Possibility in an era of climate change: anthropology, knowledge, politics

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Abstract

We live in an era already impacted by global anthropogenic climate change, its effects getting visibly worse every year, often outstripping predictions. Yet countries are unable to meet their goals or strengthen their targets on climate change. Meanwhile researchers have accumulated the scientific and technical knowledge to understand climate change in all its ambiguity and the international community knows what kind of action it will take to limit global warming. Between these levels, where governance and scientific knowledge come together, it is less clear. This dissertation is about the challenges and possibilities of addressing global anthropogenic climate change, both politically and anthropologically, at this murky zone of encounter. Specifically, it examines a network of mid-level non-profit climate NGOs based in the United States and Canada who bring together the work of both scientists and political actors to meet the demands of a changing global climate. How is climate science made actionable and climate action scientifically accurate? How do we understand and act on the scale of the global climate? How are climate-safe futures rendered possible? Based on over seventeen months of fieldwork, this dissertation tackles these questions and more by investigating how the network of organizations and their people problematize and act upon climate change at the intersection of what are deemed science and politics. Fieldwork involved following interlocutors who telecommuted, working remotely over digital communication technology, periodically attending in-person meetings, conferences and summits. The research therefore required a variety of methods, including digital, remote and in-person fieldwork.

Chapter One of the dissertation outlines the shape of the field by taking a close look at fieldwork in action around the edges of one major climate change summit, and in doing so describes the space these actors and organizations occupy between science and politics, grassroots activism and high-level diplomacy. The second chapter focuses on one US-based non-profit NGO, experts on system dynamics modelling and climate education. I lay out a brief oral and written history of the organization and its field of study and intervention. Chapter Three develops the concept of "possibility," attending to how this same organization and its actors create the conditions for people to envision and enact desirable futures of their own imagining, from their own perspective, background and communities. The subject of Chapter Four is a different, Canada-based non-profit, following the story of the remote organization and in-person implementation of Canada's largest conference of grassroots climate activists. The chapter argues that the events of the conference speak to the different problematizations of climate change at play among diverse participants, along with the corresponding challenges to notions of epistemology, expertise and political action. Finally, Chapter Five returns to the first chapter's deliberations on fieldwork to more thoroughly explore the mixed-methods remote and in-person fieldwork used to study two organizations that convene corporate climate action and subnational climate action data coordinators, respectively. Overall, this research highlights the pressing theoretical and practical challenges of how to imagine and enact a world that is equipped to face climate change.

Résumé

Nous vivons de nos jours à une époque qui subit déjà les effets, toujours plus pressants et imprévisibles, du changement climatique anthropique global. Pourtant, les pays du monde dans leur ensemble, déjà dans l'incapacité d'atteindre leurs cibles climatiques établies, se trouvent encore moins capable de les renforcer. Pendant ce temps, les chercheurs recueillent de plus en plus de connaissances techniques et scientifiques leur permettant de comprendre toujours mieux le changement climatique dans toutes ses ambiguïtés. De son côté, la communauté internationale a déjà déterminé quel type d'actions à entreprendre pour limiter le réchauffement climatique. La jonction de ces deux milieux, l'espace où la gouvernance et la connaissance scientifique se rencontrent, reste à articuler. C'est dans cette espace de rencontre entre politique et science que le travail de cette thèse de doctorat se situe, là où se négocient les enjeux et possibilités de réponses face au changement climatique anthropique global. Plus particulièrement, elle enquête sur un réseau d'ONG intermédiaires au Canada et aux États-Unis qui rassemblent le travail de scientifiques et d'acteurs politiques afin de répondre aux exigences d'un climat global en plein changement. Comment les sciences climatiques se mettent-elles en action ? Comment s'adapte-elle l'action politique à la recherche scientifique ? Comment est-ce que nous appréhendons et agissons à l'échelle du changement climatique global ? Comment un futur climatique sécuritaire peut-il être rendu possible ? Sur la base d'un terrain de dix-sept mois, cette thèse aborde ces questions, et d'autres encore, en enquêtant sur la manière dont le réseau d'organisations et ceux qui y travaillent problématisent et agissent contre le changement climatique, à l'intersection entre les mondes de la science et du politique. Ma méthode de terrain a consisté à suivre des interlocuteurs dans leur télétravail, en opérant à distance par des technologies de communication numériques, et en participant périodiquement aux réunions, conférences et sommets. J'ai donc dû mobiliser différentes modalités de participation au terrain: numérique, à distance et présentiel.

Le premier chapitre de la thèse retrace le champ du terrain en portant une attention particulière au terrain en action aux contours d'un sommet majeur du changement climatique. Ce faisant, j'y décris l'espace que ces acteurs et ses organisations occupent entre les milieux scientifiques et politiques ainsi que l'activisme local populaire [*grassroot*s] d'une part, et les échelons élevés de la diplomatie de l'autre. Le deuxième chapitre de la thèse porte sur le cas d'une ONG américaine, experte en modélisation de dynamiques des systèmes et en sensibilisation et vulgarisation scientifique. J'y expose brièvement l'histoire orale et écrite de l'organisation et de ces champs d'étude et d'intervention. Le troisième chapitre développe le concept de "possibilité." Il s'attache à la manière dont cette même organisation et ses acteurs créent les conditions propices à ce que les gens puissent mettre en pratique leurs visions d'un avenir désirable et durable, et ce selon leur propre perspective, expérience et communauté. Le chapitre quatre traite d'une autre organisme, cette fois canadien, suivant l'organisation à distance et l'exécution en présentiel de la plus grande conférence du mouvement populaire sur le climat au Canada. Le chapitre défend la thèse que les événements de la conférence se rapportent aux différentes problématisations du changement climatique formulées par divers participants, ainsi qu'aux enjeux correspondant à des notions établis d'épistémologie, d'expertise et d'action politique. Enfin, le chapitre cinq revient sur les considérations de terrain du premier chapitre et explore davantage les méthodes mixes utilisées tant à distance qu'en présentiel pour étudier deux organisations qui convoquent les coordinateurs de données sur l'action climatique infranational et qui organisent l'action climatique corporative. Dans l'ensemble, cette recherche souligne comment les enjeux pressants, à la fois théoriques et pratiques, posent la question de savoir

comment imaginer et édicter un monde qui puisse s’équiper pour contrer le changement climatique.

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Introduction

Living in an era of global environmental change, it is easy to feel overwhelmed, disempowered, grief-stricken. We live in a day and age of hyper-connected globalization, the twenty-four-hour internet news cycle, emails and video calls with friends and family all over the globe. We are alive in a time of "screen time," marked by monoculture factory farms, failing soil productivity, the Great Pacific Garbage Patch. Microplastics are now found in human placenta, in our food, feces and facewash, and even in the air at a remote mountain catchment high in the French Pyrenees.[1] In an era of global anthropogenic climate change that will see a Planet Earth increasingly uninhabitable for human civilization as we know it by 2100, a year no longer out of reach, a year when babies born two, three, four years ago are a grandma's age—we sit on the rocking metro train or walk to the garden, drive in our cars to work and then back again, and the Earth spins slowly, getting hotter and more chaotic with each passing year. Every summer, deep in the southern Indian Ocean, blue whales (the largest animal to ever live) are calling to each other at higher and higher pitches to be heard over the crackle and whoosh of melting polar sea ice (Zak 2019; Leroy et al. 2018). What can one even do with all that?

For many, the current state of the world is woven through with a sense of ambiguous loss and anticipatory grief. We are faced with an ocean of information about ailing ecosystems, with little guidance about how these issues connect—or don't—and what to do about it all. With regard to the global environment, this is an anxiety that the collective actions of large groups of people in the last and coming centuries will affect—are affecting—livability for human and more-than-human life on the planet for thousands and thousands of years to come. And yet, it doesn't have to be this way. The cry from Seattle, 1999, that "Another World Is Possible," still rings true among those of us who have seen its seedlings sprout up in our lives or in our work. This mantra in one way or another drives the actors and organization whose work is the empirical focus of this dissertation research project.

Based on over seventeen months of fieldwork from 2017-2019 in Canada and the United States, this dissertation is about the challenges and possibilities of addressing global

[1] There is scientific literature documenting the presence of microplastics throughout the global environment, including in human placenta (Ragusa et al. 2021), feces (Schwabl et al. 2019), food (e.g. Oliveri Conti et al. 2020), facewash (e.g. Chang 2015), in the air in the French Pyrenees (Allen et al. 2019).

anthropogenic climate change, both politically and anthropologically. Empirically, I focus this inquiry on a network of non-governmental organizations operating at the intersection of what are deemed climate change politics and climate science in North America.[2] This network is populated by the grassroots convenors, policy coordinators, science communicators and educators, data analysts and technology developers working to make climate science politically actionable and climate action scientifically accurate. They do so in a murky zone of encounter, not quite the "boundary organizations" of the "science-policy interface" (see below), nor the spaces of direct action of some grassroots activists. While most of these actors are working from within the NGO space, academics are strewn throughout the network, collaborating and complementing existing work. The organizations are commonly staffed by telecommuters, working remotely over conference calls and digital communication technology. They periodically meet in person. These reunions often occur at the diplomatic and organizing summits that are the outcome of months' work.

Following the shape of the field, this research project required a variety of methods, including digital, remote and in-person fieldwork. Each of the people and organizations that make up the topic of this research address the proclivities of global anthropogenic climate change in their own way—experts in shaping the space where political and scientific knowledge meet.

Over the course of this research, I traveled to four climate summits and conferences in Canada and the US—the ICLEI World Congress 2018 hosted in Montreal in June, the Global Climate Action Summit in San Francisco and Climate Week NYC 2018 in New York in September 2018 and ClimaCon 2018 in Toronto. In addition, I was a participant-observer at several other meetings and workshops, from climate policy role-playing simulations at MIT in Cambridge, Massachusetts to a Canadian Climate Town Hall that I helped to organize in Toronto in the spring leading up the 2019 federal election. I volunteered on the steering committee of ClimaCon, meeting virtually to plan the network-convening conference of largely grassroots Canadian climate organizations. I conducted extensive remote fieldwork, including digital methods using audio and video conference calls, as well as interviews via Skype and an early

[2] For more explicit discussion on the problematization of climate change, especially in North America, as a domain upon which to be intervened at the intersections of climate science and climate change politics, see Fleischmann 2016.

version Zoom with people in at least twelve countries spanning North and South America, Africa, Europe, the Middle East and Asia. I attended numerous live webinars in English and French that presented updated versions of climate-policy models and new white papers; and I participated in bimonthly online meetings convening a global network of sub-national climate action data coordinators. This fieldwork will be explored more below in the section on the phases of research (as well as in the body of this dissertation).

Background—Global Anthropogenic Climate Change

Climate change is a unique problem. Its causes and its effects are long-lasting and distant from one another. It is everywhere and nowhere at once, made up of global, long-term trends that play out locally in mostly imperceptible ways. Driven chiefly by certain human ways of life, its impacts will affect everyone—some more than others. The negative impacts of global climate change are unequally and inequitably distributed across space *and* time, as are the benefits of the fossil-fuel capitalism that has caused it. Those who have contributed the least feel the impacts of this irony lost on so many of us in the Global North who have contributed most. Responsibility and consequence are distributed across decades, borders and difference. In other words, people produce carbon emissions in the United States or the European Union, yet the effects are seen, much sooner and more intensely, in Bangladesh or Greenland. People produce emissions *today*, but it is our children, grandchildren, and great-grandchildren who will deal with growing consequences like sea-level rise and increasingly extreme weather.

Global anthropogenic climate change, as an indicator of human-induced changes in the *global* climate system, is a problem domain with epistemic and moral claims mediated through the concepts and institutions of science. It exists as a distinctive conceptual space, accompanied by the development of "climate science as a global knowledge infrastructure" (Edwards 2010: 8) and subsequent international (aspirationally "global") political institutions meant to act on this knowledge (Beck et al. 2017). This global thinking has an ongoing history, often enmeshed with those of colonialism and imperialism. As Beck, Forsyth, Kohler, Lahsen and Mahony have put it, "Conceptions of the world as a globally connected system ordered by physical, chemical, and biological laws have a long history, animated not just by abstract theoretical advances but by processes of European expansion and the imperial thirst for both facts and resources" (Beck et al. 2017: 1060-1061).

Indeed, the idea of climate as a single, global unit had already been proposed by the mid-19th century. However, early theoretical models of atmospheric circulation had serious limitations in tackling the staggering complexity of the problem of a global system. This place-based—or, at its most aggregated, regional—conception of the climate remained until technological advances following the Second World War. It was the advent of computer models, during and after the war, that could begin to handle the practical task of confirming a theory of general atmospheric circulation. This allowed for the realization of the concept of a *global* climate, previously imagined in terms of physical laws but not practically amenable to calculation. This breakthrough led the way to systems theories of general circulation, which connected the oceans, land, geology, living things and ice in the latter half of the twentieth-century (Yip 2014: 4-8; see Figure 1). The notion of a global climate thus emerged, produced by the complex set of relations *through which* we have come to know and understand it (Edwards 2010): an assemblage of scientists and meteorological phenomena, discourses and institutions, national meteorological services and massive computer models, satellites and weather stations and archives—physical things and actual events in time.

Yet as Paul Edwards (2010: 4) put it in his influential history of climate science, "No one lives in a 'global' climate. Without scientific guidance, not even the most cosmopolitan traveler could perceive a global average temperature change of about [1.2°C], the amount we have seen so far" (Edwards 2010: 4). We can't *see* changes in climatic averages over thirty years and we can't perceive the global climate itself, in all its globality, *per se*. We *can*, of course, see its meteorological impacts and cumulative effects. We can witness how its aggregate, interacting systems change how we experience the day-to-day variation of the state of the atmosphere with respect to its effects on human life (otherwise known as the weather). We *can* measure the global climate, and model it, projecting it into the future and the past. But in its very globality, it exists as an overgrowth, a sum greater than its knowledge-production-system parts. No one lives in a global climate.

All this, of course, does not mean the global climate is not "real." It is grounded in observations and other empirical data, a global knowledge infrastructure, and requires active reproduction throughout. The labor and maintenance of this knowledge-production system is the very reason why we can even think of a planetary climate as something to be observed, understood, affected by human activities, cared about by the general public and managed through

the regulation of the chemistry of the atmosphere (Edwards 2010: 8; Whitington 2016). The global climate is a vital concept for this dissertation; the dynamic, nonintuitive characteristics of climate change described above are due in large part to the global nature of climate change. This understanding of global climate change greatly informed the design and theoretical framework I adopted in my anthropological study of global anthropogenic climate change and its problematization at the intersection of science and politics.

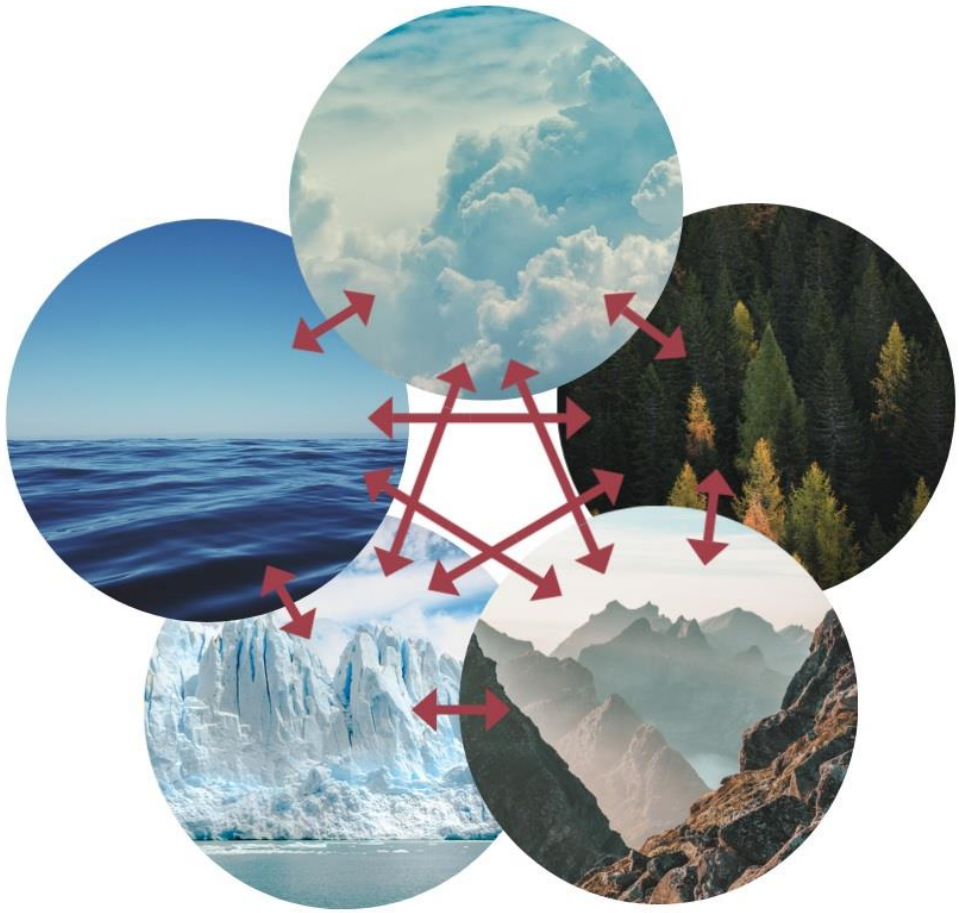

Figure 1 A representation of the five interacting spheres of the global climate system, from top, clockwise: the atmosphere, biosphere, lithosphere, cryosphere and hydrosphere. Femkemilene, CC BY-SA 4.0, via Wikimedia Commons

Background—Key Terms and Framing

Climate change in this analysis, then, is an emergent, ever-unfolding, global phenomenon. It is a phenomenon that "eludes stability and specificity" (Callison 2014: 12), with its "boundary-crossing propensities" and "material processes, evidenced by climate science, that threaten to disrupt what we might call a modern way of being in the world" (Knox 2020: 227; 14). Beyond either weather (and, equally, merely the other impacts of climate change) or the abstractions of scientific models, climate change is, as Knox conveys it, "a phenomenon that does not fall neatly into a category of either immediate materiality or abstract representation" (Knox 2020: 5). Here, following Callison, it is "treated simultaneously as object, issue, cause, experience, and body of scientific research, evidence, and predictions" (Callison 2015: 11). More than this, however, it is a pluralistic (Callison 2015) problem domain (Whitington 2016; Rabinow 2003) that is not reducible to merely our understandings of it. It exists beyond us humans.

This is a framing based not only in climate science and its history, but in anthropological and related conceptualizations of this broad object of study. Candis Callison's *How Climate Change Comes to Matter: The Communal Life of Facts* (Callison 2014) and Hannah Knox's *Thinking Like a Climate: Governing a City in Times of Environmental Change* (Knox 2020) are two of the few anthropological monographs that treat climate change as a direct object of study. Their methods and theory provide, in differing ways, grounding and inspiration for this dissertation's theoretical framing of climate change. Nevertheless, this dissertation relies on its own particular framing and analytic, situated within a particular intellectual genealogy. I will expand briefly and then differentiate my own approach to understanding and studying climate change anthropologically.

Callison's framework for analyzing climate change in its "form of life" is a Wittgensteinian theoretical framework, consisting of meaning-creation through *action* on an "emergent" techno-scientific problem in motion (e.g Wittgenstein 2000; Fischer 2003). This framework is understandable for and works precisely given her more specific interests in the media and various "vernaculars" through which climate change and its science are understood, given meaning, negotiated and enunciated—in short, made to matter—by and for five disparate publics. It also allows Callison to understand how difficulties in dealing with climate change brush up against and reveal key democratic and scientific ideals**,** indexed ethnographically

through the ways in which the five groups make climate change matter in their worlds. Likewise, Hannah Knox's theoretical framework of "thinking like a climate" is based in Gregory Bateson's (and subsequently Eduardo Kohn's) "ecology of ideas," an understanding of the (natural) world as a communicative web of interactions between entities, each of which is understood as an idea or thought; humans are but a part of this interplay of entities (e.g. Bateson 2000; Kohn 2013). Through their interactional, significatory capacities, entities like a global climate can think, as an *effect* of a stabilized coherence or pattern in their interactions with other entities. To inhabit an anthropological mode of thinking like a climate allows for Knox's simultaneous focus on both the material and semiotic (meaning-making) dynamics of climate change and its affects/effects on humans and the rest of the world—including science and municipal-level politics.

In this dissertation, I take up many of both author's articulations of the problem of climate change, along with Callison's framing of climate change as an emergent phenomenon that can and should be treated multitudinously and Knox's objective of treating climate change, science and politics and epistemological conditions of possibility as happening both beyond human beings and through them (Knox 2020: 234). However, departing from Callison and Knox, I leave behind both scholars' focus on semiosis, meaning and representation. It is my belief, based in seven years of doctoral research, that if we are to address the challenges—articulated in both Knox's, Callison's and my own earlier accounts (Knox 2020: 16; Callison 2014: 19; Fleischmann 2016; Fleischmann and Yip 2019)—that climate change makes to the possibility of doing politics, to democratic and scientific ideals and to anthropological concepts such as society and culture, we must take another route theoretically.

This route must move beyond a focus on semiosis or representational practice, beyond what Elizabeth Povinelli has called, "the generosity of *extending* our form of semiosis" to nonhuman beings and forces, such as climate change; this move forecloses the possibility of it provincializing us (Povinelli 2017: 142). In other words, if an entity like global climate change is already necessarily understood as producing thought-qua-signs, can we truly attempt to understand it in its own terms "through the surprise-producing practice called fieldwork/research" (Rees 2018: 68)? Although climate change is not the first existential threat, as Black and Indigenous people know well (Heglar 2019), we are not familiar with challenges at the magnitude of climate change: its global scale, its gestures to the universal yet its differentiated causes and effects, the injustice and uncertainty of its system dynamics. If we are

to affirm and explore a bleeding edge of possibility, already transforming the world, I am convinced we must be open to forms of being-in-relation-with-others that look nothing like the relations and subject —and its subsequent form of semiosis—that helped give rise to the climate crisis. As Pandian recently wrote, "we do need ways of seeing the world anew" (Pandian 2019: 120–121).

Instead, in this dissertation I attempt to study global anthropogenic climate change, its science and politics, by focusing on an analytic of problematization: how and why problems are defined as they are. In a May 1984 interview just before his death, Michel Foucault defined the study of problematizations as "a question of a movement of critical analysis in which one tries to see how the different solutions to a problem have been constructed; but also how these different solutions result from a specific form of problematization" (Foucault 1984d: 389). With problematization, one can understand a problem like climate change as a multiplicitous, changing object on the move, without necessarily a reliance on an analysis of representation or theory of semiosis. Further, in studying how climate change is *problematized* at the intersection of science and politics in this dissertation, I am able to take these three "charismatic mega-categories" (Reddy 2014) as they appear in the field: "The study of modes of problematization (that is, of what is neither an anthropological constant nor a chronological variation) is thus the way to analyze questions of general import in their historically unique form" (Foucault 1984a : 14). In this sense, rather than discrete entities fixed on either side of an analytical divide, both politics and science are conceptualized "ethnographically"—that is, they are shifting actor categories, or moving concepts endemic to the field of research.

Most of the politics involved in this dissertation can thus be described by the informal designation of "lower-case-p" politics. That is, it is *not* an "upper-case-p" Politics that is practiced directly in the governmental spheres of sub-national or national policy, nor exclusively in the realms of international climate negotiations. In many instances throughout the dissertation, other scholars might instead designate the political work being done by my interlocutors as political "action," although this designation, in my opinion, is perhaps less clear or as unclear as a "lower-case" and "upper-case-P" denotation for politics/Politics. In any case, it should be noted that the space where science and politics encounter one another in this dissertation, while making the policy of Politics possible, is not about the exchange of information for the direct purposes of policymaking or government decision-making. This zone of encounter is therefore *not* the

"science-policy interface" in the sense that the term is often used in the governance spheres, in STS and in other social sciences studying climate change or environmental governance more broadly (e.g. Lahsen 2009; United Nations Committee of Experts on Public Administration 2021; van den Hove 2007). However, as noted below, the science-policy interface is one space in which many of my field collaborators do work, albeit often in their work at the international scale, which has proven outside the scope of this dissertation. Further, the organizations discussed in this dissertation are therefore also *not* best categorized as the "boundary organizations" or "climate services" organizations of the science-policy interface. Boundary organizations are identified by their formality as institutions and "aim at creating collaborative processes that allow both science and policy to achieve their goals;" the Intergovernmental Panel on Climate Change (IPCC), however, problematically so, is the boundary organization *exemplaire* at the international scale (Jensen-Ryan and German 2018: 13; Gustafsson and Lidskog 2018: 2).[3] Climate services, on the other hand, most "typically" involves a national-scale (meteorological) research institute collaborating with decision-makers online in regard to climate-related agricultural information.

Rather, the chapters of this dissertation explore how the assemblages of science and lower-case-p politics are enrolled and implemented in various parts of the field. It is an attempt to study the movement of these two entities in the field *in terms* of that movement (Rees 2018; cf. Chapter 3), to analyze and understand a fleeting snapshot of these two imbricating assemblages, despite or alongside their multiplicity. (Fleischmann 2016). Focusing on how climate change is problematized at the intersection of what are deemed politics and science allows for the emergence of differing images of these latter two, defined *emically*, in all their ambiguity, in the field. For in the end, as Callison admits, "addressing climate change requires room for pluralistic conceptions of the problem it poses, replete with reflexivity about where and how knowledge has been and/or is being produced" Callison 2014: 14). This framing and understanding of global anthropogenic climate change and its problematization transpired against the backdrop of a particular domestic and international political and Political context during the time of this research.

[3] Gustafsson and Lidskog (2018) identity boundary organizations at other scales in the academic literature, including Arizona State University's Decision Center for a Desert City at the municipal scale and the Dutch Delta Committee at the national scale. Note, however, all of these organizations' ostensible traffic directly in formal, policymaking Politics.

Background—The State of Climate Politics During This Study

On the first of June 2017, then-United States President Donald Trump announced his intention to withdraw the United States from the 2015 United Nations Paris climate agreement. The world's historically largest carbon-emitting country had bucked international agreement to distance itself from coordinated efforts for action on climate change. During the time of my fieldwork, climate politics in Canada and the United States were largely characterized by what I call *national non-action and non-national action on climate change*. While Trump's government withdrew the United States from the international Paris Agreement upon his inauguration, subsequently swiftly undoing decades of environmental protections, in Canada, Prime Minister Justin Trudeau's federal government bought a province-crossing tar sands oil pipeline contrary to the country's Paris Agreement goals, and despite increasingly fraught relationships with, and legal challenges by, First Nations.

