



Historicizing climate change—engaging new approaches to climate and history

Sverker Sörlin¹  • Melissa Lane²

Received: 16 April 2018 / Accepted: 13 August 2018 / Published online: 14 September 2018
© The Author(s) 2018

Abstract

This introduction to a special issue of *Climatic Change* argues that it is timely and welcome to intensify historical research into climate change and climate as factors of history. This is also already an ongoing trend in many disciplines. The article identifies two main strands in historical work on climate change, both multi-disciplinary: one that looks for it as a driver of historical change in human societies, the other that analyzes the intellectual and scientific roots of the climate system and its changes. In presenting the five papers in this special issue the introduction argues that it is becoming increasingly important to also situate “historicizing climate change” within the history of thought and practice in wider fields, as a matter of intellectual, political, and social history and theory. The five papers all serve as examples of intellectual, political, and social responses to climate-related phenomena and their consequences (ones that have manifested themselves relatively recently and are predominantly attributable to anthropogenic climate change). The historicizing work that these papers perform lies in the analysis of issues that are rising in societies related to climate change in its modern anthropogenic version. The history here is not so much about past climates, although climate change itself is always directly or indirectly present in the story, but rather about history as the social space where encounters take place and where new conditions for humans and societies and their companion species and their life worlds in natures and environments are unfolding and negotiated. With climate change as a growing phenomenon historicizing climate change in this version will become increasingly relevant.

1 Introduction

Climate change is an historical phenomenon. Climate history is also a specialty in its own right, drawing increasing attention from scholars in many fields. In this special issue of

This article is part of a Special Issue on “Historicizing Climate Change” edited by Melissa Lane, John R. McNeill, Robert H. Socolow, Sverker Sörlin

✉ Sverker Sörlin
sorlin@kth.se

¹ Division of History of Science, Technology and Environment, KTH Royal Institute of Technology, SE-100 44 Stockholm, Sweden

² Department of Politics, Princeton University, Princeton, NJ 08544-1012, USA

Climatic Change, we explore not the history of climate in itself but the histories of agential engagements with climate change, as a contribution to making climate change fully a part of history in both its natural and societal dimensions. “Historicizing climate change” as a motto for this work draws on the work of Reinhart Koselleck, who argued for the need to historicize concepts, i.e., to contextualize them in processes of change over time. Among these were not least historical concepts, for example, time, progress, and decline, and indeed history itself (Koselleck 1975/1997, 1985/2004: ch 9). We explore in this special issue ways of historicizing climate change in the sense of weaving climate change as an issue and as a context into the fabric of broader intellectual, political, and social histories. Our focus is on anthropogenic climate change as a modern phenomenon, and on the recognition of anthropogenic climate change and its implications in particular for human civilizations and planetary futures, as this has taken place in particular intellectual disciplines and social and political contexts (not simply on climatic variation which is of course an eternal fact).

The papers assembled here started as draft contributions to a workshop entitled “Historicizing Climate Change” at Princeton University in May 2014. This workshop was convened by a research group in the Princeton Institute for International and Regional Studies focused on “Communicating Uncertainty: Science, Institution, and Ethics in the Politics of Global Climate Change.” Workshop participants included a number of climate scientists as well as historians, philosophers, economists, and others, who explored several topics relevant both to historicizing the emergence of climate science and to its relationship to the predicament, and understanding, of climate change. Five of the papers presented at the workshop are published here (as with many workshops, the route from presentation to publication has been a complex one). The papers unite in exploring particular relations and responses (both agential and experiential) to climate change. These relations are embedded in but not limited to the experiences of place (Hastrup on the Inughuit, Amrith on the Indian monsoon, Anker on the Norwegian oil economy and the politics thereof) and intellectual discipline (Forrester on Anglophone moral and political philosophy especially in the 1970s, Dennig on recent currents within welfare economics, including these dealing with future time). Together, they bear at least partial witness to the broader themes of the workshop, which included the relations between prescription and description; the limits of quantification (including the relations between risk and uncertainty); and the ethical and agential dilemmas of predicting and responding as well as anticipating.

In what follows, we provide some background on efforts to historicize climate change before the “historicizing” concept was in wide circulation. We do this to identify some of the standard tropes and topics of climate change discourse, especially to assist readers unfamiliar with historical and historiographical approaches to past and recent climate and its changes. From there, we proceed to discuss the five papers to bring out some of their crucial ideas.

2 Chronologies and other necessary linear understandings

One important line of historical work on climate change has sought to understand the development of the science that underpins current understandings of the Intergovernmental Panel of Climate Change, IPCC. Its fundamental account of the progress of knowledge is mapped out in a separate chapter in the *Fourth Assessment Report* (Le Treut et al. 2007) which reads very much like a chronology of scientific discoveries and of models. Several book length studies do the same kind of work. Perhaps the most well known of these is Spencer Weart’s *History of Global Warming* (2003/2008).

On a different tack, Clarence Glacken's *Traces on the Rhodian Shore* (1967) remains a landmark work on theories of climate change and ways of understanding climate in human history. Many internal histories of geographical thought and of the atmospheric and geophysical sciences provide more work on these lines. Neville Brown's *History and Climate Change* (2001) serves as an example; Rupert Darwall chronicles the last half century of policy history in *The Age of Global Warming* (2013); *A History of the Science and Politics of Climate Change* (2007), an institutional autobiography by IPCC founding chair Bert Bolin also belongs among these now quite numerous attempts to recount the emergence of the current state of the field.

