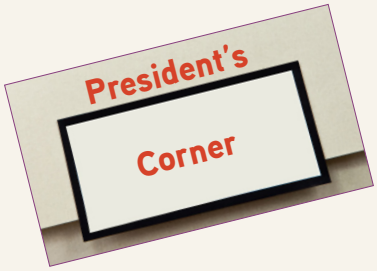
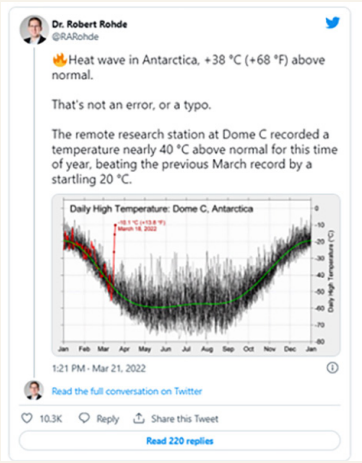


Reflections on the 'impossible' and the 'unthinkable'

'Yesterday I was clever, so I wanted to change the world.
Today, I am wise so I am changing myself.' - Rumi

During the early weeks of March 2022, the coldest location on the planet experienced an episode of exceptionally warm weather. Temperatures over the eastern Antarctic ice sheet soared by 10 to 32°C above normal. The warm spell smashed records and confounded scientists and observers. This unprecedented event upended expectations about the Antarctic climate system with climatologists using words like 'impossible' and 'unthinkable' to describe the temperatures in tweets and interviews. While the heatwave temperatures are still well below zero, at –10°C, it is a massive temperature spike by Antarctic standards. Normally temperatures are expected to be about –50°C this time of year. The heatwave is also noteworthy for occurring in March, which marks the beginning of autumn in Antarctica. At this time of year, Antarctica is rapidly losing sunlight each day as it moves into winter. The unusually warm conditions were caused by an extreme atmospheric river (described as a narrow corridor of water vapour in the sky). The moisture diffused and spread over the continent, but it was trapped by a strong high-pressure system, described as 'exceptionally intense' (five standard deviations above normal). While these types of phenomena are not unusual, the extent and intensity of this specific event have not been observed before.



It is difficult to attribute a single event to climate change, but unusual meteorological conditions certainly raise concerns as we increasingly see changing patterns and extreme events. On the opposite side of the planet, temperatures near the North Pole also peaked above normal, with temperatures close to the melting point of ice recorded during the same week as the heatwave in the Antarctic. And in Australia, unusually warm waters are stressing sensitive corals in the Great Barrier Reef leading to the fourth major bleaching event in the last seven years.

The heatwave in Antarctica, the unusually hot weather in the Arctic, and the bleaching event in Australia were all reported on within two weeks in March, but they barely made the proverbial front pages. The world arena is currently complex and fraught with increasing possibilities for long-term conflict over national rivalries, economic competition, the impact of unmitigated climate change, and cultural and ideological differences. There is no doubt that the possible futures before us are increasingly unpredictable. Unconventional solutions will be required to address global challenges as what we once believed to be a relatively predictable road ahead, now forks in new and uncertain directions. Economic, social, ecological, and political challenges have been shaking up international systems recently and our confidence in interpreting and understanding these complexities is understandably challenged. An outlier such as the spike in temperature in the Antarctic just adds to this sense of uncertainty.

The Paris Agreement is an addition to the United Nations Framework Convention on Climate Change (UNFCCC), initially agreed to by all 195 countries present at the 2015 United Nations Climate Change Conference, which included the United States, then under the presidency of Barack Obama. The main aim of the Paris Agreement is to hold the increase in the global average temperature to below 2°C above pre-industrial levels, predominantly by reducing greenhouse gas emissions. The Agreement differs from the 1997 Kyoto Protocol in that no annexes are established to lessen the responsibility of developing nations. Rather, emissions targets for each nation were separately negotiated and are to be voluntarily adopted. In a dramatic statement on 1 June 2017, President Donald Trump announced that the United States would withdraw from the Paris Agreement and the country formally exited the Agreement on 4 November 2020, the day after the presidential elections. Following his election, President-elect Joe Biden promised to re-join the Paris Agreement on his first day in office, and the United States formally re-joined the Agreement on 19 February 2021. For 107 days, during a time that one might say there has been an unprecedented

President's Corner *(Continued)*

global agreement that climate change requires action, the United States had not been a signatory of the Paris Agreement. The country likely would have remained outside of the Paris Agreement if President Biden had not taken office.