Within this context of both Trudeau- and Trump-government climate inaction and a growing media ecosystem of disinformation, non-national bodies politic endeavored to step in and take compensatory action on climate change during the time of my research: cities and municipalities, states and provinces, even businesses. Within twelve hours of Trump's announcement, eleven state governors, along with mayors from sixty-one cites across the US had committed to cutting their own emissions in order that the US meet agreed emissions targets. An expanding gap had appeared between climate mitigation efforts at the federal, and therefore international, level and those "non-national actors" committed to the U.S. and Canada meeting their climate goals. As several interlocutors duly noted to me during the time of research, this made the time of this research an interesting one for those working to fill this gap.

The NGOs who invited me into their worlds shaped priorities and guided initiatives at the local, regional and international levels of climate politics. They did so while enmeshed in a network of other organizations. Made up of a few dozen mostly Canada- and U.S.-based organizations and thousands of experts worldwide, this network is best understood as a politico-organizational form—defined by collaboration and common aspirations—as much as a network constituted by computer and digital technology-supported infrastructure (Juris 2008). Yet it is also a network with ephemeral qualities. Over the course of this research, I traced the form of collectivity constituted by remote work and periodic, temporary coming-together: a nested, networked sociality with nodes that are by-and-large neither stable nor permanent. The shape of

this object of study shaped my research practices, and my reflections on them, including what I call a "mixed-methods in-person and remote methodological" approach, more fully addressed in Chapter 4.

Meanwhile, during this time the rest of the international community fared only nominally better in meeting their climate goals than the U.S. and Canada. 2018 was a unique and important year, I was told, leading up to not only the 2019 Canadian federal election, but also by late in the next year or early 2020, countries were expected to update their Nationally Determined Contributions, or NDCs, the mechanism in the Paris Agreement by which countries make consecutively more ambitious goals, "ratcheting up" their commitments. "Non-Party" civil society groups like my interlocutors (i.e. non-country groups not legally a part of the international agreement) were consequently pushing for countries to strengthen their NDCs with more ambitious goals aligned with what science and the Paris Agreement, while also attempting to forge clearer pathways with implementation previous contributions domestically. This led to 2018 being a year of many meetings, often one scheduled right after the other (see Table 1). Needless to say, it was a very busy year for international meetings to combat global climate change. As of late 2021, however, well past the time of this fieldwork, only one country in the world is currently on track to meet their commitments to international climate targets (Climate Action Tracker 2021).

While through the Paris Agreement countries have agreed to targets with end dates in the next few decades, most conversations around climate change discuss impacts "by 2100." The goal of keeping the global temperature increase below 1.5° Celsius or 2° Celsius, for example, is in reference to the year 2100. This date is useful for several reasons: It sits within, but at the limits of, most people's ability to picture the future. It is also a limit for which the international political and scientific communities can make accurate and meaningful predictions. Hitting the targets set for 2100 will require urgent political, economic, and social changes—starting today. In order to have a fifty-fifty chance of limiting warming to 1.5° C by 2100, the IPCC wrote in its influential 2018 report, humanity will have to collectively reduce global carbon emissions by forty-five to fifty percent from 2010 levels by 2030— just eight years from the time of writing. This will take nothing less than a complete transformation of the world's global economic and energy systems.

With all this in mind, how can humans grapple with the vast consequences of our collective action? How do we understand and act on the scale of the global climate? And where do we as individuals fit into solutions for a problem that is about so much more than individual consumers? As interdisciplinary Tahltan scholar Candis Callison writes, climate change "enables questions beyond what the realm of science offers: What is our relation to each other, locally and globally? What is our relationship with the earth—an entity or bounty that we have taken for granted through much of the industrial age? What does the future look like if our impulses and choices remain unchecked?" (Callison 2014: 23).

Date	**Name**	**Location**
Early March 2018	The inaugural Intergovernmental Panel on Climate Change (IPCC) Cities and Climate Change Science Conference	Edmonton, Canada
April 30-May 10, 2018	The first "intersessional" meeting of the United Nations Framework Convention on Climate Change (UNFCCC) of 2018	Bonn, Germany
June 19-22, 2018	ICLEI Local Governments for Sustainability World Congress 2018	Montreal, Canada
September 4-9, 2018	The second "intersessional" meeting of the United Nations Framework Convention on Climate Change (UNFCCC) of 2018	Bangkok, Thailand
September 12-14, 2018	The Global Climate Action Summit (GCAS)	San Francisco, USA
September 19-21, 2018	The G7 (Group of Seven) Environment, Energy and Ocean Ministers meeting	Halifax, Canada

September 24-30, 2018	The Climate Group's Climate Week NYC	New York, USA
October 1-5, 2018	The 48th Session of the Intergovernmental Panel on Climate Change (IPCC)	Incheon, South Korea
October 10-11, 2018	Climate Action Network-Réseau action climat Canada's 2018 ClimaCon	Toronto, Canada
Late November and Early December, 2018	The 24th Conference of Parties to the UNFCCC (COP 24)	Katowice, Poland

Table 1 Some of the many international, U.S. and Canada climate summits and conferences in 2018

Broad Questions

This dissertation research project has been guided and informed by such a mood and rhetoric of high-stakes, large-scale questions. How are climate-safe futures rendered possible? For example, in what ways do contemporary problems pose productive challenges and theoretical questions to the ways in which different political subjects mobilize knowledge and rethink everyday political practices, unfolding against the background of this earthly problem? What new ways of being and relating to one another, human and nonhuman alike, emerge from responses to (and epistemic space opened up by) global anthropogenic climate, or more broadly, the Anthropocene and its attendant crises? In other words, what ethics, what new subjectivities does global anthropogenic climate change produce?

This research topic also raises questions about what climate change demands of anthropology, of myself as a writer and teacher. How to do anthropological research on a global object of study, one that largely defies the scripts and concepts upon which anthropology has relied (Callison 2015; Fleischmann 2016)? Beyond Callison's formulation that ended the previous section, two other recent articulations by anthropologists of climate change have proven influential for the questions and answers this dissertation seeks. In, *Thinking Like a Climate,* Knox put the disciplinary stakes wonderfully when asking what becomes of anthropological methods and perspectives when "Confronted with the specter of the scale-sliding, time-destroying, knowledge-undoing properties of climate change" (Knox 2020: 268). Further, Jerome Whitington's 2016 articulation of the anthropological stakes of climate change remains

pertinent in its provocation, asking what happens to anthropology when one takes the challenges presented by global climate change seriously: "Taken as a tenuous and shifting terrain of exploration, what does climate change demand of anthropology?" (Whitington 2016: 6). How must anthropology, and our practice of it, change in the face of all that climate change demands of the world? And what modes of thinking, what kind of anthropological stories and their requisite, antecedent forms of attention can recognize and render possible the subjectivities and ethics that will be needed to usher in a climate-safe world? For that matter, what methods?

Further, these questions extend more broadly to my work as writer and educator. How can we help people be alive to the danger and possibility of now? As a writer and teacher, can I render the willing reader or student responsible to the ethics of paying attention to the present, present to the present moment? What are the ethics of bringing someone into the sense of ambiguous loss and anticipatory grief of an avoidable near future of global climate catastrophe? In the language of anthropologist Julianne Yip, "What would it mean to let climate change work people over," to change how they view themselves, their relations, their place in the world? (Yip 2019: 11). Finally, at the same time, this project has also followed the epistemological lead of smaller-scale, empirical questions. What does the work of my various interlocutor's organizations look like? How do they engage with both "science" and "politics" and how does this engagement rework what both of the latter mean? How does one study this work, if it is dispersed, remote and itinerant? What is more, do my interlocutors bridge shifting scales to act on the global climate? If so, in what ways? More specifically, how do they engage with this shifting, mercurial global object? Is there a particular epistemic space that they open up in their work with science and politics? In its short history, the anthropology of climate change has begun to voice and address some of these questions. Within the subdiscipline of the anthropology of climate change, I engage with a particular problematization of global climate change.

The Anthropology of Climate Change & the Place of This Project

With this research project, I ask who inhabits the borderlands where political and scientific knowledge on climate change come together, and whether anthropology can investigate this murky space. Bringing empirical interests and field sites of social movement studies, science and technology studies, institutional ethnography and the anthropology of knowledge into the

anthropology of climate change, I investigate the assemblages (Fleischmann 2016: 39-44) and arrangements of knowledge, ethics and politics of the organizations and people working in this borderland. In particular, I examine how mid-level experts help bring together the work of politico-managerial and scientific levels as the world shifts energy, economic, social and political systems to meet the demands of the climate crisis. Throughout, I explore the extent to which the established methods and conceptual tools of anthropology and its related disciplines and subdisciplines function for this project and its object of study.

While Callison and Knox (cf. above) are exceptions, research in the anthropology of anthropogenic climate change has largely tended to concentrate its efforts on impacts on threatened communities, their *vulnerability* and *adaptation* to, and their *resilience* in the face of, climate change.[4] Such research has been called "ethnographic climate change response research" (Baer and Singer 2014: 63). Studying the human dimensions of climate change has been instrumental in lifting up the stories of those who have often contributed the least to climate change, but suffer the most from it. This is a trend that will only intensify as we writhe toward 1.5°C or warmer. This focus has also allowed anthropologists to converse in the language of international negotiations and broader environmental change research, all while conducting research predominantly in what have been anthropology's "traditional" field sites, in Indigenous, small rural or otherwise marginal(ized) communities. So far, these have mostly come in the form of articles and edited volumes.

In addition, for more than a decade, anthropologists have called for heightened focus on climate change and increased involvement in (and research on) natural science climate research (Crate 2008; Jasanoff 2010; Hulme 2011; Fiske 2012; Barnes et al. 2013; Fiske at al. 2014; etc.). Only recently, however, have calls to study the "power brokers" (Lahsen 2008) of climate change taken hold—often "privileged knowledge workers" such as scientists, researchers, journalists, activists, Indigenous, religious or business leaders, politicians, policy workers and other government decision makers involved in the political-economic governance of climate change (e.g. Callison 2014; Whitington 2016; Howe and Pandian 2016; Knox 2020). These

[4] In these contexts, vulnerability is the degree to which a natural/social/cultural system is susceptible to or unable to cope with adverse effects of climate change. Adaptation, or adaptive capacity, is the ability of a natural/social/cultural system to adjust to, to moderate potential damages, to take advantage of opportunities, or to cope with the effects of climate change. Finally, resilience is the extent to which a social/cultural/ecological system can withstand or adapt to change or shock.

power brokers are "much more important in shaping climate change and associated *knowledge* and *policies* than are the marginal populations we are accustomed to studying," Myanna Lahsen argued in an early plea for expanding anthropological knowledge production to sites such as these (Lahsen 2008: 587). What, then, does an anthropology of climate change look like if it moves explicitly outside the important work on impacts, vulnerability, adaptation and resilience?[5] To what part of the massive climate change knowledge-producing apparatus does it look? In fact, anthropologists have turned their gaze to diverse sites.

Over a decade ago, P.J. Puntenney remarked on the state of global environmental change research in the preeminent early anthropology and climate change text edited by Susan Crate and Mark Nuttall (2009). Researchers of global environmental change "have developed a fair amount of scientific and technical knowledge on one level," wrote Puntenney. "On another level," she continued, "we have made real progress in sorting out the application of practical knowledge. It is between these levels, where managerial and scientific knowledge meet...that things are murky" (322). This doctoral research project is located in this murky space. The discourse surrounding climate change, especially in North America, is littered with allusions toward a gap between what "the science" says is needed and what is being done to address climate change in the realm of "politics." I explored this problematization of climate change in earlier work (Fleischmann 2016). In both that work and this much larger one, I ask who the actors are occupying this space between climate science and climate politics. What do they do, and what role do they play at the international and subnational levels of science and politics? This anthropological dissertation project attempts to answer these questions by conducting fieldwork and research on the network of organizations, and the mid-level experts that make them up, that work between climate science and political action on climate change in North America. Let us now delve deeper into the kind of actors and organizations on whom this dissertation focuses.

Network Typology

Mapping the shape of this network of organizations, how they work and how to categorize the roles they fill has been an important part of understanding the space where climate science and politics meet. Most people and organizations with the network necessarily play

[5] For a more thorough literature review of the anthropology of climate change and the turn beyond a focus on impacts, see Fleischmann 2016, O'Reilly et al. 2020, Barnes et al. 2013, etc.

multiple roles and the different types of climate actors often co-exist within the same organization or job description. They can be categorized into four general types, though each organization considered in this dissertation does work that falls into more than one category of this typology.

Conveners:

Conveners bring together sub-national or national and international stakeholders from different states, in the face-to-face venues governments and others prefer or must work within. However, organizations with workstreams that involve convening work, or organizations that do primarily convening work, provide a valuable service that goes beyond simply bringing people together. First of all, as is often the case in the non-profit world, although actors in the space between climate science and national or international politics are sometimes adjacent to large amounts of money, inadequate funding for these groups is a reoccurring, near-universal issue. Conveners are sometimes able to provide funding to host events around a larger summit, meeting or ministerial. At times they literally bring people into conversations that might not take place without them. Alternatively, conveners can supply logistics or coordination to help bring people into these conversations or places. They bring together relevant policy experts, analysts and coordinators with government officials. They bring together business leaders to form agreements and pledges. These actors can also convene networks of organizations and activist groups. Some conveners, such as CAN-Rac Canada, convene members, networks or organizations, pooling resources and momentum for action at the regional or national level.

In addition, conveners use their networking skillset and resources to bring people necessarily face-to-face to share information, resources and practical, technical expertise in climate governance, science, activism or finance. Often, conveners told me, convening the space creates the political will for something to happen, linking commitments to actions to markets and international governance. Creating the signals that people support certain policies can give diplomats and negotiators the courage to push for stronger commitments at the international, state/provincial or municipal levels. Similarly, convening government and municipal commitments to energy transition, for example, can create the space for investors and renewable energy business to expand production to meeting the coming demand. Conveners, like communicators, do the work of inserting climate change into popular dialogue, whether it be in government, business or NGO settings. They also encourage higher up decision-makers to take

on an issue or emphasis, shaping leaders' policy priorities or plans by pushing them to consider, or consider more strongly, certain climate issues and actions. On the other hand, showcasing and aggregating work can create the space or momentum for larger scale climate action more broadly.

Indeed, the work of conveners sometimes results in formal agreements or accords, as is the case of the Under2 Coalition, which began as an agreement between the state of California and the German state of Baden-Wurttemberg, with The Climate Group convening the coalition. In this sense, conveners can act as permanent liaisons or secretariats, managing relationships and communications between government offices, such as Ministers or Governors. Alternatively, they create connections between stakeholders of policies or users of data and tools, so that they can share and collaborate among themselves. Sometimes academic publications or dialogue briefs come out of the convenings. As such, much policy- and data-coordination work involves convening as well.

Policy coordinators and analysts:

At the international, national and subnational levels, policy analysts and coordinators work to understand and enhance governments' and other stakeholders' plans for and ability to take action to combat climate change. At the international level (and thereby national and sometimes regional levels, given that international climate action depends on national-level commitments, with often-regional level implementation), this has sometimes involved assistance in the preparation of Nationally Determined Contributions (NDCs), the mechanism built into the Paris Agreement wherein countries make plans for reducing national emissions, the ambitions of which must "ratchet up" and be resubmitted every five years. Policy coordinators and analysts sometimes help to enhance and literally write or re-write countries' NDCs. This is the case for so-called developed countries as much as so-called developing countries. In so-called developed countries, policy analysts work to push national plans in new (more just, accurate or better) directions, bringing in new scientific findings, stakeholders, strategies or priorities. While some of the most powerful nations are exactly those that are not taking the lead on climate change—e.g. important to the context at hand, the U.S., Canada—policy analysts also provide real-time technical and negotiation support for delegates from vulnerable and so-called developing countries. They sometimes assist vulnerable countries at the international stage, from crafting NDCs to implementation to assessing scientific viability. They also provide briefings and

background papers for countries who may not have the resources for this themselves. Other policy analysts and coordinator act as negotiators regarding financial decisions in the international financial architectures of the Green Climate Fund, the World Bank or the UN Secretary General's climate team. As is the case of Climate Action Network-Réseau action climate Canada, policy coordinators and analysts also sometimes serve as representatives or coordinators of civil society groups at high-level summits such as the International Panel on Climate Change (IPCC) meetings, where meetings often happen to consolidate resources and funding for travel.[6]

At the national and regional levels, policy coordinators and analysts help to turn climate strategies and targets into realistic and effective action. This might look like working directly with the environment or climate offices of regional governments, or organizing lobbying and policy priorities for civil society and activist groups. It might also look like project development, translating climate change mitigation pledges and plans for adaptation into actionable projects or investments. Other policy coordinators at the national and subnational levels work to coordinate regional plans, ensuring they add up to the national policy goals of their country's NDCs or other larger scale goals (in this way, coordination work is often not unlike convening work). In the Canadian context, the implementation of the country's climate commitments happens largely at the level of the Pan-Canadian Framework on Clean Growth and Climate Change, a plan for Canada to meet its NDC via the provinces and territories. In the United States context, this might mean work with the United States Climate Alliance, a coalition of states and territories dedicated to upholding the United States' commitments to the Paris Agreement in spite of action or inaction from the federal government.

Policy work in this realm also sometimes involves analysis and coordination of "pathways" to climate goals, involving scales from municipalities and regions, such as states or provinces, to the private sector. In this regard, policy analysts and coordinators at the subnational level might primarily or also work with government and industry at the municipality level. They might work with or at ICLEI (an international network of local and regional governments committed to sustainable development), the Global Covenant of Mayors for Climate and Energy,

[6] International climate diplomacy and policy is largely outside of the scope of this dissertation, it being its own, vast field of knowledge, action and relations. However, the work at this, international, level of policy analysis and coordination lies within the scope of this doctoral research such that many of the organizations with whom I worked and spoke are vital actors in this space. For more on this domain, see note 5, Chapter 4.

the C40 Cities Climate Leadership Group or other municipal sustainability and environmental action groups, the work of which is largely outside the scope of this doctoral project. These groups often work within the language and framing of sustainability, environmental health, urban practice or design and procurement, rather than climate change. At these various scales, policy coordinators and analysts work to bring the best science-based policy analysis together to help the world meet its climate goals. Data coordinators analysts and developers also work to bridge climate science and politics.

Data coordinators, analysts and technology developers:

Data coordinators, data analysts and technology developers fulfil another essential role in the space where climate change politics and climate science are problematized together. Coordination is an essential role in this category. Data coordination sometimes also involves aggregation work, highlighting the fact that siloed or isolated climate action cannot affect larger scale change. Data coordinators aggregate various sources of data, including models, scenarios and academic papers. They create resources such as databases or new tools to help the public and stakeholders explore different economic and emissions scenarios, with the goal, for example, to reach national and international climate action goals. They aggregate relationships (between producers of data, sources of data, tools, etc.) as much as data. In some sense, data coordination can mean convening the commitment to act, backed by the data. In this way, the work of some data coordinators like those at the Under2 Coalition also involves the networking and relationship management skills of convening.

Data aggregators build out a methodology to collect and standardize data from aggregated sources (e.g. subnational climate action measurement from a specific country), and work with stakeholders to share the results of this work. This will sometimes involve facilitation work, academic advising and convening conferences and talks to communicate this work in resulting papers and reports. Data analysts are often the "numbers people," interlocutors told me. They provide the story that the data tells, connecting scientific knowledge like greenhouse gas source data to the broader context, so that policy analysts and coordinators are empowered to do the political maneuvering at which they better most skilled. Beyond translating data into actionable information, data analysts write reports for specific audiences, presenting the scientific data to lobby decision makers and other elites to take a particular political action on climate change. Data analysis and coordination can also be used to quickly produce reports and

white papers about academic articles or international scientific reports to make this information knowable and useable for different audiences.

Lastly, they also create tools to be used by other data analysts, by communicators and educators and by policy analysts. These "data people" are often developers of models and graphic, online tools. They use their robust analytical capabilities to create economic- and policy-climate models. These can be the more complex aggregate models such as integrated assessment models (IAMs) or, more often in the space between science and action, the more user-friendly simple climate models, such as Climate Interactive's En-ROADS computer simulator. They also create tools, sometimes online, sometimes available to the public, such as the Climate Action Tracker or the World Resource Institute's Climate Watch Pathways tool, which can be used to search, analyze and compare countries' commitments under the Paris Agreement, historical emissions data or current subnational climate action. These models and tools allow the public, communicators and decision-makers to learn for themselves, building their own capacity to take action in their own realms of influence. Used in combination with communication and education work, these tools are especially impactful.

Science communicators and educators:

Communication and education are crucial parts of the work done at the intersection of climate science and politics. Science communicators within the organizations working in this space come in many forms. Their work will appear textually and graphically in public media reporting or in behind-the-scenes reports and decision making. Sometimes they address the general public of news media while at other times their work is for specific audiences, spheres or kinds of actors. Some groups focus more on science communication, while the work of others tends toward education. All of these groups also do work that can be categorized under the previous three types.

Some groups, primarily academic, produce studies on public opinion and behavior regarding climate change and related issues in order to inform decision-makers in government and business and the media or to educate the public. With some groups and projects, this looks like literally translating climate science into language that people can use, breaking down the most recent IPCC report or new policy commitments and their feasibility and consequences, producing graphics to explain the latest science. Alternatively, one longstanding project in this realm is a collaboration between the Yale Program on Climate Change Communication and the

George Mason University Center for Climate Change Communication. They create practical and educational resources for television weather forecasters (the most widely watched kind of television programming, even in the current saturated media ecosystem) to bring climate change into their daily forecasts.

Yet other content is created for journalists and television news broadcasters to aid producers of written media, offering reports and graphics, interactive tools and websites following new scientific studies. These resources are widely used in major news outlets, including newspapers and online magazines. Other projects break down scientific findings about a particular topic rather than a new scientific finding. For example, around Saint Patrick's Day 2020, Princeton, New Jersey based non-profit, Climate Central, collaborated with data from a trade association to publish a set of resources for US journalists to discuss the effects of climate change on the beer industry (Climate Central 2020). They included ready-to-use national and state-by-state graphics on the economics of local breweries, key takeaways and questions for potential local story angles, and local and national interview ideas. Other topics have included electric vehicle use and accessibility.

Climate communication groups sometimes collaborate or overlap with organizations whose primary function in this realm is more specifically aimed at science *education*. Rather than communicate scientific findings to various stakeholders, climate education groups aim to build advocacy and political will for science-based climate action. Some groups, like Climate Interactive, use their data analytical work to create experience-based learning environments using "learning experience design." They use their simple computer models to allow everyone from middle schoolers to head negotiators at the UN explore the dynamics of a complex socio-economic-environmental system via affective, embodied and social learning experiences, such as role-playing games. By guiding people to learn for themselves, these groups aim to build the capacity for effective climate action in stakeholders from the public to politicians and bankers.

Other groups put on climate change workshops for "socially vulnerable groups" across the US. Collaborating with the environmental chairs of local NAACP chapters, local and state government offices, scientists from local universities or scientific agency offices (e.g. the National Oceanic and Atmospheric Administration or NOAA), they combine the convening work of outreach and managing relationships with communication work to create bridges "between science and the public." Most of these communication and education organizations

also conduct their own research, and in this also way overlap and find kinship in data coordination and analysis work. For example, some groups conduct research explicitly aimed—unlike standard academic research—at communication and dissemination to the public or various stakeholders. I conducted research on these types of actors and organizations in three phases.

Phases of Research

I began research with Phase One, a plan to both better understand the loose shape of the field I wished to study, and to search out potential field sites to send "cold call" emails to establish contact and, optimistically, negotiate access. I will briefly lay out what comprised these three or four Phases of research.

Phase One consisted of extensive pre-fieldwork research and writing exercises, that at the time I called "mapping the terrain:" a wide-sweeping survey of a few dozen climate science-and-politics organizations. It was conducted in several stages of research and reflection. I sought out organizations based on an initial snowball sampling—connections made via recommendations from interviewees, collaborators with known organizations, etc. Once deemed appropriate or fitting based on initial research, I took notes on an organization, its publications, its organizational structure, staff, mission, etc. I then wrote a series of reflections about the organization, its place among other organizations working in this space and its presumed consonance with my own project. My reflections were an early exercise in the practice of negotiating access, pitching myself and my project to their time and social or political "capitol"—a task, as we will see in this dissertation, that is never an easy one, and muchly dependent on chance. I often followed this step by a period of sending out "cold call" emails to staff members at these climate organizations. As was the case a dozen or so times, I conducted remote, preliminary and exploratory interviews and casual conversations over the phone and Skype video calls.

A five- to six-month exercise, Phase One ultimately suggested that to "imagine the field more thoroughly before 'going there'" and to map out "conceptual boundaries of research projects" (Marcus 2009: 12) were necessary preparations for research on an object of study like a network such as mine. This was so even, or especially, while the remote methods I would continue to employ would render the sometimes "non-place" of the field everywhere; in other

words, I was never really not "there."[7] Following Rees (2018), who draws on the different aspects of the anthropological in research, the distinction between fieldwork and research proved an important one. based on my own experience, for multi-sited research projects in institutions, much of the early "fieldwork" research arguably must be done adjacent to, or only virtually "in" the field. I am not the first among my peers to make this distinction. Fadaak (2019)'s period of initial "desk research," for example, to map Global Health Security "1.0" and "2.0" in his dissertation on global epidemic disease detection and prevention speaks to the necessity of this visioning and mapping work for fieldwork among loose networks of expert organizations working on a supra-national and supra-international problems.

Phase Two After the mapping work of the first phase, Phase Two included research with the U.S-based nonprofit think-tank Climate Interactive, on the users and developers of their C-ROADS simple climate model and World Climate role-play simulation game, as well as interviews and participation in planning of Climate Action Network-Réseau action climat Canada (CAN-Rac)'s ClimaCon.[8] Large spells of the Phase Two fieldwork consisted of remote interviews with participants, staff members of Climate Interactive and CAN-Rac or users of their tools and resources, located all over the North American continent, and often on three or four other continents. In addition, my research with both organizations involved various other forms of participant and nonparticipant observation, including sitting in and participating in conference calls and webinars; steering committee and working group meetings; engaging in fleeting in-person meetings over coffee and between presentations.

In addition, I employed extensive "desk research" in the form of secondary data analysis to supplement data yielded from interviews in Phase Two. For Climate Interactive, covered in Chapters 2 and 3, this included: published academic material as well as manuscripts regarding the World Climate project and simulation game; video recordings covering a period eight years of World Climate game simulations; materials from the organizational grey literature, including textual and audiovisual educational and facilitation materials, recordings of webinars, lectures

[7] My thanks for colleague Jonathan Wald for helping clarify this point with me.