These and other "linear" histories have done and keep doing important work for the broader understanding of climate change. They set the knowledge record straight and they provide essential information of the sequence of events in science and governance that supplements the natural history data of climate variation. But, they were based on earlier work of similar kinds: works such as those by Hubert Lamb in the 1960s and 1970s (Lamb 1972/1977, 1982), Jean Grove (1988), and the less well-known work of G. E. P. Brooks of the British Met Office, whose *Climate Through the Ages* (1926, new ed. 1949) offered a systematic classification of then-current theories about climate and its variations. Taken as a whole, this literature provides a useful insight in the sometimes rapid shifts of state-of-the-art knowledge. Brooks is a case in point. Like Lamb, who had studied medieval warming and predicted coming ice ages, he did not readily accept the idea of anthropogenic warming during the industrial period, advanced by G. S. Callendar (1938, cf. Fleming 2007). Brooks, like most experts of the time, dismissed the idea as late as 1951, writing: "[Svante] Arrhenius and [Thomas] Chamberlin saw in this [i.e., increased atmospheric carbon dioxide] a cause of climatic changes, but the theory was never widely accepted and was abandoned when it was found that all the long-wave radiation absorbed by CO₂ is also absorbed by water vapour." Callendar's theory, judged Brooks was sadly mistaken, and "not considered further." (Brooks 1951: 1016).

3 Historical science and politics of climate change

Histories of the scientific understanding of climate change are numerous and they have in common the rejection of then-current orthodoxy. There is a large body of work on the epistemology and sociology of climate change, and much of it deals with skepticism and denial. Although some of that work is historical, its time horizons are not generally very deep. There is emerging work on how societies can or cannot take on challenges, ranging from broader synthetic overviews such as Jared Diamond's *Collapse* (2004) to specialized studies related to contemporary policy. A strong example here is Mike Hulme's *Why We Disagree About Climate Change* (2009), but equally important are Hulme's articles on the problems that may occur when we reduce "the future to climate change" or disregard the role of humanities in seeking a deeper understanding of climate change as a societal phenomenon (Hulme 2011a, Hulme 2011b; cf. Holm and Viniwarter 2017). Also of significance is Joshua P. Howe's analysis of the science politics of Charles David Keeling's now-famous Mauna Loa curve showing the atmospheric concentration of CO₂. Although the curve has been central to communicating climate change to politicians, environmentalists, and the general public the focus on the curve has also hidden what has always been behind it: society, economic interests, and the behavior of millions of humans, all that produces its unbroken upward trend (Howe 2014).

Historians and sociologists of science and the environment, joined by historical geographers and historically inclined scientists, have produced studies of climate change, of media representations of climate change, of the institutions that are involved in climate change science and policy, of their reports and assessments, and of the local effects of climate change on various social groups. The geographies of climate change have also been addressed in multiple ways. Climate-centered historical studies, many of which include compelling case studies appear from virtually all corners of the world. The Arctic and the North Atlantic have become hotspots of climate change science and meteorology since the late nineteenth century, thanks to the work of the Bergen school of meteorology and comprehensive studies of glaciers and sea ice measurements (Friedman 1989, Sörlin 2009a, 2011, Christensen et al. 2013). We have detailed investigations (by Matt Farish, John P. Lackenbauer, Ron Doel, Julia Lajus, and many others) of how the US, Canada, the Soviet Union and other countries built research stations and specialized laboratories that could monitor and understand snow and ice conditions related to a potential Arctic war (Doel et al. 2014). The changing historical geopolitics of climate change are well documented by contributions to a volume on *Polar Geopolitics* (2014) edited by Klaus Dodds and Richard Powell. Mark Carey's (2010) work on the encounters of glaciology with local residents and cultures in the Andes demonstrates historians' interest in weaving local, anthropological, and science histories into a richer understanding of what climate change actually means on the ground and in human communities (cf Taillant 2015). Similar reinterpretations have been proposed for Australia (McGrath and Jebb 2015), North American settler history (White 2017), and other regional histories are also being enriched and nuanced by the re-introduction of climate.

Climate is a key feature of the vibrant multi-disciplinary literature writing of “planetary” histories as reflections of the common human predicament, or as examples of what anthropologist Joseph Masco (2010, 2014), calls the “security state” by which he means military, geoengineering, and terraforming enterprises. Literary scholar Ursula Heise (2008) has similarly identified an emerging “sense of planet” in a post-nature—*Nach der Natur*—state (Heise 2010). Science, and not least climate science, is very much part of histories of the “planetary” and of the Anthropocene (Hamblin 2013; Höhler 2015; Bonneuil and Fressoz 2016).

