Introduction

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Climate change is a defining theme for the 21st century. Changes in the climate permeate our lives in multifarious ways, affecting critical functions in economic, political and social systems upon which we base our lives and our well-being. Alluding to this dynamism and prominence, climate scientist and geographer Mike Hulme has commented, 'climate change has more potency now as a mobilising idea than it does as a physical phenomenon' (2009, 328).

In response, the interdisciplinary nature of engagement here in *The Politics of Climate Change: A Survey* reflects the contemporary conditions where climate politics penetrate all aspects of our lives. 'Politics' here are considered as the management and contestations of policies, through social relations infused with power, authority and varying perspectives. 'Politics' involve proposals, ideas, intentions, decisions and behaviours, with a focus on processes that prop up, challenge, lurk behind, support and resist explicit actions. By directing inquiries in this way, the authors in this volume unpack and examine varied influences that expand as well as constrict the spectrum of considerations for ongoing climate politics, deliberations and governance.

Moving headlong into the 21st century, this period of time has been dubbed the 'Anthropocene Era' due to the unprecedented scale of human influence on the environment (Crutzen 2002).[1] Since the beginnings of the Industrial Revolution in the 1700s by way of iron smelting in the coal-rich Shropshire region in the United Kingdom (UK), heavy reliance on carbon-based sources for energy and materials in industry and society have contributed to substantial changes in the climate. In this contemporary milieu, anthropogenic sources of CO_2 are primarily attributed to transportation, industry, household use/infrastructure, and land use and land-cover changes. Emissions from these activities thus contribute to increases in concentrations of atmospheric CO_2 and associated climate changes (IPCC 2007).

An expansive genealogy of the 'discovery' of climate change or global warming in Western science begins with inquiries by German astronomer Frederick William Herschel in the 1700s. Herschel examined how sunspots may have an effect on cooling and warming periods of planet earth (Weart 2003). Histories of modern scientific inquiries more specific to anthropogenic climate change often look to work initiated by French physicist Jean-Baptiste Joseph Fourier, who examined the earth's energy budget and worked to explain heat-absorptive processes in the atmosphere (Fleming 1998). Furthering this work, in the late 1800s British scientist John Tyndall experimented with

various atmospheric gases in order to understand their unique heat-trapping capacities, while Swedish physicist Svante Arrhenius looked specifically at the heat absorption of CO_2 and the connections to (warming) atmospheric temperature (Bolin 2007). From these foundational observations and experiments, physical scientific examinations of changes in the climate continued through the mid-20th century by way of notable researchers such as Guy Stewart Callendar, Milutin Milanković, Gilbert Plass, Willard Frank Libby, Hans Seuss, Roger Revelle and Charles David Keeling.

This edited volume is a collaborative effort that seeks to address associated pressing and formidable questions in the area of climate politics. The collection draws on a vast array of authors' experience, expertise and perspectives; contributors have backgrounds in climate science, environmental studies, geography, biology, sociology, political science and psychology. In this book, authors offer keen insights, observations and analyses as they work through salient questions along themes such as politics at the science-policy interface, the politics of markets and economics, the politics of climate ethics and justice, the politics of adaptation and development, and the politics of public engagement.[2] Chapter authors interrogate the many webs of negotiations, from formal and codified policy actions to informal ways of understanding, considering and engaging with climate change.

In the Foreword to the book, Tim O'Riordan points out how over the last three decades we have seen concerns regarding human contributions to climate change move from obscure scientific inquiries to the fore of science, politics, policy and practice at multiple levels. These developments have been accompanied by growing recognition that physical science identification of 'climate change' in the 18th century has opened up over time to interdisciplinary challenges linking to social sciences and the humanities, in turn interacting with contemporary politics, governance and policymaking. It is here, in the interstices of human institutions and the environment – referred to by Simon Dalby as 'Anthropocene Geopolitics' (2007) – where critical decisions about a collective future rapidly unfold. Such decisions pose significant challenges for the resilience of institutions and society. In his recent book (with a similar name to this one), Anthony Giddens commented, 'responding to climate change will prompt and require innovation in government itself and in the relations between the state, markets and civil society' (2009, 94). Chapters in this volume demonstrate that while much more is needed, a great deal is already under way. In the aggregate, these endeavours are highly contentious as they cut to the heart of industry and society in the 21st century. From local adaptation strategies to international treaty development, the power-infused 'politics of climate change' are as pervasive and contested as ever.

