

# Communicating the Climate: From Knowing Change to Changing Knowledge

## Introduction

After decades of climate change debate, what should have been obvious from the beginning has become increasingly difficult to ignore, and increasingly urgent: tackling anthropogenic climate change was never going to be straightforward, and it was never purely a scientific, political, or economic question. Instead, something as seemingly abstract and all-encompassing as “climate change” is, and always will be, an existential question, produced by an intimate collaboration between the life worlds and convictions of many different stakeholders. If we expect people to grapple effectively with what climate change means, interdisciplinary academic collaboration—combining the data-driven knowledge of the Earth’s complex systems with an understanding that is more sensitive to the unpredictable and diverse world of humans—has to be part and parcel of how experts shape their messages and share them with the public. Climate change cannot be solved by dumping facts into the public sphere. Because of the scale of sociotechnical transformations that tackling climate change necessitates—changes to the energy system, changes to the agricultural system, changes to the way cities are built, changes to mobility, to name a few—it really is a deeply uncomfortable truth. For many, adapting to climate change means a complete redefinition of their lives. Unsurprisingly, many receive this message, and climate change as its carrier, with skepticism. So, efforts to communicate the daunting complexity of climate change, and the scale of the change needed to prevent or mitigate it, have to account both for how people make sense of these facts and how this knowledge (along with its consequences and distribution) affects them. Yet so far, while there have been attempts to forge the interdisciplinary connections that are key to communicating issues relating to climate change, truly interdisciplinary collaborations have been few and far between.

As concerned human beings and as environmental scholars living in a world that is already experiencing the effects of a changing climate, we consider anthropogenic climate change to be the most pressing matter of our time—followed by overall environmental degradation and species extinction. The people we encounter in our work and our scholarly environment usually tend to agree. Yet public discussion of climate change is still too often dominated by the question of whether or not it is real. In interrogating why this could be the case, we kept returning to the importance of science communication—typically understood as the communication of complex scientific issues to nonexperts, although in this volume we use it to also include communication between the natural sciences and the humanities, between scientists and the public, and between different stakeholders, as well as locals and activists. Not always, it seems, does more information about climate change lead to the desirable outcome—i.e., more action to mitigate

the consequences of climate change or to tackle its causes.<sup>1</sup> This paradox intrigued us, prompting us to look more deeply into science communication.

The notion of stories and the act of storytelling are as fundamental in science communication as in any other form of communication. And as technology now enables us to be more interconnected with other parts of the world in real time than ever before, ever more connections will influence the development of our stories. Along with increased access to education, the technology available to us has enabled people to be more aware of what is happening around the planet, potentially increasing shared concerns of humanity. Satellites and computers, for example, allow us to create and disseminate visualizations of the planet, making it possible to imagine a truly *global* climate. This global perspective is visible in, for example, the graphics produced by the Intergovernmental Panel on Climate Change (IPCC), which outline several different future warming scenarios. Yet no one knows exactly how any of these scenarios would play out in the real world, what the particular negative consequences will be, and how and where they will occur. These stories are still unfolding.

As an early modern historian, one of the two editors of this volume, Katrin, usually knows how a story ends when she starts writing it—although the people living through the stories of the past did not. They still lived in the realm of sideshadowing, where multiple futures were still possible. As scholars, it is important to read the texts they left behind with an open mind, to see how they perceived their own situation and the world they lived in—and it can be difficult not to foreshadow too much while writing. The other editor, Jeroen, has no idea how the stories he deals with will end. As a sociologist of science, he thinks about issues of the present and the future, caught up in contemplating issues outside the normal temporal range of human planning. Often, his research topic, climate engineering, leads him to think about developments five, thirty, a hundred years into the future, captured in the uncertainty of prediction and foreshadowing. For both of us, it is quite exciting to write about the present. We do not know how this story will end, but we do know that we want to influence it.

As both actors and subjects in the story of climate change, we are obviously invested in its outcome, for better or for worse. With our dual role as citizens and “experts,” we, along with many others, share a responsibility to communicate the uncertainties, the complexity, and the implications of different climate futures, while still mobilizing as many people as possible to take action, whether individually or collectively. It may be an idle hope to think that we can change everyone’s behavior, but we should at least try to do our part in the communication of climatic futures. The communication of the insights and results of climate science to the general public in the recent past has created awareness but has, as of yet, not been sufficient to foster sustained political pressure at a level that will definitely limit climate change. Neither scaremongering nor cold, hard facts have convinced people to change their attitudes and

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<sup>1</sup> Dan M. Kahan, Ellen Peters, Erica Dawson, and Paul Slovic, “Motivated Numeracy and Enlightened Self-Government,” *Behavioural Public Policy* 1 (2013): 54–86.

lifestyles<sup>2</sup>—and that is if something called “cold, hard facts” can even be said to exist. Hope, too, seems only to work to a limited extent. Time is of the essence when tackling climate change, but the timing cannot be “too late”—otherwise demoralization could lead to even fewer efforts.