4 Reinvoking the agency of climate

Using historical climate data to explain history has a much longer pre-history than climate science. Since Hippocrates (c. 460–370 BC), there has been a rich, if not always venerable, environmentalist or determinist tendency to understand differences among cultures and nations and even “races” by reference to their climates. Climate was here understood as local or regional climate. Our modern understanding of climate as a common planetary phenomenon with average and secular trends of CO₂ content, ice, dust, temperature, and other features is essentially a product of the age of climate models which homogenized climate into a global phenomenon and thus contributed immensely to the emerging planetary story. Deborah Coen's (2013, 2018) work on late nineteenth-century understandings of climatology arising at the boundaries of geography, geophysics, and anthropology, and struggling to situate the various scales of the subject between the local and regional on the one hand and the global (produced by interaction among local effects) on the other, highlights philosophical debates about such understanding, poised between law-like explanations and idiographic meaning.

In the late nineteenth and early twentieth centuries, environmentalist explanations had their heyday. An influential root of this line of thinking was the work of Friedrich Ratzel, the German geographer, whose many followers included geographers Ellen Churchill Semple (whose key work *Influences of Geographic Environment* (1911) drew heavily on Ratzel), and Ellsworth Huntington (famous for claims about the strong influence of climate on human societies—as in *Civilization and Climate* 1915 and other books). Both Semple and Huntington wrote in the first decades of the twentieth century and remained influential up until WW II. Their histories worked chiefly on a grand scale and had a metaphysical bent. Huntington wanted to understand why Asian cultures expanded westward. Other geographers in the first half of the twentieth century, including Griffith Taylor (Strange 2010, Strange and Bashford 2008) and Vilhjálmur Stefánsson (e.g. Stefánsson 1922; Pálsson 2005) similarly produced grand schemes of human “progress” or “decline” based on climate. This line of thinking won little sympathy among historians and diminished rather than stimulated their interest in environmental factors. When climatic explanations are taken up today, they avoid the many absurdities of earlier climate determinism (Hornborg and Crumley 2006; White 2017). New work on the Roman Climate Optimum and on reinterpreting the Norse Sagas in light of new knowledge of climate change (Hartman et al. 2017; cf. Utterström 1955) exemplifies these developments.

Historical work on climate change *time series* deserves particular mention, with eminent contributions from Christian Pfister and his followers in Switzerland and other Alpine countries, by Astrid Ogilvie and colleagues in Iceland, and from many archeologists spread around the world (Pfister 1988, Ogilvie and Jónsson 2001a, b). Some recent historical work in this area uses models. One major initiative in this regard is IHOPE (Integrated History and Future of People on Earth; IHOPE 2018). It was started in 2003 as part of the earth science community of the global ICSU portfolio of programs, which has now changed its umbrella name to Future Earth. From the outset IHOPE researchers have sought to model and quantify historical change across time scales that often reach beyond those of traditional history or even archeology. This fits well into the narrative of a quantifying planetary enterprise resting on mega-infrastructures for monitoring and modeling (Edwards 2010; Höhler 2015), and some of IHOPE’s publications so far (e.g., Costanza et al. 2007) show a lot of this ambition. Indeed, so considerable is the growth in climatic reinterpretations of past events and periods that we may talk of an “encounter” of paleo-science and history (Haldon et al. 2018).

Geoffrey Parker is more conventional in his choice of historical themes—war, disease, famine, demographic factors—in *Global Crisis: War, Climate Change & Catastrophe in the Seventeenth Century* (2013). This is a towering achievement linking events all over the world into a comprehensive framework, with climate as the ultimate driving force. It is far from new to propose climate as a key factor in crisis-ridden Europe; the late Eric Hobsbawm did this in two articles in *Past & Present* in 1954 and sparked debate about the seventeenth century “crisis” in Europe (Hobsbawm 1954 a and b). The “Little Ice Age”—the concept itself dates to 1939 (Matthes 1939; Grove 1988; Fagan 2000)—has been the source of historical explanations of witch hunts (a long standing debate in its own right, e.g., Levack 1987, Behringer 1988, 1995, 1999, Behringer et al. 2005, Büntgen et al. 2011, Büntgen and Hellmann 2014); demographic change; the course of the thirty-year war; and many other occurrences. What Parker does, is to expand climatic causality to the world, using recent knowledge of monsoon changes, El Niño and La Niña phenomena. Above all, Parker seeks to understand how repercussions of climate-related events such as famine and plague in one place spread to others through trade, war, colonial policies, and disease (cf Brooke 2014).

Bold and admirable, even ground-breaking though Parker's attempt to historicize the world through the agency of climate change, may seem it ultimately fails to convince. Parker leaves unexplained why his perspective provides a "global" history, let alone a global "crisis," a concept that in and of itself deserves to be thoroughly historicized as agency of major earthly disruptions is shifting towards humans in the Anthropocene, and by implication to earlier periods (Mauelshagen 2014; Paglia 2015). Did some imam in the Arab world or some Moghul leader in India, some aboriginal person in Australia, natives of Tierra del Fuego, or even people in Europe before the thirty-year war, define their predicament as a crisis? If so, how was it a worse crisis than those of previous centuries? Empirical testing of the "Parker thesis" has provided a wealth of new knowledge but does not seem to corroborate his basic claim (Izdebski 2018; Hieu Phung Corsi 2018). This does not, of course, rule out climatic explanations in other periods or more specific domains, for example from Asian history (e.g. Lieberman 2003, 2012) or early modern North America (White 2017).