The first three chapters in the volume provide a solid foundation for understanding these politics of climate change. Chapter 1, by Stephen H. Schneider and Michael D. Mastrandrea, begins by working through the tenets of climate science, such as climate cycles and processes, historical climate

patterns, the scientific basis for attribution of current climate change to human activities, and climate change models. They discuss how these aspects of the science are treated in politics and policymaking, as well as how climate science has become increasingly politicized in recent decades. In a section entitled 'mediarology', the chapter then focuses on the role of mass media as an important link between science, policy actors and the public. Drawing from a combination of prominent illustrations and personal experiences, the authors then offer suggestions as to how scientists and the media can improve representations of various dimensions of climate science.

Chapter 2, by Heike Schroeder, situates these interactions in a 30-year history of climate politics and policy since the 1979 World Climate Conference in Geneva, Switzerland. She identifies four phases through which climate politics have moved up to the present negotiations unfolding through the United Nations Conference of Parties talks. These might be referred to in shorthand as the emergence of climate change in the political realm (through the formation of the Intergovernmental Panel on Climate Change—IPCC), regime creation (through the development of the United Nations Framework Convention on Climate Change—UNFCCC), regime strengthening (centred on the Kyoto Protocol), and regime maturation (by way of the development of a post-2012 architecture). Schroeder wades through the acronym soup that has developed in climate politics over time to clarify the key issues, processes and institutions involved in these arenas of international climate politics. She insightfully clarifies what have become increasingly murky waters, where international climate regimes and supporting institutions have grown in sophistication and complexity.

Chukwumerije Okereke picks up these discussions in Chapter 3, in the context of present political activities, and further delineates prominent issues in these high-profile and highly-politicized climate negotiations. Also, while Schroeder emphasizes on history through the institutions in Chapter 2, Okereke turns a critical gaze to the actors – particularly nation-states and coalition groups. He focuses on elements of leadership and trust as he lays out the details of how certain compromises have been vital to the functioning of ongoing climate negotiations in the theatre of treaty negotiations. Most prominently, Okereke discusses these politics through the constructions of affinity groups in 'developed' and 'developing' countries, of countries in the 'Global North' and 'Global South'.

In Chapter 4, Hans von Storch examines how various features of the climate science-policy interface shape consequent dimensions of policy advice and public understanding. He describes two competing frames of knowledge he calls 'cultural constructs' and 'scientific constructs' in order to help analyse how misunderstandings and discrepancies have developed between the science and policy communities over time. Drawing on experiences primarily in the German context, von Storch analyses how to improve connectivity at the climate science-policy interface, particularly as we move into negotiations for a post-2012 international climate policy regime. He draws usefully on

science-policy insights from Roger Pielke, Jr and Peter Weingart, as well as the tenets of postnormal science (also discussed in Chapter 1) as they relate to environmental decision-making.

In Chapter 5, Peter Newell and Matthew Paterson expand considerations to those of political economy and finance as well as relations between the states and markets. They survey an increasingly hegemonic arena of climate politics governed by markets through the carbon economy. The authors characterize the carbon economy as an inter-related web of climate governance systems tied into processes of commodification of the atmosphere, and fetish-ization of markets. This is manifested through emissions trading and carbon offsets (both voluntary and through the Clean Development Mechanism—CDM), as well as carbon disclosure schemes. They trace the history of the carbon economy to key developments in neoliberalism, concurrent to the institutional history outlined by Schroeder (Chapter 2). Their critical analysis is then cast upon what the future implications of this emergent form of climate govern-ance might be, and whether and under what conditions the carbon economy might enable a transition to climate capitalism, in which capitalist imperatives of accumulation are achieved through low-carbon economic growth. They argue that it remains unclear whether the carbon economy will follow a path towards unregulated and privatized 'cowboy climate capitalism' or a more regulated, state-managed 'climate Keynesianism'. None the less, they outline how these routes will have critical consequences for constraining or expanding possibilities for significant greenhouse gas (GHG) emissions reductions and decarbonization in the post-2012 regime.