[8] Throughout the dissertation, the organization denoted "Climate Action Network-Réseau action climat Canada" will be, in the vast majority of cases, presented with its standard, emic bilingual orthography and syntax, that is, without italics and with French orthography, accents included. Consequently, it will most commonly be called by its English-French acronym, CAN-Rac. Exceptions will include when interlocutors call the organization by the choreographic abbreviation, "CAN Canada."

and speeches by staff and associates and blog posts by World Climate users; journalistic sources including local written and radio news, as well as MIT and UMass Lowell sources. My immersion in these diverse sources of data played an important part in my immersion in the field(work) more generally. In order to study these organizations and their knowledge systems, I had to immerse myself in their discursive and epistemic *oeuvre*. In a context marked by remote work and mobile, fleeting in-person nodes, these data were essential for the anthropological commitments of this research, and part of what will be referred to below as the nongeographically defined spaces of research.

Phase Three followed and overlapped with the end of Phase Two. While timing and reality defies my neat categorization into discrete Phases of research, I separate Phase Three from Phase Two to emphasize two things. First, I do this to emphasize that most of Phase Three came chronologically after the research activities of the previous Phases. Second, Phase Three designates the in-person, event-based nature of this part of the fieldwork. While this Phase of research was more in line with the in-person, physically "being there" proclivities of traditional ethnography, it also followed the patterns of work, travel and meeting of my interlocutors, distinct from the more frequent remote-work activities of their quotidian lives throughout most of the year. This third Phase of research involved event-based participant- and nonparticipant-observation at the ICLEI sustainable cities conference in Montreal, simulations of World Climate at the MIT Sloan School's Executive Business program in Cambridge, the Global Climate Action Summit in San Francisco, The Climate Group's Climate Week NYC and Climate Action Network-Réseau action's ClimaCon in Toronto. These events occurred between June and October 2018, with the latter three happening in September and October of that year, following the particularly busy late-2018 schedule of large national and international climate science and diplomacy summits.

Goals of the dissertation

The broad goals of my dissertation can be organized into three categories: empirical/descriptive; disciplinary/methodological; critical/affective.

A primary goal of this dissertation is empirical: to describe the object of study, the people and the work of the network of actors who work in the space between climate change science and political action on climate change. This involves several layers. One part of this goal is

describing the everyday practices, discourses, technologies and collaborations these actors employ. A second part of the empirical goal of this dissertation is to describe the systems of knowledge, visions of the world, political possibilities and ethical relations produced through the above practices. Third, with this empirical aim I also seek to describe and give shape to the *network* of organizations that do this kind of work in North America, including the different roles individuals and organizations play between climate science and climate action. The three parts of this goal will help me to determine the extent to which these practices and what they produce work to make climate science actionable and climate action scientifically accurate, in a context where both science and politics are publicly contested. Combined, this expository writing will help define what science and political action are in these North American contexts, simultaneously situated within and working on a global phenomenon. It will work to explore and affirm and critique the potentially transformative work of the organizations under study.

After this primary set of goals, a second goal of the dissertation concerns the subdiscipline of the anthropology of climate change, as well as the methodological discussions and practices necessarily employed to study the non-*ethnos*-based network of actors and organizations that concerns this work. With the elaboration, throughout the dissertation, of the kinds of fieldwork methods that were necessary to study this object of research, I hope to contribute a mixed-methods approach to field-based anthropological research on climate change that combines in-person and remote "ethnography" with research in what I called above the sometimes "non-place" of the field rendered everywhere; the "nongeographically defined spaces" of documents, websites, emails and technological networks (Knox 2020: 11). Part of this goal also includes the aim of contributing to the anthropology of climate change, explicitly beyond what has been deemed, "ethnographic climate change response research" (Baer and Singer 2014: 63). The latter is a valuable, often justice-oriented, contribution to the field, concentrating on the impacts of climate change on various peoples across the globe and their lived experiences, orienting around the conceptual frameworks of adaptation, vulnerability and resilience. However, I hope to contribute differently to the as-yet rather sparse landscape of literature—sparse, especially, beyond articles and edited volumes—in the anthropology of climate change. With science and technology studies and social movement studies as guiding orientations, I hope to realize an anthropology of climate change that interrogates not only scientific practices and political organizing or governance surrounding climate change, but also,

especially, the linkages and imbrications of these two ostensibly separate spheres. By way of these connections, I hope to practice an anthropology of climate change that investigates the fertile land where science and politics on climate change mix in order to make things happen. I am also interested in contributing to addressing the challenges of doing anthropology "in/of" (Knox 2020: 26) climate change and how climate change challenges anthropological practice and knowledge production. In doing so, I hope to able to provide tentative, partial answers to the questions of what, following Jerome Whitington (2016), climate change demands of anthropology and what, following Hannah Knox (2020: 268), anthropological knowledge can bring to bear on climate change.

A final goal of this dissertation can be described as critical and affective: to mine my own research experiences and others' writing on climate change (academic or otherwise) with the goal of critically expressing something of the atmosphere and valence, feeling and character of life in these contexts, "unfolding against the background of this earthly problem," as a friend recently put it.[9] In this vein, I engage with increasingly salient popular sentiments surrounding climate change—eco-anxiety, anticipatory grief—as my interlocutors work toward collectively imagining and enacting a climate-safe world. Within these fieldwork contexts and based in this anthropological research, my goal is to articulate a verisimilar sense of the spirit and affect of the experience of being human, of living together, in an era of global climate change. Ultimately, this will be an experiment in how the tools and attentions of "ethnographic" and anthropological research and writing can work to help the reader pay attention to the present, to be alive and present to "the possibilities and the strangeness and the dangers on this earth in this moment" (Solnit 2018: 5). This goal therefore addresses some of the political, ethical and creative stakes of this project. Each of the chapters of this dissertation will allow for these goals to play out in different ways.

Chapters

Chapter 1, "Access, Feelings and the Shape of the Field(work)," plays a primary role introducing both the first and second, empirical and methodological, goals of the dissertation. It lays out some of the dynamics of doing fieldwork the way that I did it and, in doing so, begins to

[9] Alonso Gamarra, personal communication, November 5, 2021.

reveal the shape of the field, the actors that made up the field and the fieldwork itself. These dynamics includes the insights into the affective landscape of experimental fieldwork. Centered around an ethnographic revelation—that what felt like observations about difficult fieldwork access were really participant-observations—this chapter immerses the reader in the fieldwork and describes the particular place my interlocutors occupy in the imbricated realms of climate science and politics. The knowledge that this object of study was not just a mobile network necessitating multiple field sites, but that these sites themselves were mobile (moving through space) and sometimes fleeting (impermanent in time), proved essential to understand how, and in what contexts in particular, my interlocutors maintain, reproduce and disseminate their expertise—and their interventions on climate change.

Chapter 2, "Climate Interactive's History, Role-Playing Games and System Dynamics Modeling," tells the story of Climate Interactive (CI), one of two organizations that are my main focus in this dissertation. A small United States-based non-profit, CI produces interactive simulations, timely analysis, decision-support tools and experience-based educational games and workshops that endeavor to empower people, from school children to Obama's climate team, to reach their goals in addressing climate change. I provide a snapshot of how CI's role-playing games and Simple Climate Models have disseminated across the globe and I present a brief history of the organization. With roots in systems dynamics modeling and open-access, experience-based design and pedagogy, CI contributes a unique intervention to a field where science and politics are explicitly problematized—constructed as problems with certain kinds of solutions—together in climate change. In doing so, they provide insights into how an anthropologist and climate action practitioners alike work to grasp global anthropogenic climate change as an emergent object of study and action.

Chapter 3, entitled "Possibility: Ethics, Subject-Making and Cracks in the Wall," is split into two parts. It attends to possibility as an analytic and an actor category, animated by a question that has guided CI co-director Drew's career: "What are experiences that help people understand, viscerally, the long-term, distant impacts of their actions in ways that create new possibility?" As Drew and CI aim to build the capacity in people to take effective action in their communities in ways they see fit, they create the conditions of possibility to combat the seemingly intractable system dynamics of the climate crisis. Using primary and secondary materials, interviews and participant-observation, in this chapter, I first analyze CI's ethical

system of education to understand how they produce possibility. I then take up Michel Foucault's late turn to ethics and the care-of-the-self-in-relation-with-others, together with contemporary philosophical and prefigurative political theory, in order to better understand "possibility." An analysis and theorization based in a dialectic with the field, the second part of the chapter argues that what CI produces in the ethical system of "possibility" is a cultivation of space for subjects to enact new relations in the slippage or wiggle room between oppressive power relations and the care of the self.

Chapter 4 is called "'To hold a mirror up to the Canadian climate movement:' Climate Action Network-Réseau action climat Canada's ClimaCon 2018." It shifts focus to the work of Climate Action Network-Réseau action climate Canada (CAN-Rac or CAN Canada), the second of two organizations that are the main focus of this project. In doing so, it also changes directions from centering the roles of data analysts, technology developers and climate educators to centering the roles of policy analysts and conveners. This chapter describes the work of CAN-Rac on national and international policy stages and as a convener: of activist organizations from the local to the national, of faith-based, humanitarian and physicians groups, of First Nations assemblies, unions and more. It then tells the story of the remote planning of the ClimaCon 2018 conference as well as the conference itself. In analyzing the conflict, complaint and resolution at the conference, it lays out the different problematizations, ethical reasoning and relations of climate change at play in the Canadian climate movement and beyond.

Chapter Five, "Remote Fieldwork: A Reluctant Neologism for a Time of Climate Change," is the final chapter in the body of the dissertation. Providing a bookend to Chapter One's discussion of fieldwork and methods, this chapter reflects on what I learned about the network by the methodology it imposed on me. It argues that to study networks of organizations such as the one concerned here *and* to study a global phenomenon such as climate, necessitates anthropological methods that mix in-person and remote techniques. These methods differ from digital ethnography in the sense that it is normally understood—they are not focused toward digital media, digital communications and information technologies, social media, online communities or the Internet in general. Instead, they strive to move beyond *ethnos*, following the object of study. This object of study was not based in one more or less stable place, among one more or less homogenous group of people, but rather a network, with mobile and fleeting in-person nodes. The chapter introduces a reluctant neologism for the type of fieldwork required

and highlights two moments in the field when the extent of this methodological approach as needed. It concludes with a reflection on the knowledge, political and moral desire that hold together this network of actors and organizations between climate change science and climate politics.

The dissertation's conclusion recapitulates the project's stakes, putting the material into new perspective by bringing back into focus the political, ethical and creative stakes of climate change and anthropological knowledge production. Focusing first on putting the issue of global climate change in perspective, I then follow some moves made, chapter themes and lessons learned. The dissertation ends with a return to possibility, and with it, visions of futures both apocalyptic and otherwise.

Chapter 1 Access, Feelings and the Shape of the Field(work)

I am back in Montreal during my year "away" to conduct my doctoral fieldwork. My lower back is sore. There's a tension that's rising from the place where my neck meets my scalp, and my eyes feel baggy. I have just woken up, am standing in someone else's apartment. My friends, M and D have graciously agreed to host me for umpteenth time in what feels like as many months.[1] It is morning, not yet 8:00 a.m. D is in the shower, M is making a weak cup of coffee. My friend, M, also an anthropologist, and I are discussing what it is, exactly, I am doing with my fieldwork. During this pause in the busy, tumultuous middle period of fieldwork, I have more questions than answers. Wondering aloud with M, I am uncertain about negotiating access to *do* fieldwork in my field sites, about the amorphous quality of my field sites, about doing both remote and in-person fieldwork.

I slide the couch cushions back into their upright, sentinel positions, transforming my temporary bed back into the centerpiece of my friends' living room. M helps: pillows are gruffly fluffed and arranged neatly in place. Blankets are folded. Complaints pile high, then diffuse in a cathartic sigh. This stay in my friends' apartment marks a short period of less intense fieldwork activity. This follows after a period of more intense fieldwork activity: afters mapping the field in Montreal, after remote research from Michigan and Vermont, after the Global Climate Action Summit in San Francisco, and then The Climate Group's Climate Week NYC in New York, but before I head off to Toronto for the Climate Action Network-Réseau action climat (CAN-Rac)'s ClimaCon conference convening their Canadian network of grassroots climate change organizations. All this travelling—frenetic, high-activity events, followed by fallow periods following the slower pace of remote fieldwork and telecommuting—has worn me out. And, still, I feel like *access* is elusive.

M insists with sympathy that the way I've been travelling *has to* affect the research I'm doing. "Couches, sore backs, breakfast with friends," she insists that "there is also a lot to think about in all of your expressed fieldwork frustrations." All the waiting, the unanswered emails, the phone calls and conference calls, negotiations and navigations, "all the frustrating stuff in

[1] In the interest of preserving their privacy, the multiple friends who have hosted me during fieldwork are identified throughout the dissertation by a single-letter abbreviation.

your field journals," she says. My field journals and my research broadly follow the network of organizations working in what I call the sometimes-murky middle ground between climate change science and climate politics, based on my own and Puntenney's assessment discussed in the Introduction[2]. Consistent with the work of my interlocutors, my fieldwork has been episodic, partly itinerant—at multiple field sites and events—and sometimes worked remotely or by telecommuting.

As I introduced above, the murky middle ground-of climate change work is made up of a diverse community of actors and techniques. Yet as heterogeneous as it is, this space—such that I was able to access it, and therefore help shape it as an ethnographic object and thing in the world—is occupied by organizations often with distributed staff, scattered across the continent, and mostly working from virtual offices. They are staffed, if sometimes only partly, by telecommuters, who *work remotely together*—over conference calls and email. They periodically meet in person. Often these reunions occur at the diplomatic and organizing summits that are the culmination of months of work: the one-time Global Climate Action Summit that is the focus of this chapter; the other meetings and summits in my itinerary above; the IPCC (Intergovernmental Panel on Climate Change)'s meetings of scientists, or; the yearly COP (Conference of Parties) meetings of the UNFCCC (United Nations Framework Convention on Climate Change). This remote work and periodic coming together is the case at a 10-person U.S. non-profit modeling and communications think tank, as much as it is at the Canadian branch, consisting of four full time staff, of a large international non-profit network, and even some large, international climate NGOs. The exceptions are either the biggest international environmental NGOs or those that have small offices staffed by just a handful of people, often shared with other environmental or climate groups.

To recall the typology from the Introduction, some organizations primarily act as *conveners*, bringing together sub-national or national and international stakeholders from different states, in the face-to-face venues governments prefer. They often work closely with others who are *policy coordinators and analysts*, making sure climate policies add up and are

[2] When it comes to global environmental change research, "we have developed a fair amount of scientific and technical knowledge on one level," P.J. Puntenney wrote in Crate and Nuttal's (2009) preeminent early anthropology and climate change text. "On another level," Puntenney continued, "we have made real progress in sorting out the application of practical knowledge. It is between these levels, where managerial and scientific knowledge meet…that things are *murky*" (322, *emphasis added*).

consistent with scientific understandings. Others do *data analytics* or are *technology developers*, providing the tools and analysis to move knowledge and practice between what are deemed scientific and political realms. Yet others are *science communicators*, playing the role of translator or educator for the public and political leaders. While most of these actors come from the non-profit world, academics are strewn throughout, collaborating and complementing existing work. Most people necessarily play multiple roles and the different types of climate actors often co-exist within the same organization or job description.

The sometimes-remote nature of my fieldwork on this network of actors who fulfil the above roles—marked by the logic of telecommuting—on occasion felt at odds with the global nature of the empirical phenomenon of climate change. How is it to do research, another friend asked me during the same trip back to Montreal, on people who work on global climate change from an office with one or two other people? I responded, what does it mean to be thinking and working with these people from afar—from a room in my mother's house, in which I passed swiftly years of seemingly dreamless nights, slowly growing up as the world grew slowly warmer?

Questions about the nearly unfathomable void of global climate change often crossed over into questions about the seeming fallibility and consistent uncertainty of fieldwork. During fieldwork I frequently found myself asking—following others working in similar fields—whether sending so many cold call emails that no one answers really is the legitimate labor of ethnography (figure 1). Skype calls in the morning, messages in the dark, emails sent across the void—"is this really what research looks like, what it feels like?" I asked myself. What does it mean, analytically, to sort through this anxiety and frustration—what can they help to parse from the ethnographic object that was its source? And what can they tell about the challenges of studying global anthropogenic climate change anthropology, or about ethnographic methods more generally, in the wake of recent world events? These conversations and questions guide this dissertation and shaped this doctoral research as I was conducting it and writing up the results. They also frame the conversation I will take up in this chapter through the opening of fieldwork access, feelings and the place of my interlocutors in the climate science-action nexus.

Figure 2: Screenshot of an internet meme created and published on Twitter by Tufts University anthropology professor Nick Seaver during the time of the author's fieldwork.

This Chapter

In this chapter, I introduce the shape that this field—and this kind of fieldwork and feelings—between climate science and action can take. In the Introduction, I described my object of study, a mobile network of NGOs and the in-between space where it is located. In this chapter, my most "autoethnographic," I focus more specifically on what feelings about, and access to, fieldwork revealed about the field and its in-between space. I situate the conditions and quality of fieldwork in this murky space within its anthropological and fieldworking context. In doing so, I reflect on how anthropological fieldwork depends on particular definitions of an ethnographic object. When the object is indistinct or unconventional, fieldwork can be too. When the object is not just a mobile network necessitating multiple field sites, but when these sites themselves are mobile and fleeting, the fieldwork must take on this quality as well. In this particular instance,

difficulties that led to understanding this quality often manifested as challenges related to access. In their appearance as closed conference center doors, the challenged proved to be windows into a better understanding of my object of study: where I could not negotiate access, my interlocutors were not given access either. This taught me the place, as mobile and fleeting as its instantiations were, that my interlocutors occupied between what were deemed the opposing realms of climate science and climate politics, high-level diplomacy and grassroots activism.

As I have touched on in the Introduction and elsewhere (Fleischmann 2015; Fleischmann and Yip 2019), global anthropogenic climate change challenges the contemporary knowledge-making practices of anthropology through its temporal, geographical and relational scale-shifting properties, its undoing of the assumptions of environmental governance and politics. If anthropology is to address these challenges with the valuable perspectives and analyses it wields, it must remain committed to a consistency between content and form, objects of study and methods. In this case, it meant using the negotiation and recognition of fieldwork access and fieldwork feelings to understand the place of my network of interlocutors between center and periphery, science and politics. Reflections in this chapter on the affective quality of the fieldwork will reveal the nature of the work of my interlocutors as well as the place of innovative kinds of fieldwork in anthropology, an arguably increasingly important conversation in the wake of how the global coronavirus pandemic has affected anthropological research.

The chapter's section on access will then set the stage for the subsequent description, within long-mulled-over disciplinary considerations on access, of my experiences at the edges of the Global Climate Action Summit. I present the general problem of fieldwork access in similar settings in order to explore how experiencing it first-hand helped me to map out both the dynamics around a mid-level climate action summits in the late 2010s and contemporary anthropological fieldwork as it is structured today around emergent objects of study. After the story circling the convention center, I analyze the place of my interlocutors as experts adjacent to the locus of power, neither center or periphery, but sometimes leaning closer to one of the other, before concluding the chapter. First, let us talk about fieldwork feelings.

The "Ideal" Fieldwork Foil, or; Feelings in the Field: Reflections on Fieldwork in Murk-o

The "murky" nature of fieldwork in the space between climate science and politics played out as a particular affect for this type of field-working itself.[3] This affect influenced the ethnography, such as this is one (cf. Chapter 5), in both senses of the word: the character of the research that the circumstances necessitated and the writing process. It is peculiar enough to the fieldwork milieu that it is worth briefly reflecting on how it shaped the fieldwork and my understanding of the object. These are reflections about the affective obstacles shared among most fieldworkers, but which are particularly plain to see in institutional, remote, itinerant, event-based or multi-sited fieldwork such as this. These are reflections all the more pertinent in the wake of the novel coronavirus pandemic's impact on fieldwork worldwide, starting in early 2020.

Even before the pandemic, in the last few decades, critical assessments of fieldwork can seem to be as commonplace and necessary as narrative fieldwork accounts themselves. I undoubtedly am not alone in articulating the ambiguous affect or feelings of my doctoral fieldwork. Questioning, complaining, waiting: in many ways my fieldwork was similar to the experiences of peers and colleagues. Unlike the typically more collaborative nature of contemporary research and writing in the "hard" sciences, we anthropologists are expected to do year-long field research and the subsequent writing-up as individuals, away from our support networks. This expectation exists latently despite changing dominant sentiments in the discipline in the last fifty or more years. I felt a pressure despite the giants on whose shoulders I stand expanding the endeavor of field—and even while recognizing that "fieldwork as usual" is being actively renegotiated (cf. below; Marcus 2009: 8). This pressure has at its origins the expectations of the individualist, masculinist Lone Hero-Cowboy-Paladin Fieldworker, as I have sometimes called him, who conducts fieldwork by himself in a faraway place among marginalized Others for four seasons.

[3] The Geertzian wink and allusion in the subheading—using "murk" from Puntenney (2009: 322) and my own description, *inter alia*, of the "murky" space between climate science and politics—is of course to Paul Rabinow's *Reflections on Fieldwork in Morocco* (1977), which, for some, marks a late 20th century breakthrough for metamethodological conversations and autoethnographic discussions of the conditions of fieldwork itself in North American anthropology. For others, it is less monumental as a reflexive moment and marks the need for more broadly discussing privilege and positionality in the fieldwork endeavor.

These expectations were nicely capture in 1989 by Renato Rosaldo in his figure of the Lone Ethnographer and almost thirty years later, in what Tobias Rees called "classical modern ethnography" (Rees 2018). As I will explore more in Chapter 5, Rees in his philosophical-anthropological reflections on (the history of) the discipline, traces some of the multiple origins of "the ethnographic project of classical modernity" (Rees 2018: 7). He follows its path as fieldwork-qua-ethnography from the colonial project of The Cambridge Anthropological Expedition to the Torres Strait to Alfred Reginald Radcliffe-Brown and Bronisław Malinowski and well beyond. Seventy years after the fieldwork of these latter two, Rosaldo captured the resounding influence they still exerted upon the field(work). "Once upon a time," he wrote, "the Lone Ethnographer rode off into the sunset in search of his native. After undergoing a series of trials, he encountered the object of his quest in a distant land. There, he underwent his rite of passage by enduring the ultimate ordeal of 'fieldwork.' After collecting 'the data,' the Lone Ethnographer returned home and wrote a 'true' account of 'the culture'" (Rosaldo 1989: 30). Even while this was a well-established fable in 1989, in 2017-2019 the myth held sway in affective ways.

Following, then, the model of Bronislaw Malinowski, the wartime exile stranded in the Trobriand Islands,[4] early-career anthropologists are encouraged, consciously or not, to embark on a self-isolationist rite of passage that teaches us to ignore both the social and citational supports that hold us up. In truth, we rely heavily on the support of not only faraway supervisors, but, especially, friends, colleagues and family. Along the way we unsurprisingly experience some loneliness. We inevitably wallow some in self-doubt about what it is, exactly, we are studying out in the field. We question our abilities to accurately capture it, to do it justice, to make it legible or feel-able in a way appropriate to the writerly sentiments of ethnographic forebearers and academic heroes. We often feel confusion about our own roles among the people we study. For those of us whose topics of study require research at multiple sites, the isolation of the field can settle in hard as we keep moving to follow the object, question or people of our study (Marcus 1995). For those of us who are disabled or have chronic health issues, visibly or

[4] Thanks to Dr. Sarah Miller-Fellows and her 2018 Twitter thread on fieldwork and responsibilities of care for reminding me of this fact: "Let's not forget that 'one man, one site, one year' came out of Malinowski not being able to return to England, because he was an enemy subject during WWI. Hardly an intentional methodology created for the best data collection, at its outset" (Miller Fellows 2018).

invisibly, difficulties are compounded. Even those of us pale males, for whom the institutions of our society have largely been built to hold up, experience some degree of these hardships in the field. All of my colleagues have expressed similar feelings over the course of their research.

With these common, fabled expectations dwelling in the background, my experience of fieldwork in the murky middle of climate change science and action was also perhaps different than the general experience—if the general experience can be said to have involved in-person field research in one or more faraway places over the course of a year or so. My combination of multi-sited, event-based and remote research led me into murky affective territory, mixing familial obligations with field observations, hometown blues with fieldwork milieus.[5] Skype conversations with potential field collaborators conducted from my mother's house often left my head spinning in a blur of past and future lives. Interviews overlapped with family dinner time. "Away" for fieldwork, but feeling stuck in my hometown, I forgot I still had old friends nearby. Other parts of fieldwork felt dislocated not in time, but place: interviews or conference calls from temporary rented apartments, back in the city I apparently called my current home, where my life-in-things lie waiting in storage. At other times fieldwork felt joyful, exhilarating, but all-too-brief: staying with old friends in unfamiliar towns, fleetingly meeting with familiar faces in person for the first time after months of remotely working together. There was a lot to mull over, too, in all of my fieldwork frustrations about access to the field, as will be touched upon more in this chapter.

After all this, what can these affective reflections tell us? The course of these fieldwork feelings—laid out here to begin to describe the *mise en scène* of this research—led me to recognize that the flow of this type of fieldwork is murky or less than clear, that it has periods of activity and inactivity, isolation and socialization. It taught me to accept that in these field sites access will not often be easy, dozens of emails will remain unread, potential next steps never taken. Thinking about the murky affect of my fieldwork illuminated the networks of support that I know all anthropologists rely on, despite, or because of, our discipline's penchant for peddling a fantasy of individualized fieldwork. In addition, it helped me to understand the field itself.

[5] It feels important to note that while I experienced some struggles in the parts of my fieldwork at "home," I have not felt the critiques or discrimination experienced by others who have done fieldwork at "home:"
from the critiques of innovative early Black anthropologist, novelist and folklorist Zora Neale Hurston by her contemporaries like Margaret Mead based on claims and "expectations of scholarly distance" (Pandian 2019: 25), to these same critiques heard today, used to discredit those who conduct "homework" (Visweswaran 1994: 102, Carter 2019), especially, often, women anthropologists of color.

If we want to study certain things, we have to do a certain kind of fieldwork—a consistency between content and form. My fieldwork on those working between climate science and politics has presented some peculiar affective hurdles, and even some bodily hurt, as outlined at the outset of this chapter. These obstacles can be said to be a shared among most fieldworkers, but are particularly plain to see in institutional, remote, itinerant or multi-sited fieldwork. As first fieldwork projects continue to negotiate the limits of the fieldwork paradigm, how can we ensure that succeeding anthropological generations remain prepared for the cutting edge? In Chapter 5, I will dive further into the ways in which studying people who telecommute forced me to do fieldwork remotely. Here, however, I will next briefly explore some of the literature on access from anthropologists with similar research topics or settings, in order to home in on how perceived struggles with access, along with the above affective reflections, revealed the shape of the field and the object of study of this dissertation.

Access

> *"[I]n my experience and observation, first fieldwork projects in many departments today are more like experiments managed by students and their supervisors in negotiating the limits of the norms and forms of the traditional paradigm to take on dimensions of problems that 'fieldwork as usual' has not been designed to address"* (Marcus 2009: 8).