The brief exit of the United States from the Paris Agreement illustrates the fragility of international systems and agreements. It also illustrates that these types of international rules or treaties are not directly enforceable. Nation-states participate voluntarily and their participation is premised on their paradigms for economics, culture, or ideology. Increasingly, conventional approaches do not address the tasks at hand. Different paradigms are prioritized by different participants, which leads to wide divergence when it comes to the implementation of climate goals. We all view the world through the lenses that seem most accurate to us; we all also draw upon multiple lenses, arranging the elements to suit our view of the world depending on our priorities and personal circumstances.

The United Nations released the new flagship climate change report this month (4 April 2022) which presents the findings of the Intergovernmental Panel on Climate Change (IPPC). The organization's chief, Mr António Guterres, said at the launch: 'This is not fiction or exaggeration. It is what science tells us will result from our current energy policies. We are on a pathway to global warming of more than double the 1.5°C limits' which were was agreed in Paris in 2015. Mr Guterres added in a video message that unless action is taken soon, some major cities will be under water and the message forecast 'unprecedented heatwaves, terrifying storms, widespread water shortages and the extinction of a million species of plants and animals'. The newest IPCC report insists that to limit global warming to around 2°C, global greenhouse gas emissions would have to peak before 2025 and be reduced by at least 25% by 2030. While it is valuable to have these insights published and discussed, there are important limitations to the data we use to assess the future. The scenarios assessed by the IPCC report can be thought of as visions of what could happen in the future. These models are not forecasts or predictions as it is impossible for the IPCC scenario database to perfectly assess all potential futures. One comment is that the database should be considered an 'ensemble of opportunity' as it was not designed to be a single coherent collection of research. The database consists of a number of pathways that researchers from around the world were able to model to answer questions they considered relevant to their research focus. While this is valuable, it is easy to see that there may be multiple scenarios not yet assessed, that still make it possible to limit warming to 1.5°C. There is not a fundamental flaw in the scientific results per se, but we should also understand that the database is not complete. As a global community, we have not yet exhausted all the potential scenarios to avoid missing the target.

Equally, scenarios created with these extremely complex and comprehensive models can only capture part of the realities. For example, local challenges, barriers, opportunities, food security, and social inequalities are not included in the global scenarios. Through science, we attempt to define models and scenarios we can use to evaluate and measure existing paradigms. There was a time when the scientific paradigm stated that Earth is the centre of the solar system or that all things were made up of a combination of earth, fire, air, and water. These paradigms failed eventually in the face of increasingly sophisticated knowledge and something new replaced them. Where paradigms are less precisely defined and the criteria for confirmation or rejection are less clear, the process of change is understandably similarly less well defined and easily confounding. Because of the complexities involved, and therefore the less precise nature of the IPCC database, many people doubt that we are at risk. Others will ignore the complexities and take a more alarmist view of the available data. There is no clear pathway or prediction, but we have enough data indicating that unless we change our ways, something will happen. We are still questioning the complexities of predicting the impact of human behaviour on the planet, and the inequalities amongst nations still define how countries behave or develop. The IPCC report also reflects on the major gap between climate pledges and reality. Nobody should be surprised by the lack of progress. Scientists warn that we are already perilously close to tipping points that could lead to cascading and irreversible climate effects. The socio-economic and geopolitical landscape is also close to tipping points at various hotspots around the world. While we are not sure which of the many futures will realize, we cannot ignore the negative impacts of human activities, whether on a global scale or just in our backyard.

The future is coming, one way or another, and our ways of thinking, our philosophy, will need to be unconventionally wise to navigate the future paradigm. The word 'philosophy' literally translates as 'love of wisdom', from the Greek '*philo*' and '*sophia*' respectively. If we change, we can change the future, despite what feels like overwhelming problems and challenges. With caring and wisdom comes change.

'*I wanted to change the world, but I have found that the only thing one can be sure of changing is oneself.*' - Author Aldous Huxley.

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