As we have seen, Parker is far from alone in using climatic factors to write a global history; similar approaches are increasingly evident for the modern period (Mauelshagen 2010), and in the growing re-interpretive historical literature on the post-WWII period (e.g., McNeill and Engelke 2016). This interest is bound to increase rapidly just as "the environment" (Warde et al. 2018) has become a key factor in modern historiography because it has turned into a major policy issue. History is, after all, largely about societies and their decisions and concerns. In this respect, climate clearly has causal agency, but its agency differs from that attributed to it by Parker or some of the other projects looking to climate as a "driver" of historical change. Climate is *mediated through politics and social institutions*, and shaped in our time at least and perhaps for millennia (Ruddiman 2005) by humans and their diseases, technologies, animals, and societies. Here lies both a major challenge and an opening as we are considering new ways to develop our historicizing work. We shall return to this theme at the end of this introduction.

5 Different—but equal

To sum up these broad historiographic trends we can identify two dominant, albeit diverse and interdisciplinary, and quite distinct, scholarly enterprises and epistemic communities. *The first chiefly* tries to understand climate change as a scientific, political, and cultural phenomenon. To put it crudely, it is an attempt to establish an intellectual history of the climate issue and by implication it is by and large a late modern history, rarely more than a century long, but clearly with innovative exceptions, for example Julie Cruikshank's (2005) work on late eighteenth century encounters between French naturalists and the local Tlingit in the Pacific North West. Its main practitioners are in historical and other humanities and (some) social sciences, although, clearly, there are many instances of collaboration with scientists and policy.

The second is first and foremost an attempt to give historical agency to climate, albeit in many instances a climate affected by, humans. The object of historical research here is material; it is in the records of climate change and in the evidence of human influence of that climate and its influence on the humans and their societies. This evidence privileges the methodologies of archeologists, palaeo-ecologists, geoscientists and biophysical experts. Intellectual changes are in the background, although they sometimes play a role. The time depth of this historicizing enterprise is typically much longer, indeed very little of this work is about current affairs, although there are efforts in this community to claim relevance by showing "lessons from the past," often, as in Diamond's *Collapse*, lessons about the inability of human

societies to respond to rapid and unfamiliar kinds of change, or, that some past societies have displayed excellent survival capabilities, or even, as in the case of Ruddiman (2005), that humans in the past have influenced climate far beyond what was previously assumed.

Even such a cursory introduction as this shows the wide range of topics and approaches that can be brought to bear on climate change. Still, other categorizations and trends are emerging, such as a line of work that seeks to widen the scope of climate explanatory history to include modern periods as well, and thus give relevant causal agency to climate on shorter time scales and closer to the present. Clearly, we are entering a period of human history when climate is gaining significantly in historical importance. This serves in turn to explain the rapidly growing body of work on climate history, including a first ever *Handbook of Climate History* (White et al. 2018). All of this has further enhanced interest in the current climate and in the intellectual and political dimensions of “climate” in contemporary societies, as well as experiential responses to climate change that have accumulated in the fairly recent past.

6 Encountering climate change—building a trajectory

While the knowledge history of anthropogenic climate change itself, narrowly conceived, and the history of the significance of climate for past events are both important, we turn now to a third (if overlapping) area of focus as the topic of this special issue: the broader changes in history of which climate change makes up a critical (but not exhaustive or narrow) part. For, it is not only climate that changes. Historicizing work is needed to demonstrate how understandings of and responses to climate change are themselves historical, and hence something different than “climate history,” although inextricably linked to it.

These five papers are certainly not the first to historicize climate change in this respect. We find elements of it in Joshua Howe’s *Behind the Curve* (Howe 2014), with its historicizing of the Keeling curve and its politics. Many of Mike Hulme’s contributions over the last decade fit the same pattern; in his own characterization of his work: “the cultural and epistemic construction of the idea of climate change, and its discursive and material effects” (Hulme 2018). It is worth noting also that the term “historicizing” itself has sometimes been used in this same sense (e.g., Sörlin 2009b; Barnes and Dove 2015), probably to signal an ambition to go beyond the suggestion that lies implicit in the very term “climate change” that it is the record of that change that is the focus of inquiry. Because, for those with the express wish to “historicize climate change” it is rarely climate change itself that is at stake; what is essential is to make that change part of this thing we call “history.” Or, as Koselleck would have said, “historical knowledge (as against information of the past)” requires theoretical reflection on an acknowledged historical problem (White 2002: xii-xiii).

Our attention here is on the history of attempts to understand, engage with, and respond to current and future anthropogenic climate change, whether academically, politically, or experientially, while recognizing that such attempts must themselves grapple with the causes and consequences of the varying phenomena of a changing climate. Within and across political and disciplinary boundaries, human ideas, and practices that respond to climate change are thereby becoming part of what needs to be historicized. “Historicizing climate change” in this sense moves outward from the specific phenomena of climate history and the discovery of anthropogenic climate change, to trace how these phenomena are becoming embedded in the histories of intellectual disciplines and of particular societies. “Historicizing climate change” must

involve these more general histories as well as the specific ones that have so far gone under the labels of climate history and the history of climate change narrowly conceived.

