise of no more than 1.5 degrees Celsius by 2100. Global warming beyond this level is dangerous. IPCC Assessment Reports paint a

progressively dismal picture of the state of the climate, but governments procrastinate at successive COP meetings.

A new season is upon us. We are entering a world of dangerous climate change. This is a present reality for many. A recent World Meteorological Organisation report finds there is a 50:50 chance of global near-surface temperature crossing the threshold of 1.5 °C above pre-industrial levels by 2026 (3). Six out of 10 respondents to a 2021 *Nature* survey of leading climate scientists expect global warming to reach at least 3 °C above pre-industrial levels by 2100 (4). Climate-compounded disasters – more intense and frequent extreme hydro-meteorological events and disruptive change – manifest this new season of climate turbulence.

Past approaches to climate science, policy, business practices, and consumer behaviour no longer suffice. A new climate praxis – transformative ways to translate climate knowledge and understanding into action – is urgent and imperative. It might seem counter-intuitive but, in charting new pathways into *terra incognitae*, we can look to the past and be guided by ancient wisdom and insights from indigenous people about how to navigate uncharted waters.

## Climate turbulence, anxiety, fatigue, and (in)action

Climate-compounded disasters are commonplace. They cause devastation. Many people are frightened about humanity's prospects. Climate anxiety and climate fatigue are pronounced. Calls for urgent climate action are growing. But many people are emotionally drained by having to contemplate difficult moral choices when plausible actions they might take don't seem likely to make a difference.

Progress at COP27 was dubious, despite the UN Secretary General's stark warning at the start of the meeting: "We are on a highway to climate hell with our foot still on the accelerator" (5). Post-COP27 news headlines are very disappointing: "COP27 ends with historic win and dismal fail" (6); "COP27 outcome: fossil fuel progress criticised, historic climate fund cheered" (7). Dismal progress at COP27 compounds the failures of prior COP meetings. Prospects for better outcomes at COP28 – to be held in the United Arab Emirates in 2023 – are grim given the undue influence of oil producers and lobbyists at COP27 (8).

Climate inaction by world leaders is confounding – especially when hope is raised by apparent progress at COP meetings, and fresh promises made to translate climate change science into action.

The UN Secretary General's clarion call echoes myriad long-standing calls to action by the youth, scientists, Indigenous People and citizens around the world.

Yet, governments and world leaders have failed to translate robust climate change science into action at the requisite pace and scale – despite having approved each IPCC AR since 1990. How many more COP meetings will it take before human-induced global warming is arrested and those most at-risk are enabled to take transformative adaptive action? How might we mobilise action in the face of the climate impasse?

## The coming winter for the IPCC and new pathways for climate action

I have had to reconsider my involvement in future IPCC work. Should I and my fellow climate change science colleagues roll up our sleeves after AR6 and prepare for a new AR cycle – AR7? Will more science make a difference in this new season of climate turbulence? Challenging moral questions about the role of science are raised. All of us – whether citizens or policy analysts – face vexing choices.

There is an unwritten social contract between scientists and society. Public investment in science is expected to lead to better understanding about our world and help achieve beneficial societal outcomes. Dismal progress at COP meetings and weak political action around the world indicates that the science-society contract is broken, not only with respect to climate change but the raft of intersecting socio-political-environmental crises that humanity faces. It is time for climate change scientists to pause and ask: how we can restore the science-society contract?

This question underpinned a journal article I wrote with Tim Smith and Iain White, entitled *The Tragedy of Climate Change Science*, published at the close of 2021 (9). We identified three main courses of action: First, continue “science as usual” – which has been dominated by the natural sciences and documents the state of climate change and its impacts. The findings of successive IPCC reports, and AR6 in particular, coupled with tepid mobilisation of climate action by successive COP meetings, demonstrates that persisting with this course of action is untenable.

Second, bolster social science contributions to climate change research, and intensify advocacy and activism, to identify and address political barriers to climate action. In practice, this course of action has been underway for well over a decade. Despite concerted efforts, the political impasse is entrenched; most palpably reflected in the outcomes of successive COP meetings. This option is also untenable given the narrow window of time left to avert dangerous climate change.

Third, albeit unpalatable, we argue that it is time to stop research that merely documents global warming and its impacts. We propose a moratorium on climate change science-as-usual. This more radical course of action focuses attention on exposing and mending the broken science-society contract. We reached this conclusion reluctantly. In doing so, we recognise the remarkable success of the IPCC and the climate change science community. In the space of three decades, the IPCC has provided robust evidence about the nature and root causes of climate change and identified the actions necessary to tackle global warming. Public and political awareness has been raised. The time has come, we argue, for the climate change science community to hold governments and world leaders to account. They need to act on the IPCC findings they endorsed, distilled in the closing statement of the 2022 Working Group II *Summary for Policymakers*: “The cumulative scientific evidence is unequivocal: Climate change is a threat to human well-being and planetary health. Any further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all (*very high confidence*)” (2).