So, in the case of anthropogenic climate change, as in almost all other parts of life, the way the message is conveyed is as important as the message itself. Simply assuming that people will accept facts imposed on them by the authority of climate scientists in a laboratory far away<sup>3</sup> is not only naïve, it also degrades the agency and independence of people. Science has provided us with a clear, albeit particular, understanding of climate change. Still, it has not been enough to foster sustained change. Studying the theory and practice of climate-change communication, with a reflexive focus on how it can be improved, is therefore essential to our own scholarly endeavors. What can we do to mobilize more climate outrage, more climate hope? Who should be the most important actors in the climate-change debate? Should the scientist and the science even be at the center of the debate, or are there other aspects that need more attention? These are questions we will tackle in this *Perspectives* issue.

Questions of interdisciplinarity and engaging with different forms of knowledge were already familiar to us from our doctoral projects, and it was these questions that initially brought us together. As members of the structured Doctoral Program Environment and Society at the Rachel Carson Center, we interact with scholars from many different disciplines and many different countries on a daily basis. We both deal with climate change—be it as a consequence of a volcanic eruption during the Little Ice Age or as climate engineering as a proposed additional measure to tackle climate change today. Before collaborating on this volume, both of us were grappling with the enormity of climate change; both of us were grappling with the passivity of human responses to what the science is saying—both our own and that of others. Both of us were interested in the question: How can we integrate findings from the climate sciences into a doctoral project that is at home in the humanities and the social sciences rather than the natural sciences?

Our concerns coalesced into a central question that ultimately became an interdisciplinary workshop, “Communicating the Climate: How to Communicate Scholarly Findings on Climate and Weather in a Controversial Time,” which we organized at the Rachel Carson Center in August 2017. The workshop’s overarching questions were how to effectively communicate scholarly findings on climate and weather between different disciplines and to the public, as well as how to make sure our work has an actual impact. Four experts from different academic fields reflected on these topics, initiating lively discussions among the workshop participants and the Carson fellows, visiting scholars, and doctoral students who also attended. Dania Achermann spoke about some of the everyday challenges that humanities scholars and natural scientists face when working together on climate-related issues. Christoph Baumberger discussed

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<sup>2</sup> See Elin Kelsey’s *RCC Perspectives* issue on “Beyond Doom and Gloom” and her multimedia Virtual Exhibition on the Environment and Society Portal.

<sup>3</sup> These labs can of course be “far away” geographically, spatially, or practically, but also culturally, hierarchically, or psychologically.

the vocabulary used in IPCC reports (which are the result of international and interdisciplinary collaborations), the strengths and weaknesses of the reports, and how to read them. Grit Martinez addressed the roles of policies, governance, and civic activism in how different countries tackle climate change today. Helmuth Trischler reminded us of the different forms of (climate) knowledge production that play their part in questions around responsibility and climate justice in climate change. It was Helmuth's input during the workshop that provided the initial ideas that inspired this *Perspectives* issue.

But it is not enough to discuss these issues among ourselves as scholars; engagement with other groups, such as policy makers, citizen scientists, and local and indigenous activists and residents, is crucial. Another important issue in this debate is whether our various identities are mutually exclusive—i.e., can a scientist also be an activist? What is the role of expertise in the communication of climate change? How central should its authority be?

The different essays in this issue discuss the role of the scientist in producing knowledge about climate change, and whether science should be decentered to make space for local, indigenous, or citizen-science approaches. This discourse about the role of the scientist takes us on a journey through time as well as around the globe to study several examples involving different actors. Together, the contributions to this issue tell a story of how we can know the climate, who can know it, and what knowledge is relevant and accepted (and by whom). Simultaneously, it asks the question of how knowing can change people, and perhaps inspire changes in their opinions and behaviors.