The papers that follow are all representative of this turn. They historicize both the understanding of recent climate debates and the varied responses that such understanding (or lack of understanding) can produce in wider contexts. A brief summary of each paper draws out the main themes that they raise.

Sunil Amrith's article on "Risk and the South Asian Monsoon" goes several centuries back to review the emerging scientific-cum-political understanding of the monsoon, before focusing on views of the monsoon as a challenge for modern India and the Indian state project. The challenge has largely been met by large dam projects to lessen dependence on monsoon agriculture but with contemporary climate change this has opened the door to a new kind of uncertainty and to some, only partially quantifiable, attendant risks; as Amrith writes: "Anthropogenic climate change introduces a new level of uncertainty into monsoon forecasting." Amrith's paper picks up the question of scaling, between the regional effects of the monsoon and the national boundaries of the Indian state, as well as the difficulties of prediction, in relation to the human need to anticipate the future, created by a particular technological mentality and the rapidly changing climatic factors driving the monsoon.

Peder Anker tells the story of Norway, a small Scandinavian country rich in oil and gas, with large oil field reserves and the largest per capita national oil fund in the world, as well as (and partly because of that) one of the world's most affluent populations. But as Anker shows, it is also a country with an early and strong environmental movement that has been riven by debates over how to navigate the realities of a fossil fuel dependent economy, ethically, and politically. Anker argues that we can understand the particular set of global policy approaches (focused on tradeable carbon credits) advocated by some of the country's intellectual and political elite, as an effort to reconcile environmental self-understanding with the country's economic reliance on oil and gas. "A Pioneer Country?"—the question mark is warranted, as Anker's analysis (subtitled "A History of Norwegian Climate Politics") shows.

Both Amrith and Anker seek to explain how states have endeavored to navigate economic, existential, and ideological challenges posed by climate change. In different ways, India and Norway canvassed institutions and political leadership to combine academic approaches with political purposes to formulate elite policy projects. By contrast, Francis Dennig and Katrina Forrester focus primarily on academic practitioners themselves and on currents within academic disciplines, though Dennig's study of "Climate Change and the Re-Evaluation of Cost-Benefit Analysis" does identify the significance of academic debates for public policy. Dennig looks at the emergence of dominant approaches to cost-benefit analysis (CBA) and surveys debates about their applicability for understanding the economics of climate change. He focuses especially on normative questions such as the appropriate choice of discount rate. He concludes "that climate change has reopened a debate on the normative foundations of economics that had laid dormant for some time."

The role of intellectual disciplines in conceiving of the future—and the necessity for them to take stances on controversial normative questions about the nature and extent of the connection between past, present, and future—is also broached by Katrina Forrester on "The Problem of the Future in Postwar Anglo-American Political Philosophy." Forrester explores the emergence of the intergenerational problem that has become acute in contemporary analytical philosophy. She attributes this to environmental debates that included recognition of climate change. She traces a tension (explored by the philosophers in those debates), between conceiving of the future as part of a sequence of historical change (but leading to

future people whose own ethical views are hard to imagine), and flattening it out to give full and equal ethical weight to future people no different from those in the present.

Moving from the study of political theory to the practice of anthropology, Kirsten Hastrup draws on evidence from her many years of field work among North West Greenland Inughuit in Quanaaq to explore how efforts to understand climate change depend upon and disrupt relationships between past and future. Hers is a very concrete narrative of human experiences of climate change in the circumpolar world. Here too, much of the traditional ethnography holds—this is a community that is able to maintain its basic tenets. But climate change, at the same time, “changes everything”, to use Naomi Klein’s (2014) phrase. The role of anticipation, the relationship between explanation and understanding, and the question of scale in tackling the very meaning of historicization of climate change are all engaged powerfully by Hastrup.

These five papers contribute to “climate history” although they are not self-identified (either as papers or in terms of the academic subfield of their authors) as belonging in a particular “climate” subfield of history, archeology, or the environmental and atmospheric sciences. Each author stays fairly loyal to his or her primary area of expertise in political philosophy, colonial and environmental history, economics, or anthropology. Yet, they all help to “historicize climate change.” Historicizing this planetary and global/societal phenomenon requires unusual combinations of efforts in a multitude of disciplines, not least in the social sciences and humanities.

At the same time, these papers “perform” historical work as they articulate their problems. Each addresses, in a particular way, an encounter with climate change, a phenomenon that may have occurred in the past, as natural variability, but which in its current anthropogenic version cannot be discussed only in terms of effects or human/societal responses. In reality, climate change must be addressed in moral, political and intellectual terms, and all such discussions will follow a historical trajectory. At some point anthropogenic climate change enters the discussions of a community of hunters in the Arctic, a community of political economists or philosophers thinking about the future, or the intellectual and political leadership of a nation state. They all find that the foundations on which they have built their understanding and practice are changing, probably forever. The “history” here is about past climates only more indirectly (although distinct instances of historical climate change can sometimes play important roles). Rather, it is about history as the social space where encounters take place and where new conditions for humans and societies and their companion species and their life worlds in natures and environments are unfolding and negotiated.