I turn now to disciplinary, methodological considerations, especially for what Marcus (2009), in his intro to *Fieldwork Is Not What It Used To Be* (Faubian and Marcus 2009), called "first fieldwork"—that is, graduate student doctoral or Masters fieldwork. I use this extant literature to better understand the character of the fieldwork I conducted. This brief reflection on access is not in any way an attempt at a comprehensive review of the literature on this topic, which could each itself fill an entire chapter or more. It instead serves to ground part my own fieldwork experience, outlined in more detail in the next section, within the existing anthropological and fieldwork methods literature. This is used to better appreciate the space in the climate domain where my interlocutors work—and in order to understand the interlinked nature of the researcher's experiences as an anthropologist and the nature of the subject matter itself.

Difficulties with access and reflections on the difficulties of gaining and negotiating access are well established in the literature on anthropological fieldwork in institutional settings since at least 1972. The feelings of the previous section that have come with the kind of

fieldwork conducted for this project were indeed largely tied to issues of access: negotiating it, getting it, keeping it—and repeat, when each non-stable node of the network inevitably dissolves. Early on in my doctoral program, I took a graduate seminar with some of my closest colleagues on the anthropology of organizations and institutional ethnography. While the course material was largely exactly what we were looking for, nearly all of us encountered pre-existing or potential barriers when conversation or the professor encouraged us to think about the course material through our own budding pre-field projects. For example, Holmes and Marcus (2005)'s figure of the interlocutor as a "para-ethnographer," wherein the interlocutor becomes a co-anthropologist and peer-collaborator, sounded great if one could wield the influence of a full-time professor—to relate to an organizations' leaders as a peer. In our experiences as graduate students, conditioned by our relative privilege, we did not expect to be able to obtain a one-year access pass to the World Trade Organization directly from its Director-General, as French anthropologist Marc Abélès indeed did, for example (cf. Niezen and Sapignoli 2015).

For several of our research-site searches and as things, indeed, eventually played out during my own research, gaining access was more complicated than a commitment to collaboration. What happens, we asked, when every "para-" field partner appears the form of either a potential boss or an academic pseudo-supervisor? What becomes of fieldwork when access or lack thereof is superseded by institutional or prestige hierarchies, differences in age? As graduate students conducting "first fieldwork," we found these barriers to access in our institutional field sites to be considerable.

Thankfully, the literature addressing methodological questions in institutional or organizational settings in anthropology and nearby disciplines has filled pages with discussion about the dilemmas of access. Unfortunately, though, straightforward solutions to problems of empirical method are rarely easy to come by, and access remains elusive for even seasoned fieldworkers in institutional and related settings. For example, Buchanan et al. (1988) is a chapter in the relatively early textbook, *Doing Research in Organizations* (Bryman 1988). It is a text of plainspoken methodological tips from a sociology of organizations perspective—drawing on David Buchanan, David Boddy and James McCalman's experience doing research on technology users, developers and managers in industrial settings in the 1980s. It is based on their short-term research that was interview-based, involving nonparticipant-observation. Their chapter nevertheless provides straightforward and to-this-day salient methodological advice for

research in organizational settings. It focuses on negotiating access, establishing and maintaining rapport with research participants, leaving the field site and coming back to it—in other words, "Getting in, Getting on, Getting out and Getting back."

While access appears as enough of an issue for fieldwork in organizations to devote an entire chapter to it, Buchanan et al. understood it largely to be a matter of luck: "Negotiating access to organizations for the purposes of research is a game of chance, not of skill" (56). In my experience, it appeared clear to me that the game of chance did not play out in my favor when I was negotiating access to numerous sites like the first climate change communication organization I had unsuccessfully slated as a field site. Nor did luck look my way as I was literally circling the Global Climate Action Summit in San Francisco, though this clarity would transform into an anthropological revelation, as I will lay out. To be certain, as Buchanan et al. noted over thirty years ago, "The researcher must also be prepared for disappointment where the time and effort in making and following through an approach to an organization are wasted" (56). The obstacles to access I encountered appear to be present in even early calls for ethnography in organizations.

In her now-classic essay "Up the Anthropologist: Perspectives Gained From Studying Up," Laura Nader (1972) brought the study of major institutions and organizations to the popular imagination in anthropology. She identifies four primary obstacles to "studying up" the political and social power structure: access, attitudes (i.e. disciplinary predilections), ethics and methodology. "The most usual obstacle is phrased in terms of access," she wrote. "The powerful are out of reach on a number of different planes: they don't want to be studied; it is dangerous to study the powerful; they are busy people; they are not all in one place, etc." (Nader 1972:18). Not-for-profit climate change organizations do not, exactly, exhibit all the same characteristics of "the powerful." As we will see below, while they are clearly more privileged and powerful than others' interlocutors from other places in the world, a key participant-observation that showed itself only after I thought I had failed was that my interlocutors were largely not inside the Global Climate Action Summit either. However, I did indeed encounter some of Nader's obstacles in my own work in the murky middle of climate science and politics.

Most organizations with whom I worked or attempted to work were non-profit NGOs, or otherwise nonprofits but not NGOs (more rarely were they for-profit thinktanks). This meant that they were often overworked and underfunded; with five fingers and six buttons to push, as one

interviewee put it. In the case of the director of one organization, she made clear what she saw as her stakes for granting me access to her organization, employees and stakeholders: she wanted to know how much of her finite "social capital" she would have to extend on my behalf. "The main thing is *time*," she emphasized. "The most influential people are busy!"

In the case of other organizations whom I contacted in Phase One of research (cf. the dissertation Introduction), how busy they were presumably precluded their replying to me at all or their stopping to reply after a few exchanges. Otherwise they felt they didn't have to time to imagine a place for me in their current projects, despite my efforts to fit an unpaid anthropologist into them. This was certainly the case in my failed first attempt at access to a single-sited field site, especially after my two main co-conspirators left the organization.[6] Lastly, a key characteristic of the fieldwork for this project has been that "they are not all in one place," as Nader put it above. This will be a key focus of Chapter 5 of this dissertation, bookending this chapter's discussions.

Since as early as 1972, then, issues of access have been an important aspect of doing anthropological research in institutional or organizational settings, and in ways that resonate with my own research experiences. They have certainly affected my institutional, sometimes remote fieldwork via multi-sited, digital and event-based methods, which was not based in a particular group of territorially bound people of the "ethnos" of ethnography (cf. Rees 2018; Chapter 5). In this regard, in many institutional settings, making sense of and negotiating access is also a means to figuring out *the limits of the object of study itself.* As Gellner and Hirsch have argued in the introduction to the 2001 volume *Inside Organizations: Anthropologists at Work*, "the practical issues involved in such studies [in organizations] (e.g. access) cannot be divorced from important questions of theory (e.g. how boundaries are constituted)" (Gellner and Hirsch 2001:2). Much of my early work in negotiating access in Phase One of this research, though it did not often tend toward gaining access, was ultimately valuable as an investigation into the institutional structure and workstreams of the organizations I was trying to study and collaborate with. In understanding their place in the network and the boundaries—philosophical as much as practical—of these organizations' work, I began to better understand the limits of my own object of study. Anthropologists can indeed follow contemporaries to heed the call—"up the

[6] In addition, climate change communication organizations seemed particularly aware of what they likely saw as the potential danger of allowing a researcher in their midst; they wanted to control the narrative, and therefore access.

anthropologist!"—of a half-century ago to "study up" and investigate, for example, mid- and upper-level climate actors (Nader 1972). In the next section, we dive into my experiences at the Summit. Frustrations at what felt like fieldwork failures prove to be lessons in participant-observation and novel methods alike: pivotal moments in understanding the network of organizations and actors I study. Let us take a closer look at this fieldwork in action, the "chaotic public spectacles" (Fisher 1997: 459) around the edges of one major climate change summit.

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I couldn't get in. Surrounded by museums and a large convention center, I settle into the Yerba Buena Gardens, two blocks of urban public park and art in the South of Market (SoMa) district of central San Francisco, California. Dressed up in white button-down shirt, grey blazer and dark slacks, I look out on the gardens' warm green hills, ringed by colorful hedges. In my pocket I have a tie, just in case. I squint into a blanket of September sun, watching from a bench, bemused and irreverent, as besuited passerby move briskly past. I feel awkward, self-aware, and I tell myself to try to eat my single-serving cup of Greek yogurt as non-awkwardly as an adult human can eat a single-serving cup of Greek yogurt in public. Then I raise my arm, cell phone in hand: the thoroughly contemporary gesture of front-facing camera. Speaking into the camera, I send a video message to my friends, an early attempt to relay my "rejection from climate action high society," my feeling of being erased, I jokingly say, from the annals of climate history.

For the last couple of months, I'd been planning on attending the Global Climate Action Summit, a get-together of high-level, mostly US, sub-national actors on climate change to take place for three days in San Francisco in September 2018. Organized by then-California governor Jerry Brown as his last big hurrah as head of the state, the high-profile summit was referred to as GCAS by my interlocutors, pronounced "jee-kass." Meant to bring together non-state actors on climate change, like businesses, philanthropies and investors, with non-national actors, such as states or provinces and municipalities, it sought to produce new commitments to fighting climate change in accordance with the Paris Agreement—together with the glamor and celebrity of keynote speakers such as Harrison Ford.

I did, at least, try other venues to get into GCAS before the day of the summit. When putting out the preliminary research probes for how the summit and its attendance were

organized, I made a contingency plan: with orders of operations, lists of actions to take before and during the Summit, bullet points of potential options and contacts. Claire, policy director at a climate policy and research thinktank, whom I interviewed in early phases of my fieldwork, warned me that the GCAS plenary sessions would be "very hard to get into." Two months before the summit she was convinced even her organization wouldn't even have access to the inner summit. But I, intrepid PhD student, had to try. So with empty yogurt cup in hand in Yerba Buena Gardens, I regaled my friends via front-facing camera with an account of all the ways I'd tried to get accreditation to attend the summit.

Overall, I attempted nearly a dozen other routes into the forbidden summit city, some of which I outline here. After having been greeted with radio silence from the summit-organizing NGO I had been doing some interviews with, I first looked into the official Summit registration process. I quickly learned the registration process was not really meant for an individual graduate student in anthropology. Unsurprising, in retrospect. Mostly designed for businesses and organizations, registration cost hundreds if not thousands of US dollars. There was no way I, a poor lonely graduate student, could go this route. Anyway, soon enough this option was gone from the Summit website, I told my friends.[7]

After I lost contact with my accomplice at the key NGO, I attempted to volunteer at the Summit through the officially authorized California Volunteers organization. I called the number provided on the Summit website, left a voicemail for the contact person on a strange, robot-voiced and abandoned-sounding voicemail system and sent a follow up email just in case.

The next day I wrote in my contingency plan document that the phone number and email address had disappeared, without a trace of a Webarchive file, the day after I had called, left a voicemail and sent an email. Though a highly visible event, GCAS was turning into a mysteriously murky field site. I had noted the number and address elsewhere, but found no more luck after leaving more voicemails. "What th—the contact information was taken off the website as of today?! I guess I'm not going to be able to volunteer…" I thought. The quest continued, I recounted to my phone camera.

As directed by my order-of-operations-contingency-plan, I next reconnected with and made cold calls to a number of related environmental organizations. They might have a spare

[7] The mentor-interlocutor who told me to change directions or expand my focus later would tell me I could have emailed someone, told them my university affiliation, asked for a fee waiver.

accreditation lying around, I thought: a friend of a friend at the World Resource Institute; contacts at a handful of other NGOs whom I'd interviewed in earlier stages of research. The consensus became that most people didn't know anyone going from their organization. Or they weren't going, but a colleague was, but they were only going to affiliate events, not the main Summit. Or if anyone from their office did have accreditation, badges were much coveted and unlikely to multiply. The unspoken opinion was that this event was largely above, at a higher level than, them. They would keep me in mind, though.

A correspondence at the international office of a large climate NGO, Climate Action Network International (CAN-I), put in touch via a primary interlocutor, assured me he'd ask around the office. It wasn't looking good, though, he said, and no one from his office had yet cancelled. As they suggested, I was in touch with their team travelling to San Francisco up until the day of the Summit, just in case. "Unfortunately we do not have extra badges for the GCAS and I understand from my colleagues that it is a very closed event with limited numbers," they wrote in an email. "I had a word with the person coordinating our badges and she said that whilst we cannot help at the minute, once you are in SFO she can again see whether something can be done. But there are no guarantees and at the minute it does not look good." No good. That was the feedback all around: GCAS was keeping their accreditation badges scarce. Businesses willing to pay the high price of registration, or those with connections to high-rolling elites, only.

Next, I informed captive digital audience, I tried to get media accreditation. The Summit website insisted that, "Media credentials for this event are limited, and an application does not guarantee access to the Summit" (Global Climate Action Summit 2018a). Still, I had to try. So I contacted my most well-connected internet acquaintances who work in public anthropology. In exchange for a series of guest posts, four or five over a month-long period, I was grateful to secure permission to apply for media credentials with anthro{dendum}**,** the internet's oldest public anthropology blog. In 2010 it was deemed "the central online site of the North American anthropology community" by American Anthropologist (Anthrodendum 2019). Established in 2005 under the name Savage Minds, anthro{dendum} is a popular public face of political, concerned, modern, contemporary anthropology. But still, my application did not guarantee me access to the Summit, after all, and in the end it indeed did *not* grant me accreditation after all those blog posts. Even the biggest of anthropology blogs did not measure up.

What came next in my contingency plan was a series of on-the-ground strategies in San Francisco. While I waited, never to hear back, on my media credentials, and while I was let down graciously by CAN-I staff (as predicted no staff member had dropped out and no badges had reproduced themselves), I made a plan to get into the Summit through a series of ever-more desperate, clandestine in-person machinations.

My first plan was reinforced by a conversation with a field collaborator when we met for the first time in person, earlier in the week, at one of San Francisco's myriad Starbucks locations. "Just dress up a little bit and walk right in like you belong there," he said. "Throw on a tie." We chuckled, but I realized that our assumption that I could even confidently walk right into the Summit was directly due to my positionality as a white, middle class cisgender man. Why else would I feel like I could fit in with the likes of provincial prime ministers, state governors, diplomats—beside the fact that I had not yet understood just how high-level some of the inner Summit really was, Harrison Ford included? I had to try, I guess, I told my front-facing camera in the Gardens.

And try I did. On the ground, just as I was navigating the labyrinth of construction cones and closed side streets surrounding the conference center, reciting all the possible scenarios I would have to go through while "walking right in," I heard a voice to my right. "Are you also looking for the Summit entrance?" Yes, I was, in fact, doing just that. The man who had spoken was around my size and age—that is to say fairly short, fairly young—with a trim beard and kind, smiling eyes topped with the closely cropped sides and pulled back coif of an undercut ponytail. His name was José,[8] he said. And he, in his crisp blue blazer and tucked in t-shirt—on which conspicuously hung a yellow lanyard—was coincidentally from Montreal, too.

We weaved our way through the pylons and the workers setting up white event tents, and José and I got to know each other. I told him what I was up to, that I hadn't actually lived in Montreal in a few months, that I was doing research for my degree, that I moved there from Detroit five years prior. He told me he was born in Mexico, but had been in Montréal for a long, long time now. He was a practitioner of homeopathic medicine and part of an environmentally leaning religious organization. He was to represent them at the Summit.

As we made our way to the entrance, directed by a construction worker in an orange vest, I felt I had to fess up. The jig was up. If we were walking in together, if we had established this

[8] This is a pseudonym.

much kind-hearted complicity, did I really expect myself to be able to fake my way in with a straight face? Could I really bring myself, however incidentally, to implicate José the naturopath from Montreal in my plans for infiltration? And besides, maybe he could help me get in, I thought.

So I confessed, told José I didn't have a badge, that I had been planning on walking right in to the summit, and I asked him how he got his badge. He told me he got his accreditation through a sort of lottery via YOUNGO, the official constituency of youth civil society groups at the United Nations Framework Convention on Climate Change (UNFCCC). His religious organization was a member; he'd applied through the listserv.

When we finally arrived at the entrance, walking past volunteers in yellow t-shirts to take our place between the retractable zig-zagging queue control ribbons, I realized my infallible plan might not work at all. In fact, we were all waiting in line, quietly and politely like the well-disciplined and event-accredited global citizens that we were—that is, except for me. My heartrate rising, José and I stood waiting to approach one of three booths, each overhung with a yellow banner that read "CONSCRIPTION," between which lay the ascendant path to the summit. "What the…", I thought, standing in line. "Damn it!!!", I said to the front-facing camera later in the Gardens. There was no possibility for a simple walk-in-through-metal-detectors as I'd imagined.

As the circumstances appeared ever-more desperate for my covert operation to enter the summit, I began questioning our neighbors patiently waiting in the snaking line leading to the CONSCRIPTION booths. One blonde young woman in a business suit told me with a polite shrug that she worked for the mayor's office, and the office needed a representative at the summit. She was the only one to volunteer. Others said they got a badge from the local NGO where they worked. What did this say about the kinds of summit participants within the conference center castle walls? It looked like I would have no luck from our fellow line mates.

Before I abandoned José to the queue, he sent me an invitation on his phone to sign up for the YOUNGO listserv, told me he'd call me if he saw any emails suggesting the availability of an extra accreditation badge. Promising to reconnect online, I thanked him for his comradery and his brief efforts to find me a badge and I bid him adieu, moving on to give the old college try on yet another path into the summit.

Stepping under the retractable ribbon and out of the line, I retraced my steps back to where I had found the group of volunteers, lingering near the entrance in matching yellow t-shirts. My next attempt was volunteering 2.0. I asked the fine folks in canary yellow how they had achieved the honor of standing around near the entrance, wearing such bright yellow t-shirts with the GCAS logo on them. They returned my polite question with a slate of blank stares. Finally, one shrugged, said, "We work for Wells Fargo. They sent out an email asking for volunteers." Another added, "it's a corporate thing, they like us to do a certain amount of community service days." More shrugs and they pointed me toward the volunteer tent, back outside. If only I were a banker-anthropologist. Thank you, I said. Onward, I thought.

I soon found the volunteer tent, around a corner in a semi-secluded, shaded enclave of the conference center walls. Sure enough, as I approached I saw someone who appeared to be the volunteer coordinator—was this the person with the disappeared name, from the webpage with the vanishing contact information? I approached the table, greeted her cordially and told her of my plight, pledging my fealty, people power and time, if only she could bestow upon me a volunteer badge in return. I regaled her with the tale of the robotic voicemail box and the disappearing number and email; the lack of response, the multiple attempts, the struggle and the strife. I pleaded in a tone that expressed my dread, the drama of the situation, the importance of my *being inside that building*. Help me help you, I thought, this has got to work. I awaited her response.

"Well, unfortunately," the volunteer coordinator replied empathetically, "part of the volunteer registration process is a *federal background check*," due to the high number of governors, mayors and other political leaders inside. So she couldn't take on any new volunteers. As much as she could probably use my help. "Really?!" I thought. I tried exploring alternate routes to volunteerism with the coordinator, but all roads led back to my lack of federal background check. I looked on, mouth probably agape, as another opportunity to get into the summit passed me by. She, too, then suggested I could try to "just walk in." "I tried," I say, the image of the yellow CONSCRIPTION booths at the guarded entrance of the summit mirroring the declaration of VOLUNTEER on the back of her yellow shirt.

I eyed the glass door facing the volunteer booth, walked over and held my hands up against the glass. I looked on with yearning, nearly salivating, like a child with tooth decay, doomed to imagine a life imprisoned on the outside of the Old Timey Soda Shop. Just then, a

security guard in a folding chair wagged his finger at me. Reverie broken, relinquishing my longing gaze, I returned to the volunteer table and thanked the coordinator for her time and understanding. Still rather buoyant, disappointed if undeterred, I decided to test my luck on finding a stray unlocked backdoor.

I probably appeared on every security camera lining the exterior wall of the Moscone Center South as I canvassed each of the dozens of blank, windowless grey doors to the outside of the building. As my solo circumnavigation of the conference center neared its end, approaching counterclockwise again the entrance to the summit, I also tried each glass door that appeared on my left. They were all, unfailingly, crewed by a menacing-looking security guard, seated in a folding chair, ready to catch my longing gaze and narrow his eyes at me through the clear glass, on the other side of which, I thought, laid the failed destiny of my doctoral fieldwork. And so after several hours, I found myself—dress shirt, grey-blue slacks, tie in my pocket ("just in case," I repeated to my front-facing camera)—eating a hummus wrap and awkwardly cradling a single-serving cup of Greek yogurt on a hot bench in the midday sun in Yerba Buena Gardens, located just to the north of the Moscone Center South, where the Global Climate Action Summit was blasphemously carrying on without my participation.

Feeling disgraced and self-deprecating, convinced I had failed, I later came to realize that what I thought were observations—my failed plans at accreditation, my entire, shambling on-the-ground strategy—*were really participant-observations*. In my attempt to gain access to what I had considered the primary site of this moment of event-based fieldwork, I tried numerous routes into the Global Climate Action Summit. Each, it seemed, gracelessly fell apart more swiftly than the next. From an attempt at initial access with an interlocutor from an organizing NGO, to attempting to get a freed-up accreditation badge from staff at the group's international office; from using my established field networks to seek out accreditation with other NGOs to attempting to register as a volunteer; from attempting to "walk right in" to trying to get access with help from Juan and our line mates; from media accreditation to volunteering the day of the summit to circling the convention center's faceless grey doors, one after the other, after the other. I couldn't get into the Summit. However, I would soon realize that the real action for my actual interlocutors was at the affiliate events of the Global Climate Action Summit.

An hour after my front-facing camera soliloquy in the Gardens, I found myself at a bar, enjoying a refreshingly cold amber ale, determined to be somber but not sober in defeat, when I

received an email from Dr. Jerome Whitington, one of my doctoral committee members from New York University. He was insistently asking if I was available to come to an affiliate event at the Goethe Institute, next to the Dragon Gate in Chinatown. He was, surprisingly for me, in San Francisco for GCAS and he did not have a coveted accreditation badge either. But there was someone there that he thought I should meet. I quickly downed my drink, tipped the staff at the empty early afternoon bar and hopped on a bus to my next fieldwork escapade—a summit affiliate event.

GCAS was a huge event, and, all this floundering effort aside, there was considerable potential ethnographic food in the Summit's hundreds of official and unofficial affiliate events. From the launch of a new alliance of sub- and non-national climate actors to the publication event of new collaborative working papers to film screenings on indigenous resistance to mining, I attended events all over the city over the course of the three days surrounding the summit. They all proved fruitful ethnographic fodder for my research questions, and those I didn't yet know to ask. In the end, these affiliate events are where I (along with most people who were in San Francisco for the summit) spent most of my time, unable, ultimately, to make it inside the summit. They are where I made new connections and first met new interlocutors, where I took a notebook full of field observations. Ultimately my trouble with access was a reflection of the places and scales at which my interlocuters were able to intervene at this conference and on climate change more broadly.

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"Object" Lessons: Participant-Observations, Not Just Observations

Thinking about the conditions of fieldwork access taught me how to better identify and place the people working in the space between climate science and climate action. In other words, it came to matter that most of my interlocutors couldn't get into the Global Climate Action Summit either. Experiencing perceived problems with access first-hand helped me to map out the network dynamics around this (and, granted, perhaps only this) climate change summit, but also the dynamics around climate action in this space more generally. I was not alone in my lack of access; this recognition would prove an ethnographic analysis—and a strategy for rethinking what access and my object meant. I next relay what the above experiences taught me

about my object of study. These "object" lessons will come to bear in various ways on each of the following chapters of this dissertation.

Mobile and Fleeting Nodes of the Network

What did it say about the field that the volunteer contact information disappeared from the website? That the conference appeared inaccessible to the individual, let alone the meso-level climate NGOs? As I was beginning to understand at the time, even the concrete, event-based moments of my fieldwork were often murky, mobile and fleeting. According to the Volunteer Coordinator's account, the website should have been working. That it, too, proved mercurial provided me a locus from which to understand that the in-person nodes of this network of NGOs—such as this one-time Global Climate Action Summit—were mobile and fleeting in more ways than one. Rather than an organization's office or a regular event, the places the actors in the space between climate science and action periodically came together were at times one-time events such as this, and at others meetings such as the Paris Agreement's Conference of Parties (COP) meetings, each in a new place every year. That the entire GCAS website would disappear, its internet domain abandoned, just over a year after the summit speaks to the sometimes-transient nature of this network's nodes, and the novel research methods and ways of framing fieldwork this transient nature required.[9] These methods will be explored further in a bookend to this discussion in Chapter 5. As we will see in that chapter and in Chapter 4, when the in-person events of this network are not singular, one-off events or meetings in a new place along the network each year or two, the network convenes in the digital spaces of online gatherings, video and conference calls, webinars and email.

Further, can this tell us something useful about anthropological fieldwork around climate change, among political or scientific networks and other elusive, emergent objects of study? If, to recall, as historian of climate science Paul Edwards teaches us, "No one lives in a global climate" (Edwards 2010: 2), perhaps the relations of mobile and mixed-methods (field)work are what are necessary for accessing global ecosystemic changes. What else do these encounters with fieldwork access, murky feelings and configurations teach?

[9] http://www.globalclimateactionsummit.org/ no longer yields a viable website.

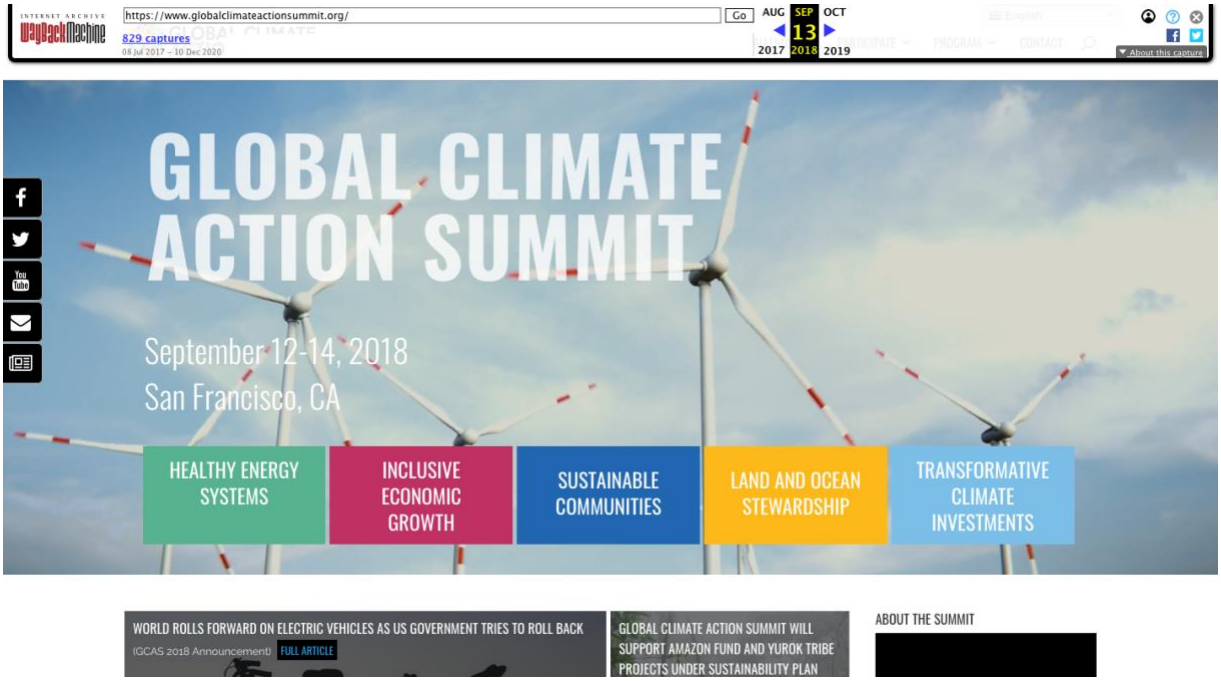

Figure 3: A screenshot of the now-defunct homepage for the Global Climate Action Summit. www.globalclimateactionsummit.oeg is no longer a vial address. Accessed December 17, 2020. (Global Climate Action Summit 2018b).