In Chapter 6, Maria Carmen Lemos and Emily Boyd shift our attention from climate mitigation to the multi-dimensional politics of adaptation. Mitigation and adaptation initiatives are often overlapping and inter-related in climate politics and governance. However, in general, mitigation activities tend to be those that protect the climate and environment from humans, while adaptation activities are those that protect humans from the environment. As Lemos and Boyd work through many pertinent elements of adaptation poli-tics, they focus on the crucial questions of justice, resource distribution and development. The authors argue that for adaptation strategies to engage suc-cessfully with goals of vulnerability reduction and resilience capacity building, policy negotiators and leadership must commit financial resources that match the scale of need, agree upon a realistic conception of 'additionality', achieve a substantive accountability framework, and better co-ordinate these activities with the ongoing work in development communities. In this burgeoning web of governance, Lemos and Boyd effectively work through what might be seen as daunting complexities, and clearly delineate the vital issues at stake in these processes.

Further along these discussions of vulnerability, risk and resilience, in Chapter 7 Bradley C. Parks and J. Timmons Roberts interrogate questions of global North–South relations, and associated issues of responsibility, equity and justice. They focus their comments on the ambitious objective of a just

and equitable post-2012 climate agreement. Their essay takes us through many reasons why it is important to account for equality and justice when formulating these policy agreements. In so doing, they point to many challenges that divergent viewpoints, perspectives and interests may pose on fostering an atmosphere of trust, which is fundamental to success. They posit that unconventional, heterodox and hybrid forms of climate politics and interventions are needed in order to overcome histories of troubled North–South environmental relations. They argue that mitigation discussions to date have overlooked longer-term issues of inequality in global North–South relations. Therefore, they turn to adaptation in particular as a way to promote civic and co-operative norms, and to inspire poor country participation in a climate treaty. To finish, the authors offer hopeful words for building a global, just, trusting and long-term co-operative climate accord.

The final two chapters emphasize interactions in the spaces of everyday. Chapter 8, by Maxwell T. Boykoff, Michael K. Goodman and Ian Curtis, explores the workings of how formal climate science, policy and politics meet the everyday lived experience. The chapter looks to how these interactions are contested, negotiated and ever-changing in both the discursive realm (e.g. what political discussions on climate action are dominant and legible) and material spaces (e.g. how these activities relate to issues of consumption). The chapter addresses how climate phenomena are framed in various contexts and thus who effectively is authorized to 'speak for the climate'. They trace how the range of 'actors' speaking out about climate change mitigation and adaptation has expanded – particularly into popular culture – as climate change has earned increasing attention in public and policy arenas. Like Chapter 1, this chapter also points out the importance of mass media. Boykoff, Goodman and Curtis specifically explore how mass media stitch together developments in art, music, sport and through a range of celebrity voices. The authors then ask questions about what these developments may have achieved so far in terms of keeping or taking GHGs out of the atmosphere, and related themes of consumption in increasingly 'naturalized' neoliberal contexts.