Showcasing the five studies in this vein is useful, because they are all anchored in a theoretical approach that locates climate change in history and likewise traces the histories that evolve around it. We can already see that this is work that attracts scholars in the social sciences and humanities. But we must also reflect on the fact that most historians and other humanists and social scientists have still not (yet?) found it relevant to engage with climate issues. Given the pervasive nature and the ominous ramifications of climate change, would it not be useful to consider historicizing climate change to engage wider strands of history, and related disciplines? Could climate change history be sorted as a dimension of the history of capitalism? Should it be located in a historical discourse centered on justice, distribution, and rights, one that engages postcolonial scholars and social historians as much as specialists in the history of atmospheric sciences and meteorology? What is climate, and what could it be, in economic history? In business history? Feminist history? Diplomatic history? Subaltern history? How, taking Dipesh Chakrabarty’s much debated “species history” proposition seriously, could

it be an active part of a, perhaps refined, Big History on the planetary level? (Chakrabarty 2009; Christian 2004).

This would involve widening the range of historical specialists involved, as this special issue has sought to do. Many of these specialists work on issues of power and politics that are close to the hearts of broad social groups, or on histories of ideas that may seem at first blush to be unrelated to the materialities of climate. The writing of a broad and integrated history makes it necessary to reflect on the relative weight of different factors. If we think that climate change is an increasingly important factor in history it behooves us to consider how it is affecting historical understanding and the self-understanding of other disciplines as their histories unfold. Climate change is working its way through social institutions, legislation, economic regulation, and markets, and it will become visible in cultural expressions and a wide range of intellectual fields and social practices.

To historicize climate change in the sense of the “*climate change of modern, contemporary, and future societies*” rather than climate change only as it appears in nature and environment is not only an urgent and worthy mission. It may also serve as a common ground to engage, bridge, and thereby further advance, the two dominant strands of previous climate historiography. By uncovering modes of intellectual engagements with climate change, the historicizing work exemplified here may also advance the practical efforts to counter and hopefully escape anthropogenic climate change to which so many such engagements point as urgent.

Acknowledgements We wish to thank the Princeton Institute for International and Regional Studies which provided the funding for the 2014 workshop on “Historicizing Climate Change,” organized by Melissa Lane and Robert Socolow, at which the papers in this special issue were first presented, and Socolow together with J. R. McNeill for serving with us as guest editors of this special issue. In addition to the authors in this special issue, other contributors to the workshop enlivened the discussion and their ideas have informed this introduction more broadly, including Deborah Coen, Caley Horan, Dale Jamieson, Jonathan Levy, Deborah Poskanzer, and Samuel Randalls; commentators Jeremy Adelman, Francis Dennig, James Fleming, Marc Fleurbaey, Sivan Kartha, Syukuro Manabe, J. R. McNeill, Jonathon Porritt, V. “Ram” Ramaswamy, Thomas Schelling, Richard Somerville, and Gus Speth; and rapporteurs Rachel Baker, Philip Hannam, David Kanter, Geeta Persad, and Nathan Ratledge, as well as all the other participants, too numerous to name here. We are also indebted to the editors and staff of this journal for their advice and patience and to Graeme Wynn for many suggestions of improvements on a draft manuscript.

Open Access This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

References

- Barnes J, Dove MR (eds) (2015) *Climate cultures: anthropological perspectives on climate change*. Yale University Press, New Haven, CT
- Behringer W (1988) *Hexenverfolgung in Bayern: Volksmagie, Glaubenseifer und Staatsräson in der Frühen Neuzeit*. Oldenbourg, München
- Behringer W (1995) Weather, hunger and fear: origins of the European witch-hunts in climate, society and mentality. *Ger Hist* 13(1):1–27
- Behringer W (1999) Climatic change and witch-hunting: the impact of the Little Ice Age on mentalities. *Clim Chang* 43:335–351
- Behringer W, Lehmann H, Pfister C (eds) (2005) *Kulturelle Konsequenzen der “Kleinen Eiszeit”/cultural consequences of the “Little Ice Age”*. Vandenhoeck & Ruprecht, Göttingen
- Bolin B (2007) *A history of the science and politics of climate change*. Cambridge University Press, Cambridge