Between Climate Science and Action, Center and Periphery

How did the closed door of the Summit—or rather the dozens of closed doors—invite me to think about the conditions that made the event and its kind of climate action possible? What did they tell me about my interlocutors? And what of their place at the affiliate events, rather than the inner summit? Recognizing that I was not alone in my lack of access was, ultimately, a strategy for rethinking what access meant, *where* access was meaningful. Somehow, despite or due to my stubbornness to get into the main Global Climate Action Summit, I had failed to recognize that the organizations and actors I largely came to San Francisco were at the affiliate events, unable to get into the summit with Harrison Ford and the government officials, either.

Periphery Yet if they were not at the "center" of the inner summit, they were also not exactly at the "periphery." That position would be occupied by the grassroots activists gravitating around the Solidarity to Solutions Summit, or Sol2Sol. This counter-summit of sorts was organized by a coalition of twenty or more grassroots groups, under the guiding banner of the It Takes Roots Coalition: "a multiracial, multicultural, intergenerational alliance of alliances representing over 200 organizations and affiliates in over 50 states, provinces, territories and Native lands on Turtle Island; and [it] is led by women, gender non-conforming people, people

of color, Black and Indigenous Peoples" (It Takes Roots 2022). Billed as the Indigenous and People of Color-led alternative to the Global Climate Action Summit, Sol2Sol took place on the day before GCAS, Tuesday, September 11, 2018, at La Raza Park in San Francisco's Mission District.

I arrive at La Raza Park (officially known as Portero del Sol), a large open green space which includes the city's largest skate park, after a fleeting first in-person meeting with an interlocutor at an awkward Starbucks near the Dragon's Gate of San Francisco's Chinatown. A music and dance performance wraps up on the large, low stage set at the bottom of the hill, as sprightly boys climb over a playground dome and skateboard girls fly up in the air and back down again. To the right of ther stage, there are tables and booths, an ad hoc bicycle repair setup and a screen-printing station. I sit on the grass at the top of the hill and await the afternoon's programming. The afternoon consists of two workshop breakout sessions, set in various shaded or grassy areas of the park, folding chairs moved to form welcoming circles. I feel at home, and at the same time come to accept the recognition that while these people are absolutely experts in their own rights, these were not exactly the meso-level experts I was looking for.

I choose the Just Transition workshop for the first session of the afternoon and the Carbon Pricing workshop for the second. The crowd is diverse but includes many more People of Color than white folks. Women tend to lead discussions and workshops and I mark the amount of Spanish being spoken around me—Bay Area residents but also accented Indigenous folks from South and Central America. During the second workshop session there is a larger Black Organizing Caucus meeting. In the second session's carbon pricing workshop group, Ninawa Huni Kui, a traditional chief and President of the Federation of the Huni Kui, one of the largest Indigenous groups of the Brazilian and Peruvian Amazon, gives a speech through a translator. He speaks of deleterious effects of carbon offset programs like REDD+ in his home in the Brazilian state of Acre. Ana Valadez Ortega from the Centro de Estudios para el Cambio en el Campo Mexicano (CECCAM), a Mayan woman in the circle of folding chairs, speaks of California's state carbon offset pilot program, which sets aside carbon-sinking Indigenous forest land in both Chiapas, Mexico and Acre, Brazil to make up for Californian emissions. In reality, she says, it's a colonialist land grab, stealing Indigenous people's land and blocking them from their own territory, so that California can say it's doing something about climate change without ever cutting emissions at the source. Gabriela Linares Sosa from the Union of Organizations of

the Sierra Juarez of Oaxaca (UNOSJO), Mexico, discusses the ways in which "native peoples' lands become the property of the polluters." If people can't harvest, use foods and medicine, it undermines self-governance, food sovereignty and therefore nutrition, economic wellbeing and more. Tamra Gilbertson from Indigenous Environmental Network presents their Sky Protectors report, which lists the groups and corporations who are buying California's carbon offset credits. They're mostly large corporations. "This is a continuation of how development works," she says, "which is a continuation of how colonialism works; this is why we call it not 'carbon offsets,' but 'carbon colonialism!'" With this circle of voices, I came to realize that these were the people actively fighting against the corporate-sponsored climate action of the inner GCAS summit.

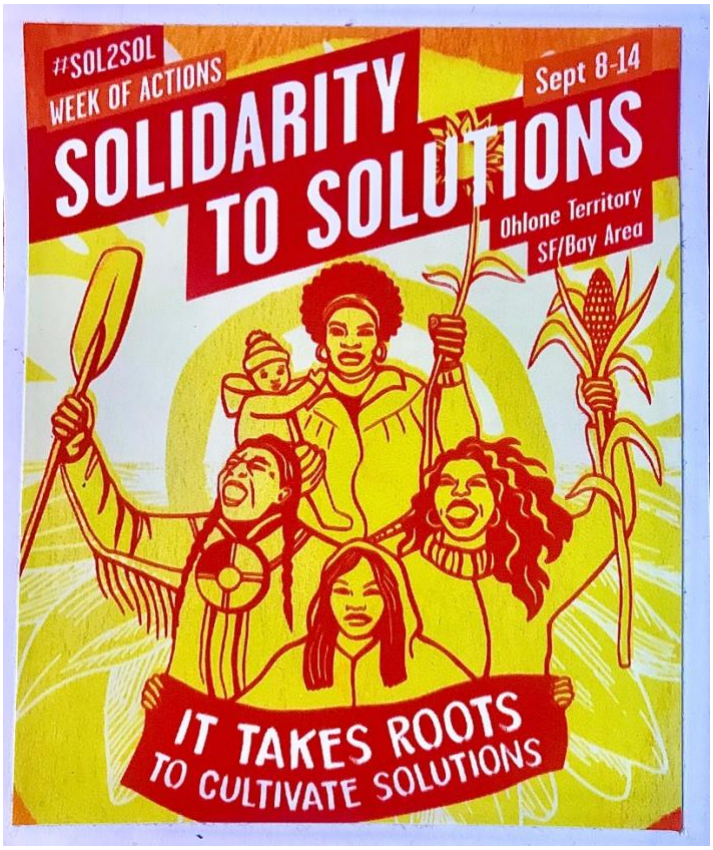

Figure 4 A sticker handed out at the Solidarity to Solutions (Sol2Sol) Summit on September 11, 2018.

The Sol2Sol Summit ends as the sun is setting with an uplifting performance and then a group prayer from the Mission District-based dance group Xiuhcoatl Danza Azteca/Mexica. Thinned out from the crowd of many hundred earlier in the day, the crowd of one hundred and fifty or more follows the group's instructions, linking hands to form a giant circle in the large field. Circling smiling faces rush past counter-clockwise, stopping at the end to recite the prompted words from the leaders of the dance. My own day ends a bit later, with a walk through

The Mission and some tacos, before a train ride back to Oakland and a slow clockwise stroll around Lake Merritt with my host-friend K and her dog, named Darryl. The next morning, across the Bay in Oakland, I am not able to make the hour to hour-and-a-half long commute for the seven o'clock wake-up call whispered about during the previous afternoon: counter-summit participants were to stage a blockade of the Mascone Center South, blocking government officials, large green NGOs and other big names from the opening day of the Global Climate Action Summit in protest of what they saw as feckless corporate climate colonialism. Periphery pushing back against center.

Affiliate Events The center-periphery analogy here is not a perfect one; some of the affiliate events I attended felt more like extensions of Tuesday's Sol2Sol counter-summit than the paper-presentation panels of other interlocutors' sessions. However, this schematic is a useful heuristic device. Rather than the central summit I wasn't able to get into or the peripheral counter-summit I attended the day before, the interlocutor organizations and people I came to San Francisco to see were largely to be found at the GCAS affiliate events. They were at the edges of the center, some closer to the inner conference center and others closer to the activists at La Raza Park.

The day after the Sol2Sol Summit, after I unsuccessfully circled the Mascone Center South, never making it into the inner summit, my committee member, Jerome, emailed me to bring to the affiliate event at the Goethe Institute. I was able to meet Michael Dorsey, a former Dartmouth professor, and former supervisor of Jerome's who had left academia for the renewable energy industry. Jerome, Dorsey (as we would call him) and I walked from the Institute to Dorsey's next appointment, us to the next affiliate event. Dorsey and I made plans to meet the next day. "Dang I need two years of fieldwork," I thought for the first but not last time, as Dorsey and I sat at our later meeting, discussing fieldwork strategies at a shaded two-person table in a wood-paneled second floor room, eating from plates of catered food paid for by a Yale University alumni association networking event. As Dorsey's blunt, punchy advice shed some light on some of the murkier parts of the space of my object of study, the shape of the field took shape around the shape of the fieldwork.

The GCAS affiliate events would come to bear directly on the events that take up two of the remaining four chapters of this dissertation and influenced parts of the remaining chapters. Later in the day, after the failed conference siege and the walk-and-talk with Dorsey and Jerome,

I would first introduce myself to a cast of characters who take the stage in Chapter Five of this dissertation. At the Marriot Marquis conference room, on a series of talks and paper-presentation panels put on by the Climate Works Foundation, I first met Todd Edwards, Thomas Hale from Oxford, Jean-Charles Senghers from the Climate Group's international office. The following day, on the last day of the summit, I would climb Knob Hill to attend another official affiliate event: the facilitation of Climate Interactive's World Climate role-playing game, organized at Grace Cathedral by religious environmental organization Green Faith, the story of which I tell in Chapter 2. In Chapter 3, I recount how I meet Climate Interactive's Drew Jones for the first time in person the day before the center GCAS meeting begins, before he runs off to a few affiliate events and then flies to the East Coast, missing out on the World Climate facilitation to head back home to deal with the consequences a climate change-charged Hurricane Florence. Regaling my friends in the Yerba Buena Gardens at the lunch hour on September 12, what I thought was a failure was, in fact, a fruitful lesson on my object of study.

Chapter Conclusion

Sneaking into the field, my attempted entrance into the Global Climate Action Summit, was not exactly Malinowski suddenly set down surrounded by all his gear, alone on a tropical beach. Yet in this chapter, I have attempted to show how fieldwork feelings, access and "failures" led to revelations about the shape of the object of study at hand in this dissertation. Confusion, tension and conflict, even or especially during fieldwork, are information-rich—tension, even, in the researcher's own body, as we saw at this chapter's opening. Often, they reveal what is at stake. The difficulties with "access" that appear in this chapter demonstrate the necessary dexterity of anthropological fieldwork around climate change, among political or scientific networks and other elusive, emergent objects of study. Reflections on the affective experience of fieldwork and the perceived difficulties with fieldwork access better outlined the shape of the field and the place my interlocutors occupy between climate science and politics.

Rather than at center stage of either the summit or the counter-summit, high-level diplomats or grassroots activists, my interlocutors occupied the affiliate events. After grappling with the foil of ideal field sites and access thereto, my research eventually followed in the footsteps of other research in similar institutional settings, experiencing similar difficulties, even while this research had mobile and fleeting field sites. And as opposed to leaving reflections on

feelings in the field aside, they were taken up as means through which to access the challenges to anthropological knowledge production that global anthropogenic climate change and those acting on it produce. These revelations fundamentally shaped the type of research I conducted during this phase of my fieldwork. They partly structured the direction of my inquiry, changing the types of questions I asked myself and interviewees and directing the ethnographic insights for which I was searching. Ultimately at stake in this chapter was the kind of anthropological fieldwork appropriate for studying global anthropogenic climate change and the people attempting to act upon it. In the next chapter, I zoom in on the work of one key interlocutor organization, Climate Interactive, as they themselves grapple with teaching people the non-intuitive system dynamics of the global politico-climate system.

Chapter 2 Climate Interactive's History, Role-Playing Games and System Dynamics Modeling

The site is easy to access. Just a few steps from home, and I'm there. I arrive and am immediately confronted with two large rectangular windows, up high. Below and to the left is a large rectangular table, covered in labels of six colors, many black numbers, a few small words. On the colored labels are the names of six nations or groups of nations: US, EU, Other Developed, China, India, Other Developing. A smaller, white square table occupies the center, bestowed with only one large, solitary number, a few diminutive words. "+4.1°C," its text reads, underscored by the words "Temperature Increase by 2100." On the far right, three squarish banners hang one over the other, announcing to the visitor the team of organizations that made this site possible.

The large window up high and on the right is mostly opaque, save a one dominating feature: a single, dark line scorches across its surface, from bottom left to top right. Upon closer inspection, it is a black line overlaying an inky purple one, like a dark comet's tail. It is bisected by two horizontal and gray dotted lines. The window on the left is less subdued, less ominous. It is lit up with a colorful array. Graceful curving lines in red, green, orange, light blue, pink and dark blue, matching the colored labels on the table below, arc to the right and skyward. Later, other lines are "stacked" and filled out, almost topographical in their technicolor, sloping hills, climbing ever-upwards, or back down, until 2100.

I click on the "Graphs" menu above the two windows and change the window on the left to show a graph of "Emissions per Capita" rather than "Energy CO2 Emissions." I change the right window to show "Sea Level Rise" rather than "Temperature Increase."

Rather than an in-person place, this site, of course, is a website. More specifically, it is the online space of non-profit Climate Interactive's climate change policy simulator, C-ROADS Online. C-ROADS is also available to download as an application, a slightly more advanced version of the climate system dynamics simulation model that can make simplified versions of complex calculations about "the long-term climate impacts of national and regional greenhouse gas emission reductions at the global level" (Climate Interactive 2022). It does this in about a second flat—innovatively fast. A free, easy to access simulator, (just a few clicks away from the

Climate Interactive homepage), C-ROADS is the model to match the World Climate Simulation role-playing game.

Introduction

With the opening deceit now exposed, having made the familiarity of a website strange, let us lean into the stakes of the matter. What can the experience of relating to global anthropogenic climate change through a website or role-playing game tell us about climate change, the relations and knowledge needed to solve it? In this chapter, I zoom in from Chapter One's establishing conversations around fieldwork and access to an elusive network, to focus in on one organization in that network: Climate Interactive. To use the network typology established in the Introduction, Climate Interactive occupies the roles of technology developers/data analysts and climate communicator/educators. This chapter begins the journey to understanding the "ethnographic"[1] details of the network of organization and actors between climate science and politics by answering the questions: What do these data and communication roles consist of, and how do they use technology and education? What is the history of this approach to studying and communicating the intricacies of systems and who are the main characters? And how does Climate Interactive's geographically diverse contingent of users take up their tools? Further, following one theme of this dissertation on non-traditional research methods—an explicit focus of Chapter 5—this chapter also begins to reveal how a computer model can act as a *place*holder; how a website can be part of a field site.

In this chapter, I introduce the world and work of Climate Interactive, the first of two key organizations for my research on the network of organizations located between climate science and climate politics. I begin with a description of Climate Interactive as an organization, explaining their models and games, as well as the place their kind of models occupy in the larger domain of climate modelling. I then gather and recount a written and oral history of the organization and its people. I describe their field of knowledge, an approach called system dynamics with origins at MIT in the 1950s. I outline the organization and its peoples' place within the genealogy of system dynamics, laying out a history of this approach to modelling and to teaching its insights through interactive games. I relay their key insights and approach to

[1] For more on the nature of the quotation marks around "ethnographic," see Chapter 5.

understanding and modelling complex systems, along with the series of events and close mentorship relationships that led to the organization's founding as Climate Interactive. This description and history are interspersed with one "ethnographic" narrative at the beginning, above, in the middle, and at the end, of how Climate Interactive's models and games are being used, based on ethnographic interviews with and participant-observation among users.

In many ways, this is a chapter located within the rich history of science and technology studies and the history of science, as much as anthropology. Yet it is anthropological in its commitments. Throughout its history, anthropology has allowed the individual to assume significance as a meaningful scale of analysis. It has been interested in how the actions, knowledge and beliefs of the individual and the small collective of the village can come to be representative of the larger, vague scalar and semantic entity that is sometimes deemed a culture. In this chapter, my presentation of the genealogy of Climate Interactive falls within these interests and commitments: small-scale analysis that reaches for larger scalar and semantic entities. I trace this small nonprofit organization's origins and field of study from one professor at MI to his small group of students and, subsequently, the mentees of one his students, from the mid-to late-twentieth century. In interspersing this history with present-tense descriptions of Climate Interactive's users' experience, I provide insights into how an anthropologist and climate action practitioners alike work to grasp the relation between the experiences of individuals and global anthropogenic climate change as an emergent object of study and action.

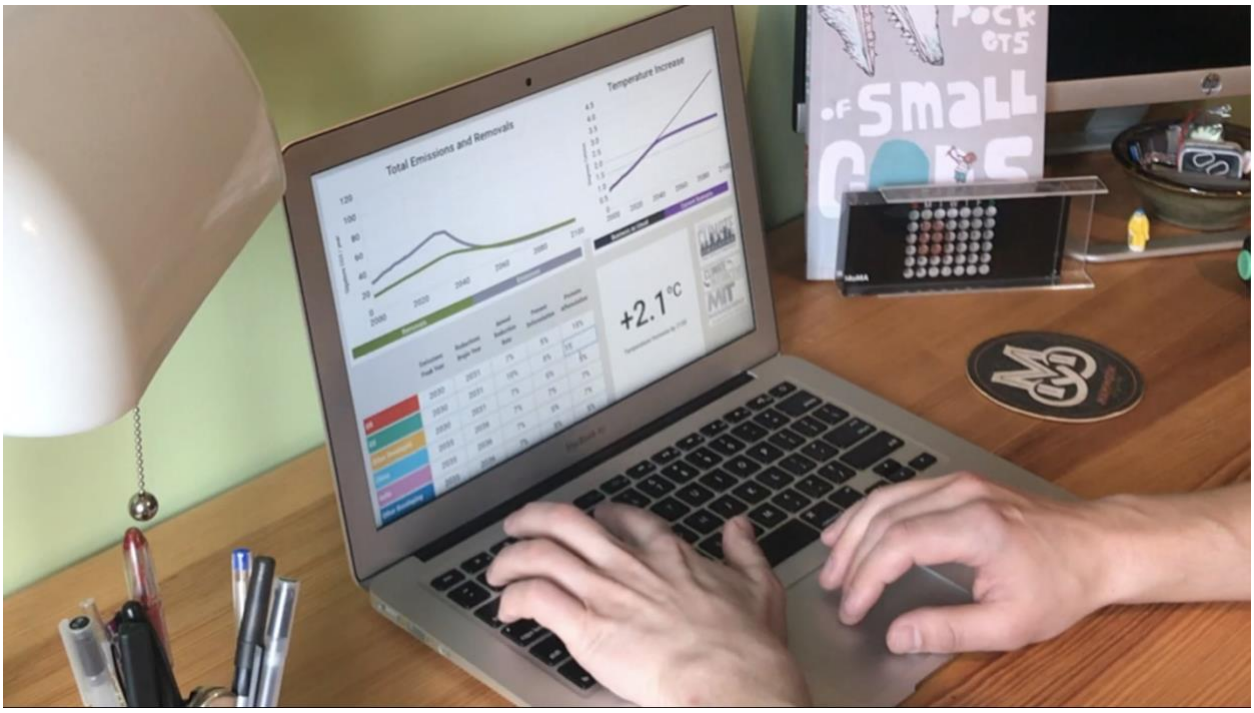

Figure 5 Screenshot of time-lapse video of the author using the C-ROADS simple climate model.

Climate Interactive – Background

Climate Interactive creates interactive simulations, decision-support tools, experience-based educational workshops and timely analysis to empower people to reach their goals in addressing climate change. Billing themselves as "an independent, not-for-profit think-tank that grew out of MIT Sloan in Cambridge, Massachusetts, USA" (Climate Interactive 2021a), Climate Interactive (CI)'s work is rooted in systems thinking and experience-based, interactive design and pedagogy. Their programs have provided support and tools for engagement on climate change and related topics for a variety partners, including government decision makers, community groups, non-profits and NGOs, business leaders, educators and the media. Bolstered by their system dynamics simulation modeling, scientifically grounded and timely analysis and open-platform learning tools, CI's work is organized roughly into three workstreams at the time of fieldwork: engagement with decision makers and other partners; communication with the public and media, and education programming, and; creating and disseminating interactive tools and simulation games. Correspondingly, CI's work occurs largely in three spaces, CI Co-Director, Andrew (Drew) P. Jones, told me: at workshops, games and events that they run or let someone else run; at big events like the COP (the Conference of Parties to the United Nations

Framework Convention on Climate Change) or The Climate Group's Climate Week (which happens concurrently with the session of the UN General Assembly in New York City), and; sitting at desks, writing emails and modelling at laptops.[2]

Within the network of organizations working between climate change science and politics, Drew and his organization perform the dual roles of technology development along with science communication and education. This research project focused largely on Climate Interactive's C-ROADS simple climate model and role-play simulation of the international climate negotiations, World Climate. World Climate participants "have included Nobel Prize winning scientists, a former U.S. Secretary of State, (actual) UN climate negotiators, university presidents, European Union policymakers, oil executives, and countless students of all ages" (Climate Interactive 2021a). As further testament to its dissemination, both World Climate and its supporting model, C-ROADS, have been made available in multiple languages. The latest version of C-ROADS is available with English, French, German, Spanish, Turkish, Japanese and Korean language support; World Climate facilitation materials, including presentation slides featuring background information and instructions, are available in fifteen languages. Some translations have been made available by CI staff and associates, but volunteer users have done the bulk of translation work.

Consistent with CI's broader mandate, staff and associates commit what resources are necessary to developing and improving World Climate and C-ROADS and supporting users through direct engagement. CI staff and associates regularly hold facilitator-training webinars on both World Climate and its sibling simulation, World Energy (and now the Climate Action Simulation; more on that below), in English and, sometimes, French and German. Facilitation materials are regularly updated and expanded and CI strongly encourages facilitators to register their events on the CI website. They also support and maintain an Ambassador and Expert Facilitator program of volunteer users and organization associates who are experienced at using their models and running their simulations and are willing to help others or facilitate games all over the world. In 2018, a dozen World Climate Ambassadors and 35 Expert Facilitators disseminated World Climate and supported new facilitators. In 2021, Climate Interactive listed 315 En-ROADS Ambassadors in forty-eight countries (Climate Interactive 2021b)

[2] Interview, January 24, 2018.

World Climate and C-ROADS

Designed for three to sixty[3] participants, World Climate is a United Nations climate negotiations simulation game that offers groups of users the opportunity to role-play the international effort to reduce global greenhouse gas emissions. Split up into three to six teams, each playing the role of a different country or group of countries, participants are tasked with lowering global greenhouse gas emissions via several mechanisms while also accomplishing their country's own negotiating goals. The general structure of World Climate is therefore comparable to a well-designed Model UN game. However, it benefits from one major pedagogical and design advantage against which participants can verify their proposed actions: CI's C-ROADS (Climate Rapid Overview and Decision Support) climate policy simulator. C-ROADS is a simple computer model with a user-friendly interface, "a free, award-winning computer simulator that helps people understand the long-term climate impacts of actions that reduce greenhouse gas emissions" (Climate Interactive 2017a).

Using C-ROADS, World Climate game participants are able to immediately test the results of their policy negotiations, translating their "climate mitigation scenarios into emissions, concentrations, temperature, and per-capita emissions outcomes" in real time using the model (Climate Interactive 2017a). Users are able to simulate mitigations scenarios for six countries or country groupings, using the levers of carbon emissions peak year, starting year for emissions reductions, annual reduction rate (%) and percentages of preventing deforestation and promoting afforestation (see input tables, lower left Figure 2). In World Climate, teams also provide a committed monetary contribution to the Green Climate Fund, the mechanism of the 2015 Paris Agreement to help "developing" countries fund their energy transitions, which often serves as a negotiating lever for the others. Transparent, with adjustable statistical assumptions and scientifically peer-reviewed (e.g. Watson et al. 2014), C-ROADS has been deemed an "instant climate model" (Tollefson 2009). Compared to the massive supercomputer models of the global climate, which truly take weeks to run a simulation, C-ROADS is free, interactive, user-friendly and runs online or from any laptop at the click of a button. According to Climate Interactive, C-ROADS was the first model to add up countries' pledges to reduce greenhouse gas emissions (GHGs) after the 2015 Paris climate agreement. In fact, combined with their pioneering simulation-based exercises, this is what Co-Director Drew Jones calls arguably CI's biggest

[3] In 2021, they recommend eight to fifty participants for the game's current iteration (Climate Interactive 2021d).

contribution to the field: an interactive climate model that runs online or off any laptop in one second flat. "Perhaps the biggest innovation of Climate Interactive," Drew told me in our first full interview, "is the role of fast-running, decision maker-oriented simulations, and learning experiences that are built around the simulations."[4]

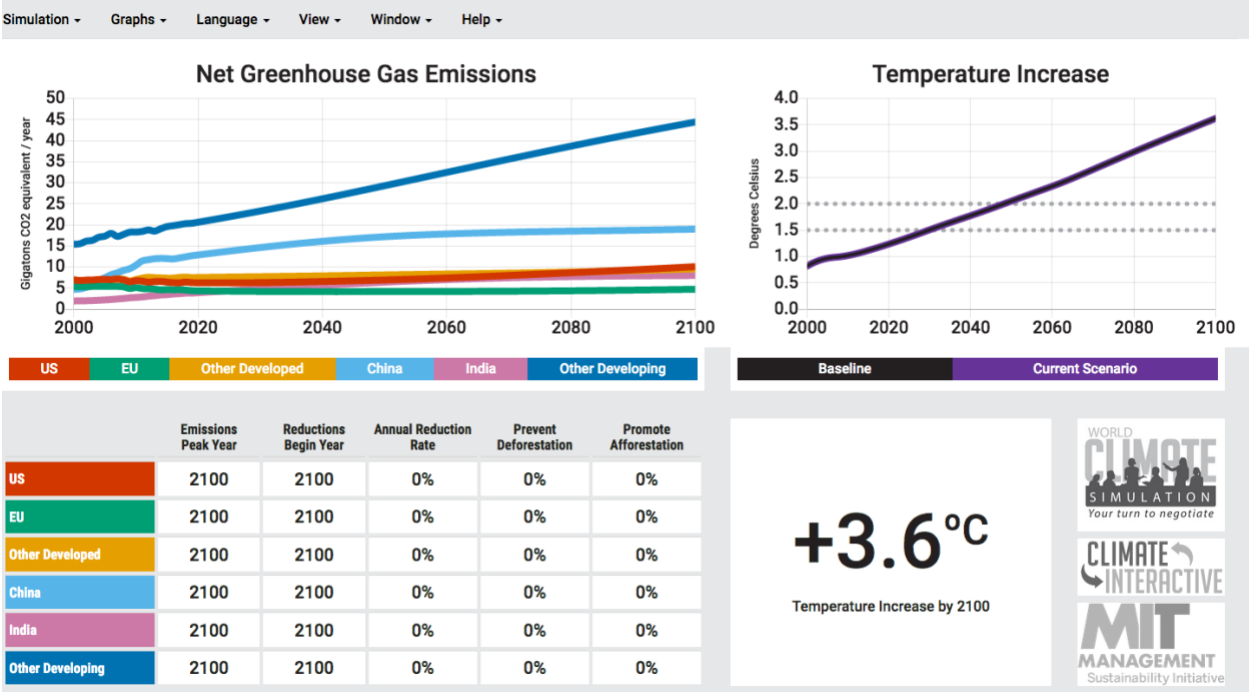

Figure 6 Baseline (business-as-usual) scenario for C-ROADS model (online version).