Chapter 9, by Susanne C. Moser, addresses climate politics as they relate to public understanding and engagement. Moser posits that no matter what treaty or accord is ultimately implemented, public support and engagement are critical to its ultimate success (or failure). In the chapter, Moser situates potential citizen action in a complex landscape of political economics, ideologies, structural forces, habitual behaviour, and the agency of nature across scales and places. She appraises the state of these interactions at present, and surveys awareness, understanding, concern, personal action and policy support across a number of social contexts. In so doing, the chapter assesses various ways that inspire or disillusion people to take part in mitigation or adaptation activities. Moser draws on research on climate communications through imagery, emotions and our 'rational' self in order to work through what communication strategies tend to empower people and inspire participation, as well as what information may overwhelm them and lead to

disengagement. The chapter ultimately argues that leadership seeking successful climate governance must commit to consider carefully these factors on public engagement, and initiatives must commit resources in ways resembling wartime mobilizations to combat the sources and impacts of anthropogenic climate change effectively.

Taking these contributions together, this project has been carried out during a pivotal time in climate politics, at multiple scales and in countless communities. As one example we can look to both multilateral and bilateral negotiations at the international level. This book goes to press while the world is on the cusp of a possible new multilateral commitment to international architectures that address GHG emissions through mitigation and adaptation actions (a potential agreement at the December 2009 UN Climate Conference in Copenhagen, Denmark). Much is at stake in terms of the structure and function of the carbon economy and society (e.g. Boykoff et al. 2009), as leaders seek a climate treaty to follow on from the 1997 Kyoto Protocol, which expires in 2012. Meanwhile, rhetoric from the recently elected US President Barack Obama and his staff has indicated a shift in US climate policy stance. Many participants in climate politics view this change as signalling a significant break from the preceding President, George W. Bush, who was an oft-considered climate villain as he withdrew US participation in the Kyoto Protocol.

In terms of concurrent bilateral negotiations at the international level, in the first months after coming into office, President Obama sent US Secretary of State Hilary Clinton to the People's Republic of China to open a dialogue on climate mitigation. These US–China talks seek to overcome what has become an entrenched impasse on commitments for climate actions to mitigate anthropogenic GHG emissions (Goldberg 2009). This dialogue — and possible progress from the two greatest contributors to climate change on planet earth — may be a profound step forward for climate politics in symbolizing movements beyond North–South differences discussed in Chapters 6 and 7. Will these bilateral talks take on the significance of the historic 'Nixon goes to China' trip in 1972 if the USA and China broker a partnership? Will these developments inspire as well as foster more co-ordinated multilateral climate policy action in Copenhagen? Time will tell. None the less, whether the potential strength of President Obama's commitments derived from promising early rhetoric and actions will be significant remain an open question, as the Copenhagen negotiations unfold.

This does not mean to suggest that the signing, ratification and entry into force of a successor treaty would represent the 'solution' to anthropogenic climate change. Rather, it calls attention to a dominant mode of climate action unfolding at the international level at this time. Former British Prime Minister Winston Churchill once said, 'It has been said that democracy is the worst form of government except all the others that have been tried'. This might usefully be applied to ongoing international climate politics and policy in their present form and function. In 2007, in a paper entitled 'Time to Ditch

Kyoto', Prins and Rayner put forward a critique of the Kyoto Protocol when they wrote (2007, 973):

'The Kyoto Protocol is a symbolically important expression of governments' concern about climate change. But as an instrument for achieving emissions reductions, it has failed. It has produced no demonstrable reductions in emissions or even in anticipated emissions growth. And it pays no more than token attention to the needs of societies to adapt to existing climate change … the Kyoto Protocol was always the wrong tool for the nature of the job.'

Among others, climate scientist John Schellnhuber responded to this Prins and Rayner critique by commenting that these are well-known deficiencies in the Kyoto process; however (2007, 346):

'Kyoto is simply a miserable precursor of the global regime intended to deliver genuine climate stabilization — and was never expected to be more. 'Ditching' it now would render all the agonies involved completely meaningless after the event, denying the entire process of policy evolution the slightest chance to succeed.'

These exchanges point to some of the highly-contentious politics and debates that often undergird explicit policy statements.