- Bonneuil C, Fressoz J-B (2016) *The shock of the Anthropocene: the earth, history and us*. Verso, London
- Brooke JL (2014) *Climate change and the course of global history: a rough journey*. Cambridge University Press, Cambridge
- Brooks CEP (1926) *Climate through the ages: a study of the climatic factors and their variations*. R. V. Coleman, New York new ed. 1949
- Brooks CEP (1951) Geological and historical aspects of climate change. In: Malone TF (ed) *Compendium of meteorology*. American Meteorological Society, Boston
- Brown N (2001) *History and climate change: a Eurocentric perspective*. Routledge, London & New York
- Büntgen U, Hellmann L (2014) The little ice age in scientific perspective: cold spells and caveats. *J Interdiscip Hist* 44(3):353–368
- Büntgen U et al (2011) 2500 years of European climate variability and human susceptibility. *Science* 331:578–582
- Callendar GS (1938) The artificial production of carbon dioxide and its influence on temperature. *Q J R Meteorol Soc*
- Carey M (2010) *In the shadow of melting glaciers: climate change and Andean society*. Oxford University Press, New York
- Chakrabarty D (2009) A climate for history: four theses. *Crit Inq* 35(2):197–222
- Christensen M, Nilsson A, Wormbs N (2013) *Media and the politics of Arctic climate change: when the ice breaks*. Palgrave MacMillan, New York
- Coen D (2013) *The earthquake observers: disaster science from Lisbon to Richter*. The University of Chicago Press, Chicago & London
- Coen D (2018) *Climate in Motion: Science, Empire, and the Problem of Scale*. The University of Chicago Press, Chicago & London
- Costanza R, Graumlich L, Steffen W (eds) (2007) *Sustainability or collapse: an integrated history and future of people on earth*. MIT Press, Cambridge, MA
- Christian D (2004) *Maps of time: an introduction to Big History*. University of California Press, Berkeley & Los Angeles
- Cruikshank J (2005) *Do glaciers listen?: local knowledge, colonial encounters, and social imagination*. UBC Press, Vancouver
- Darwall R (2013) *The age of global warming: a history*. Quartet Books, London
- Diamond J (2004) *Collapse: how societies choose to fail or succeed*. Viking, New York
- Dodds K, Powell RC (eds) (2014) *Polar geopolitics: knowledges, resources and legal regimes*. Edward Elgar, Cheltenham
- Doel R, Friedman RM, Lajus J, Sörlin S, Wråkberg U (2014) Strategic Arctic science: national interests in building natural knowledge – interwar era through the cold war. *J Hist Geogr* 42:60–80
- Edwards PA (2010) *A vast machine: computer models, climate data, and the politics of global warming*. MIT Press, Cambridge, MA
- Fagan BM (2000) *The little ice age: how climate made history, 1300–1850*. Basic Books, New York
- Fleming JA (2007) *The callendar effect: the life and work of G. S. Callendar*. American Meteorological Society/Friedman, Boston
- Friedman RM (1989) *Appropriating the weather: Vilhelm Bjerknes and the construction of a modern meteorology*. Cornell University Press, Ithaca, NY
- Glacken C (1967) *Traces on the Rhodian shore*. University of California Press, Berkeley, CA
- Grove J (1988) *The little ice age*. Methuen, London
- Haldon J, Mordechai L, Newfield TP, Chase AF, Izdebski A, Guzowski P, Labuhn I, Roberts N (2018) History meets palaeoscience: consilience and collaboration in studying past societal responses to environmental change. *Proc Natl Acad Sci* 115(13):3210–3218
- Hamblin JD (2013) *Arming mother nature: the birth of catastrophic environmentalism*. Oxford University Press, New York
- Hartman S, Ogilvie AEJ, Ingimundarson JH, Dugmore AJ, Hambrecht G, McGovern TH (2017) Medieval Iceland, Greenland, and the new human condition: a case study in integrated environmental humanities. *Glob Planet Chang* 156:123–139
- Heise U (2008) *Sense of place and sense of planet: the environmental imagination of the global*. Oxford University Press, Oxford
- Heise U (2010) *Nach der Natur: Das Artensterben und die moderne Kultur*. Suhrkamp, Frankfurt am Main
- Hieu Phung Corsi (2018) Did sixteenth-century Vietnam suffer a climatic downturn?: a possibility to reconstruct premodern Vietnamese perceptions of climate. In: Paper, 36th annual meeting of the American Society for Environmental History, Riverside CA, 16 March
- Hobsbawm EJ (1954a) The general crisis of the European economy in the 17th century. *Past and Present* 5:33–53
- Hobsbawm EJ (1954b) The crisis of the 17th century—II. *Past and Present* 6:44–65
- Höhler S (2015) *Spaceship Earth in the Environmental Age, 1960–1990*. Pickering & Chatto, London
- Holm P, Viniwarter V (2017) Climate change studies and the human sciences. *Glob Planet Chang* 156:115–122