Simple Climate Models

Climate Interactive's models like C-ROADS are simple climate models (SCMs), which rapidly assess various policy scenarios with an interface that is relatively easy to understand and graphically user-friendly (see Figures 1 and 2). Their models are globally aggregated, meaning that they function (and run simulations) on a global scale, combining large sets of observational data into summary statistics in order to organize and communicate large amounts of information, together. "As a globally aggregated SCM," writes Drew Jones' mentor and CI collaborator at MIT, John Sterman et al., "C-ROADS projects global averages for GHG [greenhouse gas] concentrations, temperature increase, sea level rise and ocean pH, but cannot assess climate impacts at the national or subnational level including changes in precipitation, wind speed, storm

[4] Interview, January 24, 2018.

intensity, etc." (Sterman et al. 2013: 132). In addition, C-ROADS can simulate carbon emissions scenarios from specific, aggregate sources: "The model allows users to specify emissions pathways for CO_2 from fossil fuels, from REDD+ policies, and for emissions of other GHGs explicitly at the level of individual nations or regional blocs, including the 13 largest emitters, which account for about 80% of global emissions" (Ibid.).[5] This means that while the effects of climate change are projected in global averages in the model, users can indeed simulate those effects via various GHG sources or mitigation policies by individual country or group of countries.

Further, simple climate models are different and meant to be used differently than more complex, disaggregated climate models. More complex, disaggregated models might deal more specifically with detailed sets of observations to produce projections for smaller regions, or about more specific parts of the global climate or more specific sources of emissions. Drew told me that this is something that CI has worked hard to emphasize about their work, presumably because their models have been doing something so novel (see Figure 1). "Over ten years ago," he said, "it was like 'all climate models were just climate models' and we were really working hard to have people understand the significant differences between the purposes of different models." When I asked Drew about where C-ROADS fits in with other climate-policy models geared toward supporting decision-makers, such as William Nordhaus of Yale University's Dynamic Integrated Climate Economy, or DICE, model[6], Drew explained it to me thusly: "DICE and C-ROADS are of one class: rapid-assessment and alternative scenarios, policy proposals, exploring uncertainty, useful for policy-makers. High speed, simplicity of use, transparency, but low scope and detail" (see Figures 2 and 3).

[5] "Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries" (REDD+) is a United Nations Framework Convention on Climate Change (UNFCCC)-backed process and framework for mitigating the effects of climate change and fostering conservation, sustainable forest management and increasing forest carbon stores through decreasing deforestation and increasing afforestation (expansion of forests). It does this by financially incentivizing "developing" countries through direct payment or carbon credits. For anthropological work on REDD+ policies and the environmental scientists who influenced them at the intersection of science and policymaking , see Rojas 2016.

[6] For more on the DICE model's work bridging the gap between climate science and climate politics via the assumptions of neoclassical economics, see Fleischmann 2016.

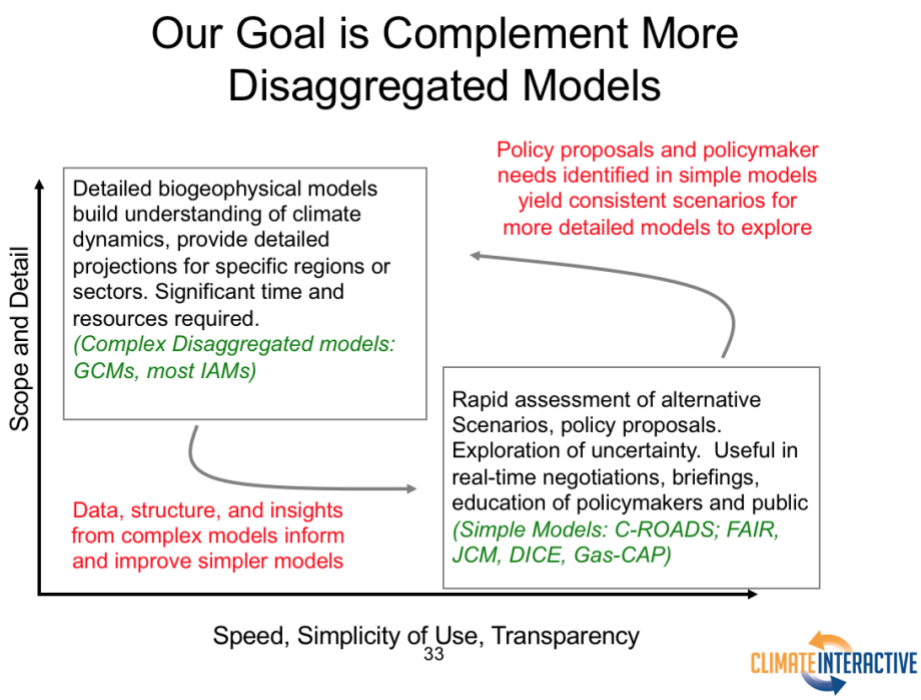

Figure 7 Graphic indicating how Climate Interactive envisions the relationship between models like C-ROADS and more complex climate models (Credit: Tom Fiddaman. Courtesy of Climate Interactive).

More complicated climate models have different uses, different strengths and abilities, Drew spelled out to me. On the one hand, Global Circulation Models or Global Climate Models (GCMs) are the complex biogeophysical models, run on powerful computers, that guide the latest climate science and the Intergovernmental Panel on Climate Change climate change reports, for example. They focus on the climate system. Integrated Assessment Models (IAMs), [7] on the other hand, combine information and analyses of from several different fields of study, such as social and economic factors along with climatological analysis in a single framework that is useful for researchers and decision makers. They "generally include both physical and social science models that consider demographic, political, and economic variables that affect

[7] Although not all integrated assessment uses modeling, it often does. "In assessment of climate change, integrated assessment refers to that activity that considers the social and economic factors that drive the emission of greenhouse gases, the biogeochemical cycles and atmospheric chemistry that determines the fate of those emissions, and the resultant effect of greenhouse gas emissions on climate and human welfare. More specifically, the two defining characteristics of a climate change integrated assessment are 1) that it seeks to provide information of use to decision makers rather than merely advancing understanding for its own sake; and 2) that it brings together a broader set of areas, methods, styles of study, or degrees of certainty, than would typically characterize a study of the same issue within the bounds of a single research discipline." (Consortium for International Earth Science Information Network [CIESIN] 1995).

greenhouse gas emission scenarios in addition to the physical climate system" (Consortium for International Earth Science Information Network [CIESIN] 1995).

As opposed to simple climate models that are characterized by high speed and ease-of-use, but low scope and detail, "most GCMs, most integrated assessment models, have high scope and detail, but are low in the ease-of-use and speed," Drew told me. Moreover, compared to Simple Climate Models(SCMs), Global Circulation Models (GCMs) and Integrated Assessment Models (IAMs) are of a different scale, even in their production, he added: "They have detailed geophysical models, disaggregation, big teams built them, a lot of time and resources required." Rather than replace these other, more complex models, Climate Interactive's models and games are meant to complement more complex models (see Figures 3 and 4).

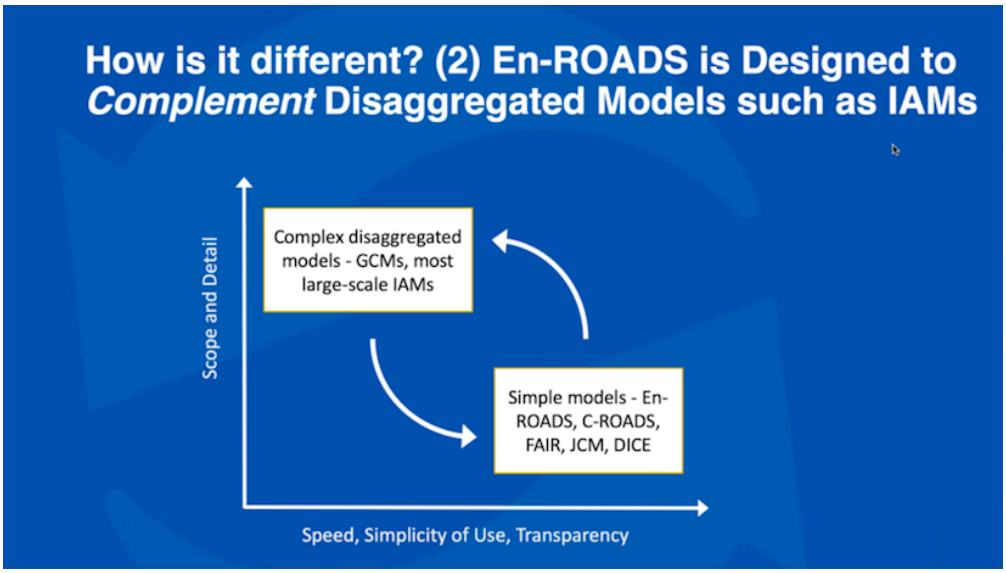

Figure 8 A simplified, updated version of Figure 1, including En-ROADS (Courtesy of Climate Interactive).

En-ROADS and the Climate Action Simulation

Alongside C-ROADS and World Climate, Climate Interactive has developed another model and set of activities, the newly revamped En-ROADS Climate Change Solutions Simulator, supporting their Climate Action Simulation, En-ROADS Climate Workshop and En-ROADS Guided Assignment. According to Climate Interactive's En-ROADS User Guide (Chikofsky et al. 2022), "En-ROADS is a powerful simulation model for exploring how to address global energy and climate challenges through large-scale policy, technological, and societal shifts." If C-ROADS and World Climate focus on national and international emissions

reductions, En-ROADS and its activities tackle *how*–through what means–countries and regions will reduce their emissions. More concretely, whereas C-ROADS allows users to simulate peak emissions years, what year to begin reductions in emissions, annual reduction rate and deforestation/afforestation, En-ROADS allows users to simulate the impacts of various kinds of policy choices to reduce emissions, such as those that emphasize various energy sources, carbon removal, land use and transportation (see Figure 5). In a webinar announcing the launch of the newly revamped version of En-ROADS in December 2019, Drew insisted that "En-ROADS is like 'how do we deliver upon the pledges' created in C-ROADS or World Climate."

As of February 2021, En-ROADS and its activities have had over 47,000 participants, in a registered 1,840 events in sixty-nine countries worldwide (Climate Interactive 2021c). Like C-ROADS, En-ROADS is a globally aggregated simple climate model, meaning that its simulated "policy, technological and societal" solutions act on a world-wide scale, rather than, for example, at the level of countries or regions responding or enacting policies or technologies. In addition, CI and partners at MIT have calibrated and tested En-ROADS against a suite of more complex Integrated Assessment Models, and all of the model's parameters, assumptions and equations are available online in the Reference Guide (Siegel et al. 2022) in addition to the User Guide. For both C-ROADS and En-ROADS and their respective activities, Climate Interactive have produced extensive training materials, from updated Facilitator Guides (Jones et al. 2020) and pre-made presentation slideshow decks (Climate Interactive 2020) to model user guides (Jones et al. 2020; Chikofsky et al. 2022) and an 8-part webinar training series and other video demonstrations (Climate Interactive 2022b); Climate Interactive 2022c; Rooney-Varga 2015).

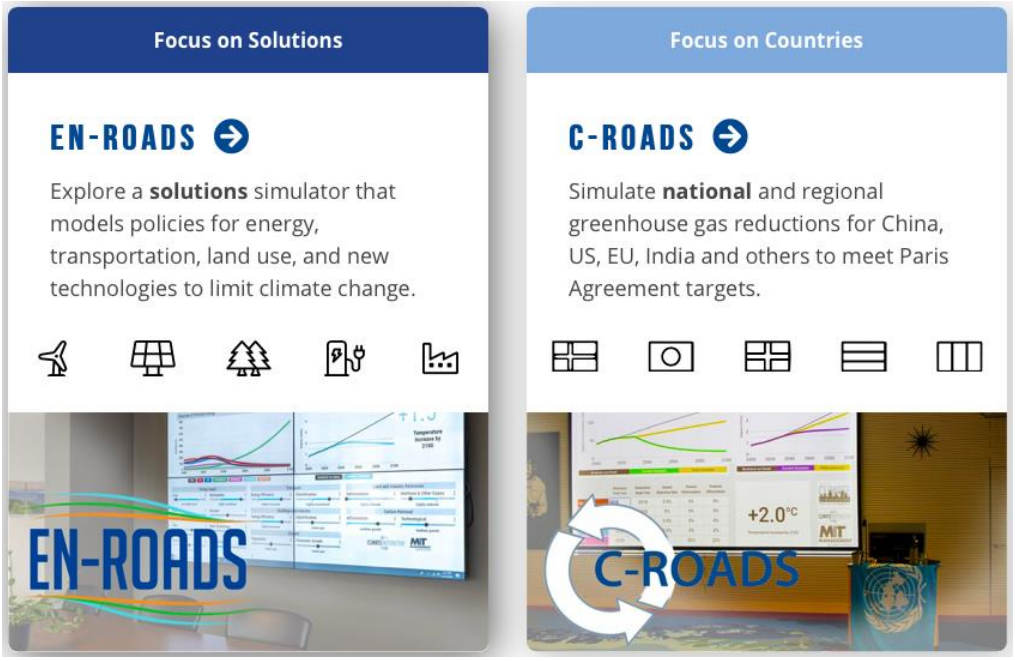

Figure 5 How Climate Interactive frames their En-ROADS and C-ROADS models (Source: https://www.climateinteractive.org/tools/)

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Recent political and meteorological events have placed climate change within the public discourse—and the public-school classroom—in Saskatchewan, Canada. Kristen Simonson takes my call from Swift Current.[8] A high school science teacher, she speaks to me during a planning period after lunch. Swift Current is a town of 15,000 located in southern Saskatchewan, hugging the US border. "It's easier to drive to Montana than Alberta," Saskatchewan's western neighbor, Kristen comments. Saskatchewan cuts a vertical stripe through Middle Canada. Together with Alberta and Manitoba to the east, they make up Canada's share of the Great Plains, usually simply called the Prairies. The province is mostly flat, semi-arid grasslands and like most of Canada, sparsely populated. As with Montana in the south, most of the economy where Kristen lives is made up of agriculture, including ranching. This specialization leaves it vulnerable to changes in the climate. She tells me that last year there was a severe drought, bad for both crops and cows. The year before that, heavy rains nearly led to widespread flooding. Extreme weather and tornado sightings have notably increased, while grassfires feel at times rampant. Whether

[8] Interview, February 15, 2018.

they name them as such or not, the consequences of a changing climate have been familiar to most Swift Current residents for some time.

During the early 2018 time of our interview, however, climate change has indeed been named as a topic of public interest in Swift Current. This was due to Canada's then-proposed provincial carbon taxes, which Kristen told me don't sit well with some rural residents. The second largest sector of the economy in Saskatchewan is oil and gas, "lots of drilling and well activity," Kristen says, "lots of people who work on rigs and pipelines and things like that." Carbon taxes are largely viewed suspiciously, an out-of-touch initiative from far-away Ottawa, and talk of climate change is often not met with enthusiasm. "Climate change is the touchiest subject around here that you could possibly talk about. Especially now with our provincial government not wanting to do a carbon tax," Kristen adds. When making Canada's pledges to Paris Agreement in 2015, the federal government's commitments have depended on the idea of sub-national carbon pricing. However, it has found trouble with implementation back home in the provinces. It introduced the carbon taxes in its 2018 budget, leaving it up to the provinces and territories to design the pricing systems, with the caveat that if provinces did not create their own carbon pricing policy, the federal government would do it for them. Saskatchewan has been a leader in resisting these policies. In March of 2018, premier Scott Moe announced that the province would legally challenge the federal government over the carbon tax. Later in 2018, Parliament would pass The Greenhouse Gas Pollution Pricing Act to place the provinces and territories who had not made a plan of their own, or who voluntarily agreed, under the federal carbon tax plans, which would be enacted in 2019.[9] As Kristen put it, "There's a whole bunch of things tied up in climate change, rather than just the science of it." With the changing climate affecting rural livelihoods and the carbon taxes perceived as threatening the oil and gas sector, climate change has become a contentious issue of public concern in the Prairies where Kristen Simonson teaches science to high school students.

So as she began organizing the first year of a new environmental science class, Kristen decided to use the Saskatchewan carbon tax debate as a "stepping stone" for students to learn about science from within the dynamic systems of international politics and the global climate. She had first heard about World Climate two years prior when researching activities for her

[9] By late March 2021, the Supreme Court of Canada had ruled that the federal government's carbon tax policies, including The Greenhouse Gas Pollution Pricing Act, were constitutional (Supreme Court of Canada 2021).

online students. A year-and-a-half after using the game in her online teaching, she decided to use the simulation for her in-person students, too. Organizing the new curriculum around climate change, she started with a unit on water, citing recent droughts in Saskatchewan, and then soil quality, covering soil degradation in the province so reliant on the agriculture industry, and so on. About three-quarters of the way through the class, students realized that climate change was the big issue at hand and that it was affecting things around them more than they had assumed. Climate Interactive's pre-made PowerPoint slide decks, showing Shanghai and London underwater in 2100, Lake Chad dried up 95% from 1963 to 2007, also helped her students understand the reality of an actually occurring climate change, she added.

In addition, Kristen also brought her sister in as a remote guest speaker, whose experiences provided Kristen with the initial perspective to bring in a simulation of the international climate negotiations into an elective environmental science class. Kristen's sister is a climate analyst for Environment Canada and has acted as a senior negotiator for Canada at the United Nations. By bringing in her sister to speak to the class as part of the curriculum around World Climate, she was able to help students begin to connect these issues at home to the international political system. The World Climate role-play simulation would act as the final assessment for the course.

The simulation took a lot of work to manage. "With 50-60 people representing different countries, a lot can go wrong," Kristen admits. C-ROADS seemed to present the most obvious potential obstacle to success. It was so open to exploration, it was hard to know where to start. At first, she wished the simulation provided suggested values to input into the model so that delegates knew, for example, what a realistic contribution to the Green Climate Fund would be. She says she put quite a bit of effort into making sure students did not punch in numbers that would result in unrealistically high or low temperatures. As we will see in further detail below, system dynamics, its feedback loops and stocks and flows are not intuitive. Kristen notes that if she were "Joe Public," with little-to-no experience with visual data representation, she doesn't know if she'd be comfortable using the software without someone explaining it step-by- step: "it's definitely geared toward people that have a very good understanding of visual graphing and things like that." Indeed, at first students were intimidated by C-ROADS, "But after they had a chance to play with it and we talked about it a little bit and how it works, then they were off, they were playing with it on their own at their own tables."

By the time the simulation final assessment began, however, the results were dynamic. “It was a pleasant surprise that the kids really got behind it, way more than I thought they would, actually,” she recalls. With the help of the CI-provided PowerPoint decks, Kristen was able to fully adapt World Climate to integrate it into the course material. Synthesizing the things that they had learned throughout the course into the simulation, students were made to “show their work” to explain why their country delegation made the decisions they did and to what end. Importantly, students also had to role-play how delegates would implement their commitments back in their home countries—something more akin to Climate Interactive’s World Energy simulation and, later, Climate Action Simulation. Beyond gains in knowledge about system dynamics, bringing in policy implementation helped Kristen’s students think with a critical lens about the Saskatchewan carbon tax. In place of a simulation debrief, students were required to write an exit piece to reflect on where they stand on the issue of climate change and how the issue connects to their lives in Swift Current.

This her first time using World Climate in the classroom, but Kristen insists she will use it again in future courses. Within her environmental science curriculum, World Climate allowed students to better understand the system and social dynamics of climate change, connecting it to their lives in Swift Current. This was crucial for Kristen. World Climate has helped Kristen “bring home the timeliness of the issue” of climate change, connecting the dots between the strange weather events in Swift Current— the previous year’s drought; the heavy rains the year before—and a globally changing climate. Students also began to understand, and form opinions around, the political debate surrounding Saskatchewan’s carbon tax. The simulation helped her teach other crucial lessons, too, such as the importance of science literacy and critical thinking. “In a fake news world,” she told me, it enabled her to equip students with the skills to discern “the validity of facts,” what facts are used for and how they are collected, and the ethics of using data, when it is in your best interest to use certain data and when it’s not. As opposed to lecturing at them, the simulation helped the students experience these dynamics for themselves and discern their own conclusions. Lastly, along with these skills, World Climate also enabled her students a time and place apart, the ability to look at the world from a systems-thinking perspective, beyond their small town in the Prairies. Momentarily freed from the assumptions of their community or family’s values, Kristen emphasizes, they were able to learn about these issues for themselves, and come up with their own ideas and opinions.

This was an important part of the problem that World Climate is helping her address. “A lot of elected officials don’t have a background in science,” she continues, “and so they don’t understand what the scientific data means or what to do with it.” Further, although farmers use science in their work all the time, she said, by and large, “there’s never been a big emphasis on science” in the community and that principle finds itself reflected at the poll and government offices. The simulation has played a part in a “huge shift” she has observed of students getting into the science, “realizing how relevant it is to their lives and then flipping the switch.”

As a teacher, this is the kind of climate action that she deems appropriate to her positionality. It is a long-term kind of activism, slow, though not too slow, Kristen tells me with a smile in her voice. It’s a small town of 15,000, she reminds me, “so you do hear things.” She mentions overhearing some students discussing why they won’t vote for the prevailing Sask’ Party, climate change being one reason among others. As we wrap up our phone call and Kristen wraps up her planning period lunch break, she concludes: “Everyone wants to make a difference on this issue. For me, being in a classroom with 130 students a day—rather than going out and petitioning—to educate a group of students that are going to be the next potential voters, that are going to be the next elected leaders, that’s a more long-term solution.” For Kristen Simonson, using World Climate in the classroom addresses problems of science literacy and critical thinking, broadening sometimes-myopic worldviews and preparing leaders for the future. The simulation has also been a means for relatively slow, unglamorous political change, an experience of pedagogical and democratic transformation.

Climate Interactive – An Organizational History

“Research shows that showing people research doesn’t work.” This is a mantra in recent years (e.g. Climate Interactive 2016) of John Sterman, a man with many titles: Jay W. Forrester Professor of Management at the MIT Sloan School of Management, Professor in the MIT Institute for Data, Systems, and Society and the Director of MIT’s System Dynamics Group. Sterman is also a key figure at Climate Interactive. A collaborator and mentor to Co-Director Drew Jones, Sterman helped develop C-ROADS and World Climate with Drew and team.

Climate Interactive was founded on the idea, backed by research, that values and experiences, not information, are what really shape people's perceptions and actions. For issues like climate change, telling people what to think or how to act doesn't have an impact. Instead, tools like World Climate create opportunities for people like Kristen Simonson's high school environmental science students to *learn for themselves* about the climatic, economic, and geopolitical systems that shape our world. "Put another way," Drew told me when we sat down to talk about how Climate Interactive came to be and he explained Sterman's mantra, "we've learned that new information doesn't change people's minds, but new experiences do." If you are in the business of inspiring people to act on a complex, dynamic issue, then this knowledge changes how you design interventions and ways to take action. Enter Climate Interactive's system dynamics models and interactive, simulation-based learning environments. But where did these interventions come from? In this section, I explore the origins of Climate Interactive, its small group of people and its technological and educational innovations.

Despite this knowledge, it was not until the early 1990s that the technology became available to do the kind of "learning experience design" upon which Climate Interactive's models and games are based. "What's new is that the models have to run really quickly and we figured out how to do that, just technologically, in the nineties," Drew said. CI uses this learning experience design in two primary ways: sitting down with, for example, policymakers or business leaders, entering into C-ROADS, for example, a carbon price of a certain amount, and producing the answer instantaneously regarding what that does to global temperature increase by 2100. The other way they primarily use this relatively new technology is games like World Climate and the Climate Action Simulation, experiences that embed people in the climate-policy system as they play the roles of actors in this system. "These two approaches go back sixty years into the field of system dynamics modeling," Drew told me.

(Origins of) System Dynamics

Sixty years prior to my conversation with Drew, in the late 1950s Massachusetts Institute of Technology Professor Jay W. Forrester, a computer engineer and systems scientist trained in electrical engineering, was founding the approach to the scientific study of systems that is now called system dynamics. This is the approach that would guide Climate Interactive's work through the present day. Born in 1918, Forrester grew up on cattle ranch in Nebraska, intimately

familiar with the practical dynamics of supply and demand, prices and costs, on the ranch. After earning a degree in electrical engineering, Forrester worked as a research assistant and Masters student at MIT. During and immediately following World War II at MIT, he worked on servomechanics (electronic controls using negative feedback error-correction to adjust position, speed, etc.) for radio and gun mounts and electronic computers for the US Navy—the latter of which involved his development of the magnetic-core memory technology that was the precursor to today's RAM computer memory.