Our article provoked a polarised response – from open hostility to strong support. Unsurprisingly, some scientists argued that science is an objective undertaking and has no place for advocacy. Politics should be left to politicians, they say. Others welcomed our fresh case for addressing long-standing political inaction. Many recognise that science does not exist in splendid isolation of the *realpolitik* of public decision-making. The science-society contract needs to be restored.

We did not elaborate on how to operationalise the moratorium. That would have been presumptuous. Rather, we called for serious introspection and robust deliberation amongst the climate change science community about how best to implement a moratorium. At the very least, I think, the ‘architecture’ of the United Nations Framework Convention on Climate Change (UNFCCC), IPCC and COP cycles need to be critically evaluated and fundamentally reconfigured.

This does not mean that scientists should stop all climate change research. There is much that can and should be done with local communities and governments to enable more targeted and timely climate action. There are many ways to expose political inaction and restore the science-society contract. This will unfold in diverse ways in different settings. What is clear is that climate change science-as-usual should not continue. Halting the next IPCC assessment cycle to critically evaluate the best way forward is essential if we are to break the climate change impasse. Hence the coming winter for the IPCC.

Just as climate change scientists need to pause and reflect on how best to navigate these uncharted waters, so too do others – citizens, policymakers, business leaders, politicians, and others. What inspiration and guidance might we draw upon to weather this new season?

## Ancient foundations for charting climate resilient development pathways

The World Meteorological Organisation (2022) recently published a multi-organisation synopsis of climate change science. Entitled ‘United in Science’, it finds the planet is in “unchartered territory of destruction” (10). How do we chart climate resilient development pathways in this *terrae incognitae*?

Introspection and deliberation amongst climate change scientists alone will not suffice. Scientists, citizens, policy advisors, business-owners, labour, government officials and politicians, the youth and many more need to be brought together in new ways to build shared understanding about our predicament and how to mobilise collective action. We can lean on traditional knowledge and ancient wisdom as we face turbulent futures.

Te Ao Māori, the worldview of the Indigenous People of Aotearoa New Zealand, provides a robust foundation for charting climate resilient development pathways in Aotearoa – enabling people and nature to prosper. Māori draw on mātauranga Māori (their ancestral knowledge), te reo Māori (their language) and whakapapa (ancestral lineage) to articulate their deeply spiritual, intertwined relationship with nature. There is an extensive and robust body of knowledge and scholarship that describes Kaupapa Māori (Māori-centred) approaches relevant to Western constructs like climate resilience and sustainable development.

We can draw on many other ancient wisdoms – e.g., from the Great Law of the Haudenosaunee Confederacy in what is now the northeast USA in which decisions were guided by considering outcomes for the seventh generation. The concept of ubuntu, an Nguni Bantu term from southern Africa, encapsulates the relatedness of our shared humanity: “I am because you are.” Among other things, ubuntu is a celebration of interdependence, fellowship, reconciliation, community and harmony – including unity between the physical and spiritual worlds.

Religions have diverse creation stories but concur about the divinity of nature which needs to be treated accordingly. For example, in 2015 Pope Francis published the *Laudato Si’* – entitled *Climate change & Inequality: Care for Our Common Home* – an encyclical that centres on caring for nature and all people. The ancient Chinese religion, Taoism or Daoism, is founded on divine harmony between nature and people.

Ancient wisdoms, indigenous knowledge and praxis, and the world’s religions, provide nautical charts and navigation tools for making our way through uncharted, turbulent waters. They are celestial reference points for navigating this new epochal season. They light a pathway to counter the dark side of humanity. They outline spiritual, ethical, and moral imperatives that can be distilled as a

duty of care and respect for each other, across generations, non-human species, and nature. They are foundational for restoring the science-society contract and enabling climate resilient development for human and planetary well-being.

## The author

Bruce is a Professor at Massey University, New Zealand. His research centres on making societal choices in the Anthropocene, focusing on coastal governance, climate change adaptation, and natural hazards planning. He held leadership roles in the IPCC Working Group II contribution to the Sixth Assessment. He is co-Editor-in-Chief of *Ocean & Coastal Management*. He led the team that produced South Africa's *White Paper for Sustainable Coastal Development* in 2000.

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