- Hornborg A, Crumley CL (eds) (2006) *The world system and the earth system: global socioenvironmental change and sustainability since the Neolithic*. Left Coast Press, Walnut Creek, CA
- Howe JP (2014) *Behind the curve: science and the politics of global warming*. University of Washington Press, Seattle, WA
- Hulme M (2009) *Why we disagree about climate change: understanding controversy, inaction and opportunity*. Cambridge University Press, Cambridge
- Hulme M (2011a) Meet the humanities. *Nat Clim Chang* 1(4):177–179
- Hulme M (2011b) Reducing the future to climate: a story of climate determinism and reductionism. *Osiris* 26: 245–266
- Hulme M (2018) <https://www.geog.cam.ac.uk/people/hulme/>. Accessed 1 August 2018
- Huntington E (1915) *Civilization and climate*. Yale University Press, New Haven, CT
- IHOPE (2018) <http://ihopenet.org/>. Accessed 26 Feb 2018
- Izdebski A (2018) Poland's golden centuries and the little ice age: studying the impact of climate change on economy using natural scientific and historical data. In: Paper, 36th annual meeting of the American Society for Environmental History, Riverside CA, 16 March
- Klein N (2014) *This changes everything: capitalism vs. the climate*. Simon & Schuster, New York
- Koselleck R (1975/1997) *The temporalization of concepts*. Finnish yearbook of political thought vol 1. University Press, Jyväskylä
- Koselleck R (1985/2004) *Futures past: on the semantics of historical time*. Columbia University Press, New York
- Lamb HH (1972/1977) *Climate: present, past and future*, 2 vols. Methuen, London
- Lamb HH (1982) *Climate, history and the modern world*. Routledge, London
- Le Treut H, Somerville R, Cubasch U, Ding Y, Mauritzen C, Mokssit A, Peterson T, Prather M (2007) Historical overview of climate change. In: *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S et al eds.]. Cambridge University Press, Cambridge & New York
- Levack BP (1987) *The witch-hunt in early modern Europe*. Longman, London & New York
- Lieberman V (2003) *Strange parallels: Southeast Asia in global context, c. 800–1830*. Volume 1. Integration on the mainland. Cambridge University Press, Cambridge
- Lieberman V (2012) The impact of climate on Southeast Asia, circa 950–1820: new findings. *Mod Asian Stud* 46(5):1049–1096
- Masco J (2010) Bad weather: on planetary crisis. *Soc Stud Sci* 40:3–30
- Masco J (2014) *The theater of operations: national security affect from the cold war to the war on terror*. Duke University Press, Durham, NC
- Matthes FE (1939) Report of the Committee on Glaciers, April 1939. *Trans Am Geophys Union* 20:518–523
- Mauelshagen F (2010) *Klimageschichte der Neuzeit 1500–1900*. Wissenschaftliche Buchgesellschaft, Darmstadt
- Mauelshagen F (2014) Redefining historical climatology in the Anthropocene. *Anthropocene Rev* 1(2):171–204
- McGrath A, Jebb MA (eds) (2015) *Long history, deep time: deepening histories of place*. ANU Press, Canberra
- McNeill JR, Engelke P (2016) *The great acceleration: an environmental history of the Anthropocene since 1945*. The Belknap Press of the Harvard University Press, Cambridge, MA
- Ogilvie A, Jónsson T (2001a) The Iceberg in the Mist: Northern Research in Pursuit of a 'Little Ice Age'. In: Jones PD, Briffa KR (eds) *The "Little Ice Age": Local and Global Perspectives*. Climatic Research Unit, University of East Anglia, Norwich
- Ogilvie A, Jónsson T (2001b) 'Little Ice Age' research: a perspective from Iceland. *Clim Chang* 48:9–52
- Paglia E (2015) Not a proper crisis. *Anthropocene Rev* 2(3):247–261
- Pálsson G (2005) *Travelling passions: the hidden life of Vilhjalmur Stefansson*, transl. K Kunz. Winnipeg: University of Manitoba Press, 2005
- Parker G (2013) *War, climate change and catastrophe in the seventeenth century*. Yale University Press, New Haven
- Pfister C (1988) *Historische Umweltforschung und Klimageschichte, mit besonderer Berücksichtigung des Hoch- und Spätmittelalters*. In: Fehn K et al (eds) *Siedlungsforschung Archäologie-Geschichte-Geographie*. Bonn, pp 111–128
- Ruddiman WF (2005) *Plows, plagues, and petroleum: how humans took control of climate*. Princeton University Press, Princeton
- Semple EC (1911) *Influences of geographic environment: on the basis of Ratzel's system of Anthropogeography*. New York: Henry Holt. Constable, London
- Sörlin S (2009a) Narratives and counter narratives of climate change: North Atlantic glaciology and meteorology, ca 1930–1955. *J Hist Geogr* 35(2):237–255
- Sörlin S (2009b) The global warming that did not happen: historicizing glaciology and climate change. In: Sörlin S, Warde P (eds) *Nature's end: history and the environment*. Palgrave MacMillan, London, pp 93–114
- Sörlin S (2011) The contemporaneity of environmental history: negotiating scholarship, useful history, and the new human condition. *J Contemp Hist* 46(3):610–630

- Stefansson V (1922) *The northward course of empire*. Harcourt, Brace and Company, New York
- Strange C (2010) The Personality of Environmental Prediction: Griffith Taylor as 'Latter-day Prophet'. *Historical Records of Australian Science* 21:2
- Strange C, Bashford A (2008) *Griffith Taylor: Visionary, Environmentalist, Explorer*. National Library of Australia, Canberra
- Taillandier JD (2015) *Glaciers: The Politics of Ice*. Oxford University Press, New York
- Utterström G (1955) Climatic fluctuations and population problems in early modern history. *Scand Econ Hist Rev* 3(1):3–47
- Warde P, Robin L, Sörlin S (2018) *The Environment – A History of the Idea*. Johns Hopkins University Press, Baltimore
- Weart S (2003/2008) *The Discovery of Global Warming*. Harvard University Press, Cambridge
- White H (2002) Foreword. In: R Koselleck, *The Practice of Conceptual History: Timing History, Spacing Concepts*. Stanford University Press, Stanford, CA, pp ix–xiv
- White S (2017) *A Cold Welcome: The Little Ice Age and Europe's Encounter With North America*. Harvard University Press, Cambridge, MA
- White S, Pfister C, Mauelshagen F (eds) (2018) *The Palgrave Handbook of Climate History*. Palgrave MacMillan, London