In 1956, Forrester joined MIT's newly built Sloan School of Management, founded in 1952 by a ten million-dollar donation from Alfred Sloan, head of the General Motors Corporation. According to his own account (Forrester 1989), he was given a luxurious full year to figure out why he was at the Sloan School and during this time struck up conversations with managers at General Electric about cycles of production disruption and instability at their appliance plants. Forrester decided to simulate the dynamics of the inventory control system described to him in order to better understand it. Using concepts from servomechanisms and control theory (Martinez-Moyano et al. 2005), he drew up a pen-and-paper spreadsheet in a notebook, and marked columns for inventories, employees, production rates and orders in order to simulate the relationships between these variables. In doing so, he had made the first simulation in system dynamics, which was initially called industrial dynamics (see Forrester 1958 and 1961). Today, system dynamics is a method of studying and a technique of mathematical modeling used to understand the behavior of systems, the interaction of objects in a system, and how they interact in complex ways over time (cf. MIT System Dynamics in Education Project [SDEP] 2020 [1997]).

To briefly elaborate, system dynamics differs from other approaches to the study of systems in that it focuses on *feedback loops* and *stocks and flows* over time. Feedback indicates how a system changes based on its effects, or outputs, and the relationship to information internal to the system, or inputs. Negative feedback negates changes in the system, while positive feedback adds or amplifies any disturbance or change in the system (Kauffman 1980).When a chain of interactive relationships forms within a system, you get a loop: "If one part has an effect on the rest of the system and the system as a whole has an effect on that one part, then a 'circular' relationship—or 'loop'—has been created" (Ibid.: 4). Hence the phrasing "positive feedback loop" or "self-reinforcing feedback loop" when describing exacerbating, destabilizing

changes to the global climate system, such as rising temperatures leading to the melting of the polar ice caps, reducing the amount of white sunlight-reflecting, temperature-maintaining surface area on Earth and contributing to sea level rise, both of which lead to more global temperature increase, which leads to the melting of the polar ice caps, etc.

Stocks and flows, on the other hand, can be simply described thusly: the interaction of a quantity of something measured at one point in time (a stock) and another, changing variable over a period of time (a flow). For example, a stock may be an amount of wealth and flows may be income or spending over time. More pertinent to the question of climate change at hand in this dissertation, a stock could be atmospheric greenhouse gases like CO_2 and flows new anthropogenic emissions or the removal of greenhouse gases by absorption into the ocean or by plants and algae. Stocks and flows, combined with the systems thinking of feedback and feedback loops, can thus help to explain why reductions (and not just a stabilization) in greenhouse gas emissions are needed to stabilize greenhouse gas concentrations in the atmosphere.

Using Climate Interactive's "Bathtub Scenario" visual analogy (see Figure 4), there is water, a stock, accumulating a bathtub. More water is going in than is coming out; as long as more water is flowing into the bathtub than is flowing out the drain, the water level in the tub will continue to rise. It is not until the amount of water coming out of the faucet is much less than the water going down the drain that the water level in the tub will start going down. In other words, as long as emissions of CO_2 into our finite atmosphere are greater than net removals, CO_2 continues to accumulate. To *stabilize* CO_2 levels in the atmosphere, emissions must equal net removals. CO_2 levels and global temperatures therefore *decrease* only if the emissions are less than net removals. Currently emissions are much larger than net removals. In fact, we are emitting so much more than we are removing that to even stabilize CO_2 in the atmosphere by getting emissions to equal net removals, "a reduction of CO_2 emissions by over 80% is necessary" (Jones et al. 2020). In addition, because we continue to emit, the longer we wait the harder it gets, "requiring steeper rates of decline to meet the same concentration or temperature targets" (Ibid.) Stocks and flows and feedback loops thus explain how climate change is an urgent problem, and why greenhouse gas emissions "must peak within the next few years and then decline to near zero by the middle to later part of this century" in order to avoid setting off a chain of positive feedback loops that will cause rapid and severe climate change (Ibid.).

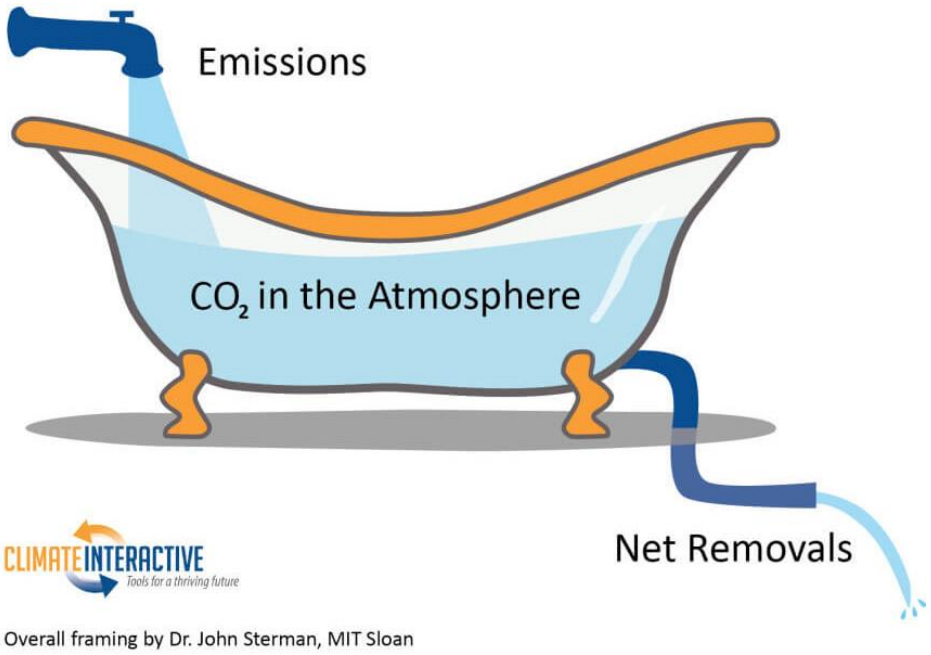

Figure 9: The "Bathtub Scenario" using the System Dynamics principle of stocks and flows to demonstrate the dynamics of emissions and net removals of CO2 in the atmosphere (image courtesy of Climate Interactive).

System Dynamics Games—The Beer Game

From the beginning, as we will see, this part of the field of system dynamics has developed alongside exercises and games to teach system dynamics. Back at MIT in the late 1950s, through further development with students during the MIT summer sessions of 1958 and 1959, Forrester's industrial dynamics simulation had become a useful exercise to teach his new methods of this approach to studying systems. By the summer 1960 academic session, the in-class production-distribution system simulation exercise had become a model and a game (Martinez-Moyano et al. 2005). By 1973 the game was continuing to change and was beginning to be called The Beer Game (rather than the production-distribution system game), used for the first time in a regular course at MIT in that year. In 1980, MIT Professor Peter Senge presented a short document outlining how to debrief the game in a post-game discussion to drive home the purpose of the lesson and the primary pedagogical takeaways—a technique that would prove essential for later system dynamics simulation role-playing games.

The game would develop quickly from here, simultaneously growing in popularity. In 1984, Senge's MIT colleague John Sterman wrote up the first instructions for running The Beer Game. Five years later, Sterman went on to publish a field-formative academic article using the

Beer Game to model managerial behavior in a dynamic stock management system (Sterman 1989). In 1992, the System Dynamics Society, formed in 1983 with Forrester as its first president, started selling physical copies of the educational board game and by 2004 it had sold record number of more than 7000 copies in one year (Martinez-Moyano et al. 2005). It is still used in management and system dynamics classrooms and boardrooms today. In parallel to these developments of The Beer Game, another branch in the Climate Interactive family tree was emerging, growing toward the developments of today's simulation games and models, with origins in the Club of Rome and its 1972 publication *Limits to Growth* (Meadows et al. 1972).

The Club of Rome and *Limits to Growth*

Founded in the Italian city in April of 1968, the Club of Rome brought together a small, informal, international group of experts from academia, industry, civil society and government, under the leadership of Italian industrialist Aurelio Peccei and British chemist Alexander King. The objectives of the initial gathering of the Club were to "foster understanding of the varied but interdependent components–economic, political, natural, and social–that make up the global system in which we all live," to spread awareness about these issues and to promote action on them, whether policy initiative or otherwise (Watts 1972: 9). Vital to the Club's actions and thinking was Peccei's notion of the *problematique*: the idea that there are a growing series of interconnected problems, world-wide in complexity and uncertain in nature, that are interconnected and function on a timescale of decades or centuries.

According to this guiding concept of the Club, the seemingly divergent problems of "accelerating industrialization, rapid population growth, widespread malnutrition, depletion of nonrenewable resources, and a deteriorating environment" (Meadows et al. 1972:21) all have at least these characteristics in common: "they occur to some degree in all societies; they contain technical, social, economic, and political elements; and, most important of all, they interact" (Watts 1972:11). Together they form the world problematique, a "generalized meta-problem (or meta-system of problems)" (Club of Rome 1970:13). Grounded in an ethos of early systems thinking in early publications, the Club claimed that "the fragmentation of reality into closed and well-bounded problems creates [a new] problem whose solution is clearly beyond the scope of the concepts we customarily employ" (Ibid.). This is an understanding of interconnected systems to that would not sound unfamiliar to climate experts today. To address this meta-system of

problems, the Club published a report, launching the Project on the Predicament of Mankind with a proposal they entitled "THE PREDICAMENT OF MANKIND: Quest for Structured Responses to Growing World-Wide Complexities and Uncertainties: (Club of Rome 1970).

Soon enough the Club of Rome would get together with MIT Sloan School professor Jay Forrester, who quickly put together a team of young experts with early-career scholar and newly minted PhD, Dennis Meadows, at the head of the Project. Both Dennis, who received his PhD from the Sloan School at MIT in 1969 and his wife Donella (Dana) Meadows, who got her PhD in biophysics from Harvard in 1968, began working at MIT in 1969. Guided by the initiative of the Club of Rome, Phase One of the Project on the Predicament of Mankind commenced in the summer of 1970 at a two-week conference at MIT in Cambridge and in Bern, Switzerland, where Forrester presented a preliminary model that suggested a way to simulate the relationships of the interrelated meta-system of problems (Watts 1972). In the ensuing two years, the team would develop what would become the World3 model. A global model, it mapped out on paper in a flow chart aided by computer calculations (see figure XXXX). In the newly formed tradition of System Dynamics, it brought together existing knowledge about cause-and-effect relationships between the five domains of the problematique ("accelerating industrialization, rapid population growth, widespread malnutrition, depletion of nonrenewable resources, and a deteriorating environment" [Meadows et al. 1972:21]), and represented that knowledge "in terms of interlocking feedback loops" (Ibid.: 90). Consulting experts and extant literature in the five domains, they established the basic structure of relationships and quantified each relationship as accurately as possible. They then calculated the simultaneous exercise of all the relationships over timing using the computer, testing the basic assumptions to ascertain what determines the system's behavior as a whole. Finally, they tested various policy changes to determine their effect on the system (Ibid.: 90-91). The results of this research initially culminated in the publication of the first official report of the Club of Rome, *Limits to Growth*, with Dana Meadows as its lead author.

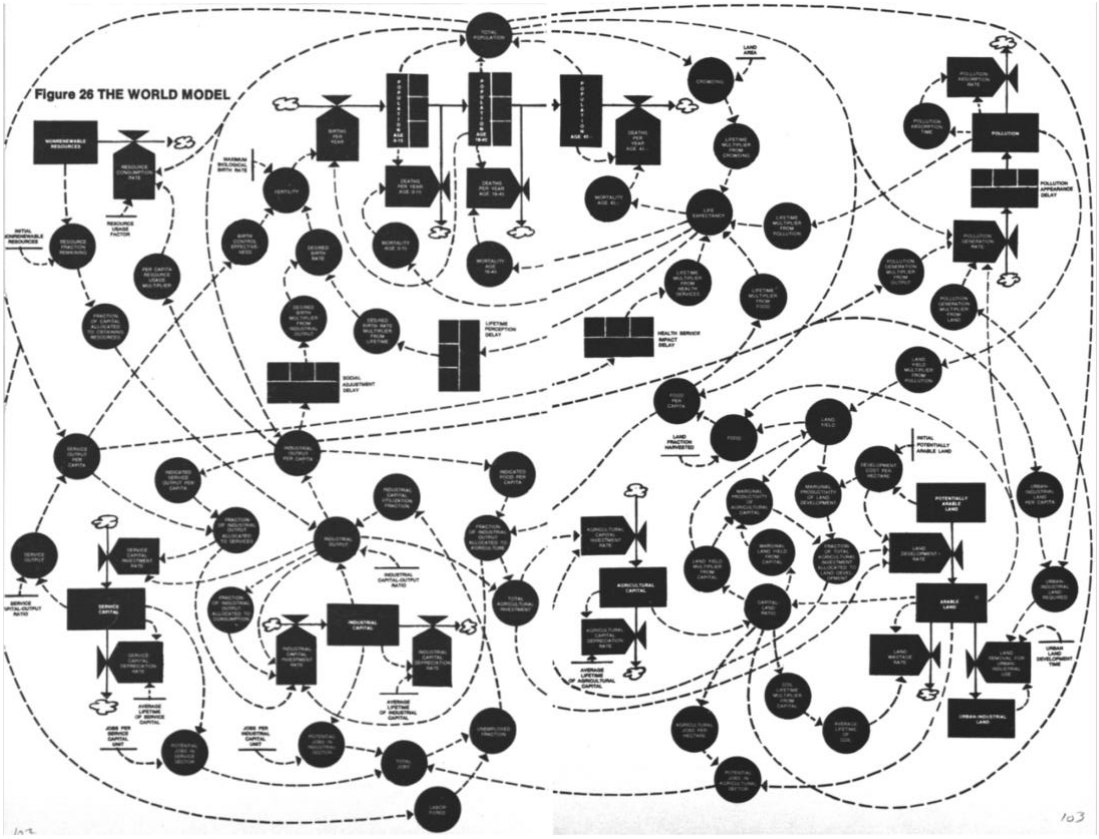

Figure 10a The flow diagram of the World Model used for Limits to Growth *(Meadows et al. 1972: 103).*

Figure 26 THE WORLD MODEL

The entire world model is represented here by a flow diagram in formal System Dynamics notation. Levels, or physical quantities that can be measured directly, are indicated by rectangles, rates that influence those levels by valves, and auxiliary variables that influence the rate equations by circles. Time delays are indicated by sections within rectangles. Real flows of people, goods, money, etc. are shown by solid arrows and causal relationships by broken arrows. Clouds represent sources or sinks that are not important to the model behavior.

Figure 6b Description of the flow diagram of the World Model used for Limits to Growth *(Meadows et al. 1972: 104).*

Rather than a technical summary, *Limits to Growth* is a summary of the main features and findings of the model, written in an accessible way. A thin, accessibly written book, its arguments proved wide-reaching and its influence widespread, it covers an array of topics: from the general characteristics, causes, implications and limits of exponential growth curves; to an analysis and discussion checking the technological optimism that could be a common reaction to their findings (but technology will save us); to "a summary of the present model, its purpose and limitations, the most important feedback loops it contains, and our general procedure for

quantifying causal relationships follows" (Meadows et al. 1972: 91). Based on the above described modelling, *Limits to Growth* had three main conclusions: 1) if current trends in "industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years;" 2) it is possible to alter these trends and establish ecological and economic stability, meeting the basic needs of everyone on earth, and; 3) if we the people of the world decide to work for this second possibility, the sooner we begin, the greater chances of success (Meadows et al. 1972: 23-24). Instead of specific dates, the study's model produced projections, with the help of computer calculations, about what was *likely* to happen if trends continue for the next 100 years, with adjustable parameters in the model to tweak the underlying assumptions. Ultimately, *Limits to Growth* argued that there are limits on a finite planet, and never-ending growth itself is the problem. *Limits to Growth* become one of the most influential and arguably the best-selling environmental book of the 20th century, with 30 million copies sold in over 30 languages by 2010 (Nørgård et al 2014).

Drew Jones, Dana and Dennis Meadows at Dartmouth

After the publication of *Limits to Growth*, both Dana and Dennis Meadows moved to Dartmouth College in 1972, where Dana taught for 29 years until her sudden, untimely death in 2001. It was at Dartmouth that Drew first met Dana Meadows, a meeting that would establish a strong mentorship and plant the seeds of what would become Climate Interactive. In 1989, Drew says that he and his friends were the activists on campus and recycling and waste reduction and consumption were hot topics. In a playful, week-long experiment, Drew and his friends convinced one-hundred and twenty Dartmouth students and faculty to carry around their waste in clear plastic bags for one full week. "Every pizza box, every beer can, plastic fork, paper napkin, beer bottle, coke can, beer bottle, all going into the bag," Drew recounted in short, TED Talk-style recorded presentation from 2008 that he made sure I watched. Soon enough, the bags got heavy and people started innovating. "It was like walking around with a different set of glasses. Everyone saw the world really differently. When there's no 'away' to throw to, you innovate." People carried around silverware to wash in the bathroom, rather than use three plastic forks a day; it became really hip to walk around with a coffee mug with a carabiner attached to your

backpack; and of course, they drank their beer by the keg—"out of principle!" 2008-Drew says with a smirk to the audience.

That is when Drew met Dana Meadows. Having caught wind of one-hundred and twenty students and staff around campus participating in this theatrical trash experiment, Dana came to Drew and "said you've created an amazing simulation that has closed a feedback loop in the world." What she meant was, using the principles of system dynamics discussed above, that Drew and crew had disturbed the set of circular relationships of the waste and consumption system on campus. "I didn't know what any of that was, really," Drew told me, "but for me it was my first simulation." It illustrated the principles of systems thinking, stocks and flows and feedback. When there was no "away" to throw things to, when the outflow of trash was changed to end up on a bag they had to carry around, feedback changed and participants changed their behavior based on this experience. "People had an experience," Drew recounted. "New information, [like] 'oh, we waste a lot of stuff,' doesn't change people's minds, but an experience like that *actually did* change peoples' minds," he emphasized. "So that's how I got into this."

System Dynamics Games—Fish Banks

By the time Drew met Dana, she and her husband had been teaching system dynamics for almost two decades. "Dennis Meadows spent twenty to thirty years after *Limits to Growth*, after the model, creating games to teach the [system] dynamics," according to Drew Jones. This included the Fish Banks game, which was one of the earliest games Drew learned to run. Fish Banks was created by Dennis Meadows in 1986. Fisheries collapse was a prominent and often-disastrous issue in the second half of the twentieth century, with several high-profile, large-scale fisheries collapses unraveling in the 1970s and 1980s; "Nearly one in four fisheries collapsed during the period 1950–2000" (Mullon et al. 2005, cited in Schreiber and Halliday 2013). In the late 1980s, Tom Fiddaman was an undergraduate at Dartmouth when, by chance, he took a system dynamics class with Dennis Meadows, outside of his program of study. Dennis became a mentor to Tom and together in the early 1990s they built a model for the Fish Banks game, transforming it into a "micro-computer assisted simulation that teaches principles for the sustainable management of renewable resources" (Meadows and Fiddaman 2001: 34). The Fish

Banks role-play simulation was a simple game to teach sustainably managing a renewable resource.

Players are given information about the fish stocks and their rate of renewal. In the role-play, they are also given a fleet of boats and different means of fishing (near shore, deep sea, etc.), and are told to maximize their money. Fiddaman clearly explained how the game plays out:

> It's very profitable early on, the fish harvests are at pretty much their maximum and they're all caught up in their own economic decisions, not thinking about coordination at all, until they collapse the fish stocks, which, just because of the non-linearity of it, happens kind of abruptly. And then there's sort of a mix between panic and denial. And then after a round or two of really low harvest and people losing money with their boats in the harbor, we debrief and talk about how this happened.[10]

According to Fiddaman, the Fish Banks thus game works in a way that it becomes very clear that people got themselves into this problem (i.e. it is a mismanagement problem). "It happens with all sorts of groups." He adds, "We ran it with the heads of the environmental programs of all the New England land grant colleges, and they were just as enthusiastic everybody else at wiping out the fish, even though they all knew better." With the dramatic collapse and subsequent game debrief, people get out of "finger-pointing mode and into introspection." In other words, the game helps people recognize how people's own actions got them into their environmental problems and how they could have avoided this mess. Through a role-playing simulation, Fish Banks allows people to experience how dynamic complexity is not intuitive. These experiences are exactly analogous to revelations of Climate Interactive's later games, workshops and assignments.

MIT, the Sustainability Institute and Founding

The Fish Banks game was one of the earliest system dynamics simulation games Drew learned to run. "Fish Banks was really just a microcosm of a global model," he explained. Moreover, it is "just absolutely analogous to World Climate, because you have a resource, a commons situation, and you've got some dynamics that allow you to overshoot a limit." After the Carrying Our Trash experiment and under the guidance of mentor Dana Meadows, Drew decided to pursue graduate studies at MIT. Drew met Tom Fiddaman when he completed a Masters in System Dynamics at MIT, from 1995 to 1997, the same year Fiddaman finished his PhD in the same department. They both worked under the mentorship of Sloan School professor

[10] Interview, February 13, 2018.

John Sterman. Drew was drawn into the long tradition of using games and simulation experiences for people to understand the non-intuitiveness of system dynamics: Fish Banks, the Beer Game and another, similar game developed by Sterman called People Express, about managing an airline.

Across the hall from Drew's office at MIT was the office of Tom Fiddaman, a former student of Dennis Meadow at Dartmouth, who helped to create some of the first computer models for the Fish Banks game. For Fiddaman's PhD dissertation, Sterman had shown him the DICE, or Dynamic Integrated Climate-Economy, model, created by Yale economist William Nordhaus, an early Simple Climate Model that put together climatic and economic factors, but made a lot of large, basic assumptions about the state of the world's economy and how much people care about the welfare of future generations.[11] An objective of Fiddaman's PhD dissertation, according to Fiddaman himself, was to critique or take apart the early DICE model and build a new one that relaxed some of the wilder assumptions. The resulting model would eventually become the original version of C-ROADS.

After his time at MIT, Drew worked for Dana Meadows at the Sustainability Institute—subsequently called the Donella Meadows Institute, and now called the Academy for Systems Change—which she formed in 1996, and where the earliest form of Climate Interactive would soon take shape. Then came Dana Meadows' sudden, untimely death in 2001, a difficult moment for her mentees. According to Drew, in 2003-2005, the rest of the four or five remaining staff at the institute, including Elizabeth Sawin, kept the work there going and Drew started a project called Climate Interactive. Around that time, Drew and Beth Sawin enlisted Tom Fiddaman, former student of Dennis Meadows, from Drew's time at MIT. They together took the climate modelling and simple, two-party version of a game from Fiddaman's doctoral dissertation and that became the first version of the C-ROADS model and what would become the World Climate game. Over months and years, the team slowly made the model more and more complex, particularly the inputs. With the model basically done, there remained a significant amount of work to figure out countries' emissions reduction commitments, that is, what they pledged to do at the international meetings and "getting it plugged into the model."[12] Peter Senge, professor at

[11] For more on the DICE model's work in the space between climate science and climate politics, see Fleischmann 2016.
[12] Tom Fiddaman, Interview, February 13, 2018.

MIT and colleague of John Sterman who helped develop the Beer Game, suggested they provide the model open-access, free to the public, and they quickly did. Eventually the project split off into its own organization, with Sawin joining Drew as the group's co-director, and Climate Interactive was born.

Experimentation and Breakthrough

By 2006 or so Drew was co-directing Climate Interactive and teaching System Dynamics to university students in his home state of North Carolina. Early on, Climate Interactive had wanted people to use the C-ROADS model with their own interfaces—for example, a science museum made an interactive exhibit using the model that toured New England. At the same time, the open-access model was made freely available online and CI started experimenting to further develop the game. However, it was through the World Climate game that their work truly began to spread. Drew wrote up a facilitator's guide for the game, just as his MIT supervisor John Sterman had for the Beer Game. He made the facilitation guide available online, with the note that if anyone wanted to translate it, they could. The Climate Interactive team started creating more materials for the game, for training facilitators and for giving the game more substance. They get ahold of or commissioned photos edited to show what major cities around the world could look like under two or three meters of sea-level rise: Shanghai tower, buried up to its waist; London's Tower Bridge no longer bridging a body of water but mostly submerged; a map of a sunken New York, SoHo and Greenwich Village fully drowned, half of Lower East Side Manhattan living underwater. These photos became powerful tokens of the stakes of the deal players would negotiate, and the CO team created a PowerPoint presentation for facilitators to use before and in-game, with other such images and statistics to heighten the stakes. They made all of this freely available online.

Drew then started innovating with the role-playing simulation game in his classrooms—adding more teams, having people from developing countries' teams sit on the floor, giving donuts to the rich countries—and shared the results with his MIT mentor John Sterman. Sterman, in turn, implemented those experiments with his classes. In this way, Drew, together with Sterman, developed these in-game trials and eventually proven facilitation techniques to immerse players into the socio-institutional and system dynamics of the climate system, and the power and social dynamics of the UN climate negotiations. For example, a recent World Climate

Facilitator Guide (Jones et al. 2020) suggests providing tables with tablecloths, snacks, flowers, pens and notebooks to the teams role-playing "developed" countries (and more of these accommodations to the EU and US than to the "other developed countries" group). It suggests providing no snacks or accommodations at all—and sometimes no tables—to China, India or the "Other Developing" group, in order for participants to feel something of the lack of justice and wealth inequality of countries coming to the table to negotiate.

Drew along with Sterman also developed other proven facilitation techniques, such as subverting expectations and encouraging players to step into the role-playing experience by assigning them roles that could be viewed as different than participants' everyday experiences. For example, they sometimes encouraged organizers to create the game as a space apart from the everyday by assigning all the players actually from the United States into other teams than the US team, or asking a Sikh man wearing a turban to play the role of the head of state of the United States, Donald J. Trump, as was the case when I witnessed Sterman facilitate two games of World Climate for two of his classes of executive MBA students at MIT in August of 2018.[13] While these in-game tactics may outwardly appear trite or cheapening of the lived experiences of real people who live under such relations of power, within the "magic circle of the game" of World Climate (Konge Nielsen 2018; Huizinga 1950) these situational tactics developed by Drew and Sterman have proven again and again to successfully function to structure simulated power relations in a short period of time.

While in-play, the fact that team United States has cookies and the "Other Developing" countries group does not, for example, becomes a negotiating (chocolate) chip for the United States, or even an affective point of contention that often results in an added layer of insidious resentment among teams *sans* snacks (and with lower historical carbon emissions). Rather than cheapening the real-world, out-of-game experience of sometimes oppressive power relations, seemingly superficial tactics such as these, developed by Drew and Sterman since Climate Interactive's founding, arguably further immerse participants in the simulated power relations of global climate politics, creating an embodied sense of empathy and an affective understanding of the inherent unfairness of global climate politics negotiations.

[13] He played the role with great success, seeming to have a lot of fun getting his executive business student colleagues laughing out loud with his Trump impression.