This example represents an indisputably compelling and contingent space of climate politics. Many related questions of critical importance are taken up to varying degrees throughout this volume: what are the most effective architectures for addressing climate mitigation and adaptation challenges? How can related concerns such as poverty, consumption, population and biodiversity protection be incorporated effectively into climate politics and governance? Can sustainable development objectives be harmonized with transitions to renewable energy pathways? In what ways do certain groups benefit from currently constructed global governance structures with heavy reliance on economic markets and the authority of the nation-state? What voices are not at the policy negotiating table and whose interests may not be represented in dominant conceptions of climate politics? How might stakeholders with a range of interests, vulnerabilities and resilience capacities differentially address, accept and adopt climate policy measures? In what ways might varied social movements align interests to promote climate mitigation and adaptation goals?

As indicated by these many questions, the comments above and the chapters in this volume, climate change is no longer merely an environmental issue. In the years to come, the contours of climate politics will undoubtedly continue to be fiercely contested. Meanwhile (strong) political leadership and (progressive) institutional actions will rapidly reconfigure these spaces. Once more, the collective intention here with *The Politics of Climate Change: A Survey* is that the contributions herein offer foundational information, insights and analyses that will prove useful to all readers, from academic researchers, business actors and government representatives, to policy negotiators, activists, students and interested members of the public. These essays

that you hold in your hands seek to help make sense of these contemporary contexts, and catalyse our collective thinking about how the future of climate science, policy, politics and governance intersect with our lives, livelihoods, happiness and well-being.

The chapters are supplemented by an extensive A–Z glossary section of terms, organizations and issues of note, cross-referenced for ease of use; a selection of maps offering graphic representation of issues affecting climate change; and statistics for reference.

NOTES

1 Through improving detection and attribution work (e.g. Allen et al. 2000, Tett et al. 1999), a consensus has emerged in the climate science community that human activity has largely driven climate changes in the past two centuries, and changes are not merely the result of natural fluctuations (see Chapter 1 for more).
2 To cover all the dimensions of the politics of climate change would require an encyclopaedic accounting, so some issues are not addressed in as much detail as we might have desired.

REFERENCES

Allen, M.R., Stott, P.A., Mitchell, J.F.B., Schnur, R. and Delworth, T.L. (2000) 'Quantifying the uncertainty in forecasts of anthropogenic climate change', *Nature* 401, 617–20.

Bolin, B. (2007) *A History of the Science and Politics of Climate Change: The Role of the Intergovernmental Panel on Climate Change.* Cambridge: Cambridge University Press.

Boykoff, M., Bumpus, A., Liverman, D. and Randalls, S. (2009) 'Theorising the carbon economy: introduction to the special issue', *Environment and Planning A* 41 (10), 2299–2304.

Crutzen, P.J. (2002) 'The Anthropocene', *Journal de Physique IV France* 10, 1–5.

Dalby, S. (2007) 'Anthropocene geopolitics: globalisation, empire, environment and critique', *Geography Compass* 1, 1–16.

Fleming, J.R. (1998) *Historical perspectives on climate change.* Oxford: Oxford University Press.

Giddens, A. (2009) *The politics of climate change.* Cambridge: Polity Press.

Goldberg, S. (2009) 'Clinton tries to build China climate pact', *The Guardian*, 14 February, 12.

Hulme, M. (2009) *Why we disagree about climate change: understanding controversy, inaction and opportunity.* Cambridge: Cambridge University Press.

IPCC (2007) *Climate Change 2007: The Physical Science Basis.* Geneva, Switzerland.

Prins, G. and Rayner, S. (2007) 'Time to ditch Kyoto', *Nature* 449, 973–75.

Schellnhuber, J. (2007) 'Kyoto: no time to rearrange the deck chairs on the *Titanic*', *Nature* 450, 346.

Tett, S.F.B., Stott, P.A., Allen, M.R., Ingram, W.J. and Mitchell, J.F.B (1999) 'Causes of twentieth-century temperature change near the Earth's surface', *Nature* 399, 569–72.

Weart, S.R. (2003) *The Discovery of Global Warming.* Cambridge, MA: Harvard University Press.