Once all the drafts for this issue came in, it was clear that almost every author felt the explicit need to address and defend the established scientific consensus behind anthropogenic climate change. As editors, we have decided to cut those parts to avoid repetition. But we would like to underline that all authors of this issue, whatever else their differences of opinion, are convinced that we live in a unique time in which the global temperature is rising due to emissions of greenhouse gases into the atmosphere as a result of human activity, and these emissions cause changes in local and global weather patterns. We also all agree that there is a dangerous lack of climate-change mitigation. Many of us, however, disagree about *how* to overcome this action deficit in climate change and in science communication. The papers collected in this issue represent our responses to the discussions in the workshop; they are diverse and explorative in the range of their topics. As such, they are pieces to think with rather than comprehensive discussions of communication theory and the history of science, which can be found elsewhere. This *Perspectives* issue provides different arguments and reflections about where to go from here. The human actors depicted in the different articles experience and embody these different visions, either directly or through stories.

The volume begins with an essay by Lynda Walsh, who—just as she did during our workshop—introduces the idea that the established authority of Western science may at times hamper rather than help meaningful action. We should therefore, she argues, seriously consider weaning science from its central

role as the core provider of knowledge and authority. According to Jeroen Oomen, our second author, this endeavor could prove dangerous and problematic because, despite its limitations, science does provide some neutral ground and established ways of knowing. These two pieces serve as the foundation on which the other essays build their arguments.

The first section, “Knowing Weather and Climate,” explores the question of how climate and weather can be known, and what it means to know. We start by looking back in time with Katrin Kleemann’s piece on an eighteenth-century volcanic eruption in Iceland that shows how knowledge influences the understanding of the world around us. Linden Ashcroft builds on this question with her story about the rescue of old weather data by citizen scientists.

The second section, “Negotiating Knowledge,” addresses how different forms of knowledge, constructed by different groups and interests, are negotiated and contested around the globe. Emma Shortis’s portrayal of the World Park campaign in Antarctica shows how scientific knowledge can be mobilized and how it can be used to further activist goals (as well as industrial interests). A similar argument is made by Saskia Brill, whose story about First Nations in Canada shows that science can not only be used as a political *tool*, but it can also be a meeting place for different interests. Next, Emilie Schur Petri analyzes a transnational example of building climate resilience, in which community health workers help shape knowledge about climate change and pollution, in order to foster resilience in their communities. Finally, Dorothea Born problematizes the role of science, warning that “Science” as it is commonly understood is also a construction that has often been used to justify and legitimize the barbarism of colonialism, exploitation, and racism. Science is not only knowledge—it is also a tool for power and domination.

The three papers that comprise the final section, “From Knowing to Action,” raise the question of how knowing can be translated into action. Vera Karina Gebhardt Fearn illustrates the importance of the immersive arts for climate-science communication, while Eline Tabak looks at the potential of climate-change novels for the same purpose. Grit Martinez concludes this section with her comparison of the cultural settings of the climate change debate in the United States and Germany, making clear that most action is still local and regional, and it has to be taken by those who inhabit and govern their immediate environments.

Over the course of the coming decades or centuries, climate change will increasingly manifest in unexpected and volatile ways. On a global level, climate change will translate into rising sea levels as rising temperatures continue to cause the polar and glacial ice caps to melt and the warmer oceans to expand. On a regional level a changing climate might translate into desertification, loss of arable land, loss of crop yields, and water shortages in dry regions; in coastal regions it will translate into intensified storm frequency and flooding. In some regions, such as North America, climate change can (and already does) translate into a shift in the jet stream, which can cause colder and harsher winters. No single piece of

writing will change these facts. No cumulative body of scientific research has proved powerful enough to avert these developments. In recent years, many authors have reflected on this apparent failure. Many of these reflections will be referenced, tackled, and discussed in this volume. Because the cumulative knowledge provided by science has not proved effective at galvanizing action, and the knowledge construct of science is highly problematic in its own right, more and more people have started to question what science can provide, what it can do.

In this issue, many people from a variety of disciplines have spoken to this question. The answers provided are not uniform. They are not necessarily profound. And they will likely not significantly alter the climate-change debate. But cumulatively, they offer a reflection on how science communication is a multifaceted beast, a daunting and challenging endeavor that is unavoidably important. *Communicating the Climate* thus contributes to the maturing conversation about climate change and about science—about what science does, what scientists do, and what science *should* do in the face of the environmental crisis we are facing. This conversation is a vital part of how to understand climate change.

We would like to thank everybody who participated in our workshop in August 2017. We also wish to express our gratitude to the Marie Curie Environmental Humanities Innovative Training Network (ENHANCE ITN), facilitated by the European Union and the European Commission, for funding for this workshop, and to the Rachel Carson Center for hosting our workshop and all the staff members who helped us make it happen. Particularly, we would like to thank Hannah Roberson for her invaluable assistance editing this *Perspectives* volume.