Over a period of years, then, Drew picked up Sterman's innovations, Sterman picked up Drew's, trying out new things for a couple years, and growing the community that was excited about the game. Drew noted how the game proliferated itself through his workshops or people would come to MIT "and one out of 20 of them would go home and say 'this is great, I could do that.' They would pick it up and go run it at home in Argentina, or in Europe or somewhere around the world."

Climate Interactive then had a breakthrough before the 2009 United Nations Climate Change Conference in Copenhagen (otherwise known as COP15, for the 15th Conference of the Parties to the United Nations Framework Convention on Climate Change). Climate Interactive was first group to add up all the pledges countries put forward ahead of the conference and calculate where that hypothetically left global temperatures. They wrote a paper, made a short video and created a widget called the Climate Scoreboard, no longer updated, but still available (Climate Interactive 2021b). This analysis quickly spread through the news media and science communication ecosystem, adding to the growing, word-of-mouth spread of World Climate and C-ROADS. Eventually, staff at the US State Department got word of it, and negotiating heads for the US at COP15 in Copenhagen, Jonathan Pershing and Todd Stern, asked CI to provide an offline version of C-ROADS that they would eventually call the backbone of their analysis heading into COP15. Soon enough CI provided the downloadable version of C-ROADS on their website. From there it has continued proliferate, popping up in academic articles and community projects to this day. "It spread through that very slow, steady word-of-mouth, reinforcing feedback loop," Drew noted, using the language of system dynamics. "We've never really gotten much money to do it, just put it out and just watched it spread around the world," Drew shared. As of February 2021, C-ROADS has now been translated into fourteen languages. World Climate has had over 74,476 participants, in a registered 1,670 events in ninety-six countries worldwide, (Climate Interactive 2021d).

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On the last day of the 2018 Global Climate Action Summit, I take the California Street Cable Car up the long, steep hill. Jerking, rickety and wooden like an old-fashioned rollercoaster, the car has fewer tourists and more San Francisco locals than I expect. I pull the chain and I'm the only one that gets off at Grace Cathedral, my eyes drawn upward. Resplendent that day atop

Nob Hill, the cathedral's front-facing rose window is cradled on either side by the two halves of an equally giant globe, the brilliance of our blue planet hanging in contrast to the sandy grey of the cathedral's stone. My eyes track even higher. A bright blue banner of a sky hangs taut over the city, rippled in surreal ridges of opaque white.

Figure 11 Grace Cathedral decorated for the Global Climate Action Summit, September 14, 2018 (photo by the author).

The World Climate simulation is being held in an intimate room in a building off the main cathedral. It is facilitated by Reverend Fletcher Harper, tall and upright in his Episcopal cleric collar, Executive Director of the interfaith environmental group, GreenFaith. He will act as UN Secretary-General, António Guterres, in the last-minute absence of Climate Interactive Co-

Director, Drew Jones. The group of us, about twenty people, range in age from late twenties to sixties or seventies and skew toward a white, older, religious demographic—unsurprising given the venue and coordinating organization. Fletcher moves us into groups of two to five, with each group representing a country or grouping of countries. We huddle together and prepare our negotiating approaches based on the provided printed position briefing. My group, the United States of America, is made up of the three youngest people in the room, myself, Brent and Elena, plus a late comer, a white-haired man named Abe.

For each negotiating round, we move across the room, gather in groups. We make our demands and concessions then gleefully scuttle, whispering, back to our huddle of teammates. After each round, back in our groups, we record what we've negotiated: 1) our intended reductions in greenhouse gas emissions (peak year, reductions start year and percentage of reduction per year), 2) our monetary contribution to the Green Climate Fund and 3) how much we'll reduce deforestation and increase afforestation (planting trees). A representative announces the group's proposals and makes a two-minute speech and Reverend Fletcher quickly enters the numbers into the instant climate model, C-ROADS. Changes appear in global temperatures, CO2 levels, sea level rise and more. Our goal is under 2ºC warming by 2100, and preferably 1.5°C.

At first the negotiations are engrossing, but polite, not too urgent, playing into the stereotypes I'd constructed in my head about soft-spoken older religious folks. Teams China and Other Developing advocate for their right to develop, India emphasizes needing help from richer countries. The European Union (EU) is playing polite hard ball, though. A middle-aged woman with short, graying hair and sharp glasses, she's uncompromising in her steely insistence that the US and "Other Developed" countries must match the EU's leadership in the fight against climate change. We on Team US, for one, do not give in, maintaining the recalcitrant position of a Trump Administration-era US that has pulled out of the Paris Agreement.

After the first round of negotiations, during the speeches, the representative from the EU delivers a tough but impassioned plea for climate action; China makes an articulate and very serious case for the US, EU and Other Developed Countries to contribute more to the Green Climate Fund; a mustachioed, white-haired man, one of two people who have decided they represent Canada from within the "Other Developed" countries group, follows with a relatively meek speech that convinces no one to make more ambitious pledges. In between rounds, soft-spoken Reverend Fletcher has transformed into a hard and uncompromising Secretary General

Guterres, allowing no negotiating and side-talk during speeches, sternly warning us of the consequences to come should we not negotiate stronger emissions-reduction commitments. He shows us Shanghai underwater, London submerged by the Thames. As temperatures increase, disaster looms. Around round two, as participants realize how little their countries' modest contributions are changing the results in C-ROADS, negotiations get nastier, more urgent.

The stakes continue to rise through the third and final round as participants attempt to successfully lower emissions below 2°C. Heads huddle, quickly crunch numbers in their heads with their teammates, weighing options. We from the US team quietly munch on our snacks as we rush to fill in our final commitments. Someone makes a plea to people of faith—"diverse faiths!" The other person from "Canada," a woman with white hair cut in a bob and glasses with clear, thick frames negotiates "woman-to-woman" with Elena, my US teammate. "Women of the world!" she calls out. People run across the room, making in-game deals outside the parameters of the game—India ensures the EU promises to exchange technology, China wants contracts for domestically manufactured clean energy infrastructure. As the timer runs out, delegates negotiate urgent positions "in character," with their country's interests in mind, but aiming for the global temperature goal. Fletcher enters our final numbers into C-ROADS and we're north of 2°C, headed for a dangerously warming world.

By the time the debrief comes around and we step out of our roles as delegates at the United Nations, everyone is appealing to Reverend Fletcher to have another round. "I wanna get that number down!" the former EU delegate shouts, complaining. Heads nod in agreement across the room, faces creased in consternation. Someone formerly from the Chinese delegation says they could see this lasting all day. Participants talk about how they felt empowered or caught up by the role they were playing. Brent from team USA notes how "you have to throw away your ethics, throw away your beliefs and play your position." Abe is disappointed, he says, because he was "playing to win" for the position of the US. We go over what exactly it would have taken to get down below 2ºC and Fletcher shows us the results in the model.

Although we started slowly, the World Climate simulation at Grace Cathedral had us participants riled up. People were smiley, angry, stubborn, gleefully ornery and downright upset. A sense of urgency pervaded the room once we realized just what it would take to turn the temperature down—serious emissions reductions from not just the US and EU but "developing" countries, too. Research led by a CI collaborator and Director of the UMass Lowell Climate

Change Initiative, Juliette Rooney-Varga, indicates that this urgency is part of what makes World Climate so successful. World Climate users experience statistically significant increases in knowledge about climate change, emotional engagement with the issue and an increased desire to learn and do more about climate change—even those with political ideologies linked to climate change denial in the US (Rooney-Varga et al. 2018). As a statistical construct describing participants' feelings about climate change, gains in *urgency* were closely related to the desire to learn more and intent to take action; gains in knowledge only were not.

Chapter Conclusion

In a spring 2021 online talk organized by Trent University Cultural Studies professor Anne Pasek, University College London anthropologist Hannah Knox discussed "the magic of scalar shifting" available when understanding global climate change action through a technological lens. Knox also noted how for the bureaucrats, engineers and scientists with which she did fieldwork (cf. Knox 2020), climate change was close to home—not far away, distant and global. Knowing climate change entailed a rethinking of people's relationships with themselves and larger systems. Similarly, for many people, Climate Interactive's games and models make global climate change about "immediate, material relations to the world and knowledge about the future," as Knox put it.[14] World Climate acts as the common idiom, the medium for diverse participants' experience of learning and feeling something so distant from normal human scales. The game is embedded in relations, built through playing a role with others in the compressed time of the in-game reality. For some, it acts as a bridging experience between delayed and distant cause and effect, between climate science and climate politics.

And while the simulation is, well, a simulation—the map is not the terrain—Climate Interactive's "magic of scalar shifting" and "magic circle of the game" is not "just" a game. In some ways, the simulation is realer than real: it presents a world more easily in touch with large, changing processes than the real world that passes these processes beneath the radar of our everyday experience and senses. In the same month that I was contentedly browsing C-ROADS

[14] For more on this conference series, see: https://www.annepasek.com/low-carbon-methods-media

again, pictured in Figure 1, the 2019-2020 Australian bushfire season, deemed the Black Summer, finally came to an end. The fires killed more than a billion mammals, birds, reptiles and invertebrates, with some species of plants and animals driven to extinction (Brulliard and Fears 2020). In this same month of March 2020, floods and heavy rain surged across the planet, displacing and killing people in places are disparate as Zambia, the Democratic Republic of Congo, Rwanda, Tanzania, Iraq, Iran, Dubai, Papua New Guinea, Indonesia and Brazil (Bir 2020). Lines of tornados and powerful windstorms storms called derechos ripped across the Midwest United States, billion-dollar weather and climate disasters (Smith 2020). Although attribution science can likely not attribute all of these events directly to anthropogenic climatic changes, extreme weather events such as these are becoming increasingly common and increasingly extreme, due to the influence of anthropogenic climate change on the earth's systems. The standard deviation is shifting toward the extreme.

While all of this was not immediately evident as I was browsing C-ROADS, my experience with the World Climate game brought me closer in relation to (how we understand) global climate change. This was the case for myself and—I hope—my readers, during the brief experience of discombobulating immersion into the microworld of the online interface of a simple climate model at the opening of this chapter. This experience initiated a consideration of the world of simple climate modelling and of sometimes-trickstery role-playing games, glimpses into the relations that make up global climate change. By learning to view a website as a place-shifting part of a field site, an online model as a relation-building in-person room, we got a hint at the transformative potential of these tools; we began to understand the global climate through a few dozen of lines of code.

For sole Saskatchewan science teacher Kristen Simonson, the World Climate simulation game acted as a formal final student assessment mechanism. Kristen's pedagogical work was also a form of "slow activism" that was appropriate to her role as a teacher in a small city whose economy—and students' families—strongly depends on the climate-vulnerable agriculture industry and on the petroleum industry. An integral part of her new environmental science curriculum, World Climate served as an interactive activity for students to recall and apply concepts from the course theme of climate change, analyze (the validity of) data and employ critical thinking skills to synthesize ideas into verbal and written arguments. Her World Climate

final assessment saw her students integrate and synthesize course materials, backing up their work to form their own opinions about this global issue affecting their small Canadian city.

For World Climate participants at Grace Cathedral, the experience of the game was carried out by a non-CI-staff facilitator, due to unforeseen climatic circumstances we will shortly learn of in Chapter 3. It was an experience that was at once fun, emotional, frustrating, drivingly urgent. People were caught up in roles, caught up in the magic circle of the game, beholden to the easy pitfalls and power dynamics of the politico-climate system. C-ROADS' relatively simple interface and usability combined with World Climate's cleverly designed in-game dynamics and realistic drama functioned to move a group of people to understand and inhabit some of the dynamics and challenges of global climate change and its politics. Under a blanketed ripple of a bright blue sky, in the shadow of Grace Cathedral's dual towers, they understood that a positive solution is indeed still possible—all through the technological "magic of scalar shifting" and "the magic circle of the game."

In this chapter, I in addition laid out the history and system dynamics of Climate Interactive and its place in among a cast of characters, knowledges and technologies. I attempted to provide an understanding of how Climate Interactive's models, games and workshops make key insights about the dynamics of the politico-climate system available for their users, from an anthropologist to school children to church groups alike. In this chapter, too, I have allowed computer models, their associated role-playing games, people and microhistories to assume significance as meaningful subjects and scales of analysis, treating them as field sites of a sort. I have also related how the experiences of relating to a global phenomenon through the Internet or a role-playing game allows Climate Interactive to cultivate in its community of users the relations and knowledge they deem necessary to create climate-safe futures. In the next chapter, Chapter 3, I will expand this close analysis to the concept actor-category of "possibility." I will zero in on an analysis inspired by Climate Interactive's knowledge practices, philosophies and theories of change, putting them in conversation with philosophical-anthropological, social, political and cultural theorists.

Chapter 3 Possibility: Ethics, Subject-Making and Cracks in the Wall

Introduction

The first time I meet Drew Jones in person is at a fleeting coffee meeting in San Francisco, the Dragon's Gate of Chinatown visible from my seat on an awkward padded bench in a plain Financial District Starbucks. Drew is the Co-Director of a now-15-person nonprofit called Climate Interactive. At this point, we had worked together for nine or ten months. We'd met over Skype and telephone multiple times. We had exchanged numerous emails. I'd watched a dozen spirited video presentations by Drew from webinars to TED-style talks to training videos, spanning a decade's worth of recordings, glasses frames and business semi-formal clothing trends. Six months prior I'd written Drew and Climate Interactive a 40-page report based on ethnographic research with the users of their simulation models and role-playing games. Yet this was the first time we were meeting in person.

Drew is taller than I had imagined, straight lines in a well-fitting blue suit. The quality of his voice reveals the same kindness and patient curiosity in person, one-on-one, as it does on the many recorded presentations and webinars I've studied—an impression of wonder meant to be shared but understandably not always present on the more business-like calls we two have shared. He buys my coffee and purchases himself a coffee and a singular banana. This is not the first instance, I think to myself, where I have felt that our relationship, by necessity or convenience, might fit into the boxes of an academic or professional supervisor and supervisee. I'm an underpaid graduate student, I enjoy the free coffee.

On the last day of the September 2018 Global Climate Action Summit, Drew Jones was to run the World Climate Simulation role-playing game at Grace Cathedral, as just one of hundreds of Summit affiliate events. As discussed in chapter one and *passim*, World Climate is one of Climate Interactive's experiential learning games using their innovated climate system dynamics simulation models. They're simple computer models that can run on your laptop, simulating carbon emissions or policy changes in less than a second. The game, whose incidents and antecedents were outlined in the previous chapter, was to take place at San Francisco's prominent Protestant place of worship, Grace Cathedral. But two days before the summit, I got an email from Drew, at midnight, with the subject, "Hurricane Florence." He'd decided to fly

home early, back before the hurricane was to dump two feet of rain on his hometown of Asheville, North Carolina. He'd meet with the hosts of the event over the phone and they'd run the game without him; he encouraged me to "attend anyhow." Attached was a screenshot the forecasted path of the hurricane. He could squeeze in a meeting with me the next day.

"It's ironic," Drew tells me as we settle down into our odd little corner of the Starbucks. "There is a meeting of hurricane scientists happening in North Carolina, *right now*."

I almost don't believe him.

He adds, "It's almost as if a greater power is trying to tell us something."

"The same thing happened with a meeting of earthquake scientists during the big Japan earthquake of recent years," he continues, referring to the 2011 Tōhoku earthquake and tsunami. The Tōhoku earthquake and tsunami killed over 15,000 people, moving the main island of Japan eight feet (2.4m) to the east, shifting the Earth's axis by at least four inches (10cm), causing the costliest natural disaster in history and setting off the chain of events that led to Fukushima nuclear disaster (Chang 2011; Ridgewell 2011). Images rush into my head.

I picture Asheville, North Carolina caught under two feet of rain, government scientists in waders tossing plastic buckets full of water from the sinking Titanic of a government building. I picture, too, the lucid, stinging ironies, too real to be made up, that propel some of the best ethnographies forward. Caught between imagining a place I have never been and a time and a story that are yet to be written I am transported, for just a moment.

Pulled back to the café, I nod and I tell Drew that the irony is not lost on me, either, of the co-director of a climate change think tank being forced to leave a climate action summit to deal with the impacts of a climate-charged hurricane back home. "No time to prevent the problem when we're dealing with its impacts very directly," Drew later affirms, stepping off his red eye flight and into the studio of Asheville's local Blue Ridge Public Radio station the next day (Loeb 2018). No time to participant-observe with climate change actors when they're off acting on the impacts of climate change. The sharp, metallic taste of these Anthropocene ironies coats my tongue. But ironies abound when you–care or–think hard enough about climate change. Ironies

or indexes of limits and possibilities, capacities to respond. The *negative impacts* of global climate change are unequally and inequitably distributed across space and time. And so are the benefits of the fossil-fuel capitalism that has caused it. Those who have contributed the least feel the impacts of this irony lost on so many of us who have contributed most. Responsibility and consequence are distributed across decades, borders and difference.

Yet what is it that we think when we think that this is all *so ironic*? What do these ironies index? What work are they doing in revealing the paradoxes, incongruities, bittersweetnesses of being in the world, in the 21st century? For something to be ironic—unexpected, absurd or self-contradictory—we must already carry within us a vision of the world as it should be. That, paradoxically, reality should not play out as we think it should, that it, in fact, plays out exactly incongruously, or, sometimes, too congruously, means that we are already envisioning the way things should be. We think, cynically, "of course, how paradoxical," that hurricane scientists come together during a hurricane. How ironic that climate impacts get in the way of climate action. We think we should be able to collectively, intuitively, understand the system dynamics of stocks and flows in the atmosphere, how our actions are affecting them, and how this is affecting human and planetary health. But we do not. As Candis Callison (2014) has taught the anthropology of climate change, these are questions, ideals at the very foundations of Western democracy and science. What work is being done to overcome these incongruities, to work through these ironies?

In one of our first interviews, Drew shared with me a question that has guided his career:

"What are experiences that help people understand, viscerally, the long-term, distant impacts of their actions in ways that create new possibility?"

"The best thing I found to do that, in a scale that matters," he told me, "is computer simulation. Games around them, or learning how to make decisions around them."

Climate Interactive's models, games and exercises are some of their attempts to create such possibility-producing experiences. In the previous chapter, I introduced Climate Interactive (CI), its history that exists intimately within the field of system dynamics, as well as some of the

fundamental principles of the field. I focused specifically on their World Climate simulation and C-ROADS model as one product of this history. In this chapter, I attend to possibility as an actor-category and an analytic. That is, it is a *concept* in Georges Canguilhem's sense of systematic, historical and constructed: situated within an orderly epistemological apparatus (which can be pre-theory and pre-science), produced within a particular genealogical milieu and a product of that particular history (e.g. Canguilhem 1975; cf. Peña-Guzman 2018). However, possibility is also a *term*, as opposed to a concept in this slightly technical sense, in that it is used out in the world differently by different contemporary people, perhaps with different meanings.[1] In this chapter, possibility is first understood as a time-and-place specific concept of Climate Interactive, before it is taken up as a term, to be used as an analytic and tool for understanding various others' uses of the term and the useful resonances between them all. This inquiry into possibility is animated by a question, introduced immediately above, that has guided CI co-director Drew's career: "What are experiences that help people understand, viscerally, the long-term, distant impacts of their actions in ways that create new possibility?" As Drew and CI aim to build the capacity in people to take effective action in their communities in ways they see fit, they create the conditions of possibility to combat the seemingly intractable consequences of the system dynamics of the climate crisis.

First, in Part I, I break down exactly how it is, through what knowledge practices, philosophies and theories of change, Climate Interactive looks to "create new possibility." In analyzing *how* exactly they look to produce possibility, I break down the work of what I call their ethical system into the three steps they take in this possibility-producing process. In what follows in Part II, I take up Michel Foucault's late turn to ethics and the care-of-the-self-in-relation-with-others, together with Montgomery and bergman, Solnit and Rees, to better understand what exactly this possibility is, could be, and how Climate Interactive's ethical system of possibility production enrolls political subjects in the open-ended, movement-based cultivation of a life of taking positive action on climate change.

[1] I thank my co-supervisor Tobias Rees for this articulation of the Canguilhemian distinction between concept and term, to which I was first introduced by his comment in a workshop with French Canguilhem expert Jean-François Braunstein in mid-September 2014 in the Social Studies of Medicine department at McGill University.

Drew got home safe Wednesday morning. Florence caused $24 billion in damages in the Carolinas alone. The hurricane claimed the lives of up to 39 people in the Carolinas and Virginia, breaking state rainfall records and causing major flooding. Shortly after the bulk of the storm had left Carolina skies, early data from NOAA indicated that Florence brought the fourth-highest amount of rainfall of any hurricane to hit mainland United States since 1950 (Grossman 2018). Dozens of North Carolina's hog waste lagoons—shallow man-made, football field-sized open-air lakes made bright pink by the anerobic digestion of millions and millions of gallons of pig excrement produced by the country's second-largest population of pigs—were inundated and overflowed. The waste infiltrated water systems and seeped into the surrounding communities, some of the state's poorest, disproportionately Black and Latinx communities, with disproportionately low life-expectancies (Irfan 2018a; Kuo 2015; Pierre-Louis 2018; Rhew, Akushevich et al. 2018). A byproduct of burning coal in powerplants called coal ash, full of heavy metals and radioactive material, washed from pits, ponds and landfills, threatening to contaminate yet other rivers (Irfan 2018a). State officials confirmed the deaths of 3.4 million chickens and turkeys and at least 5,500 pigs (Mufson, Dennis and Fears: 2018). The National Weather Service called Hurricane Florence a "1,000-year" probability rainfall event (Irfan 2018b; National Weather Service, n/d). This was a relatively mild hurricane, not many people outside of the southeast seem to remember its name. Each year the changes keep getting worse, more unexpected, more wild, outstripping predictions.

Outside of the café in San Francisco, the irony of it all—the hurricane scientists, the distributed impacts and benefits, the fact that after my first in-person meeting with a key research collaborator in this ephemeral network of climate groups, he has to hastily fly home to the opposite end of the continent to deal with a climate-charged emergency—all of this still hangs around me, in the air, on my tongue, on my mind. I tell Drew I'll let him know how the Summit is, if I can get in. We shake hands and exchange pleasant goodbyes and Drew leaves me to my notebook, walking past the Dragon's Gate and onto his next meeting before returning home to the hurricane.

Part I. *How They Produce Possibility: An Ethical System in Three Parts*

How exactly does Climate Interactive create "experiences that help people understand, viscerally, the long-term, distant impacts of their actions in ways that create new possibility"? How do the experiences they create *produce* possibility and what do they hope to achieve in accomplishing this? In what follows in Part I of this chapter, I present, to the best of my ability, the diverse elements that make up the systematicity of their collective striving to "create new possibility." In this striving, the manner through which Climate Interactive creates new possibility can be described by "its dual quality as both a means to an end and an end in itself," as Annelise Riles describes of activity the NGO networks she studied (2000: 51). Further, this collection of means and ends is something other than just the "underlying ideas" sought out by Malinowski and the 20th century anthropology he inspired (e.g. Malinowski [1922] 2005: 21, 60), by which I could interpret the social structure, culture or cultural phenomenon of Climate Interactive as an organization (Rees 2018: 81). They are "not hidden themes in the subtext of life" but "what actually captivated attention—what people devoted time to making" during fieldwork (Riles 2000: xiv). What I describe in Part I is a set of practices, a theory of change, and of pedagogy, a system of knowledge, an ethical system by which they themselves attempt "to open up unanticipated, still emergent spaces of marvel and surprise" (Rees 2018: 82)—and of possibility. In this sense, it is not so straightforward to characterize what exactly it is that I will be describing in this first part of the chapter. It is based on in-depth interviews and participant observation at in-person and online events, but also dozens of written documents, training materials and articles, hours of recorded presentations, webinars and their slideshows, the online presence of the organization.

It is, first of all, a set of practices that I describe, or describe being described, by which the organization and its people aim to achieve their goals. It is the means through which they put into practice their theory of change on addressing-climate-change-via-creating-new-possibility. As a theory of change, too, it holds within it assumptions and visions about how to best address—and bring other people to address—climate change using the systems thinking of the field of system dynamics and the field's attendant simulation models and simulation-based learning experiences. In this sense, it is, in addition, a particular system of knowledge, based in

the broader field of system dynamics and its thinkers discussed above, in Chapter 2. Yet it is also a system of teaching-and-learning, a teaching philosophy and practice, by which to teach potential teachers how to teach and inspire (or, that is, teach potential facilitators how to facilitate the teaching and inspiration). The object of this pedagogy and inspiration is to increase knowledge about the climate-political system, the imagination of positive climate futures and participant-initiated actions to enact those futures in participants' everyday lives. Like all theories of change and pedagogical systems, these practices enroll people into particular subjectivities and modes of relation. Ultimately, then, it is an ethical system, of openness and possibility, a way of (guiding people through) relating to the world, through a system-dynamics perspective. It is an ethical system for relating to the world when that world includes "humans, or certain forms of human existence" (Povinelli 2016:14), pulling all humans into species-level influence on the earth and its climate on a geological or planetary scale. For these reasons, below I will use the shorthand of ethics and an ethic to describe the internal systematicity of Climate Interactive's work to produce new possibility, while recognizing its inadequacy in fully describing what follows. This distinction will be explored further in Part II.

Let us begin by summarizing the three parts of this system. First, Climate Interactive's ethical system consists of using their models and role-playing experiences to help people to learn for themselves what it will realistically take, in terms of carbon emissions reductions and through what means to accomplish the former, for the world to reach international climate goals (namely limiting global temperature increase to 1.5° or 2°C by 2100), or participants' own climate goals. The next part of what makes Climate Interactive's experiences transformative, producing new possibility, is how they create the conditions that allow people the opportunity—emotionally, intellectually, creatively—to imagine a world, beyond the way things are currently organized, in which their desirable vision of climate success is possible. Finally, the third way they produce possibility is in cultivating experiences, to help people build the capacity to take effective action on climate change in their own community or organization, in the best way that they can.
Put succinctly, Climate Interactive's ethical system creates the conditions for people:

1) to learn for themselves what it'll take;
2) to envision a desirable future of their own imagining;
3) to cultivate this knowledge and vision to build capacity to take effective action in their own way, in their own communities.

Let us explore these three steps further.

1.

The first way CI produces possibility is by helping people learn for themselves, to come to the scientifically backed conclusions, about several things: the level of carbon emissions reductions (and other mitigation measures) needed to reach international goals on climate change, from which countries or groups of countries these actions need to come, what some of the (power- or system dynamics-based) political and equity barriers to achieving these goals are and what are the kinds of means through which to achieve those reductions goals. Through their system dynamics models (C-ROADS and En-ROADS, see Chapter 2) together with their role-playing games and workshops, they teach people the basic dynamics and challenges of the current political and climate system through affective, interactive learning experiences, while emphasizing the potential equity challenges that arrive in addressing these dynamics and challenges. In addition, they create opportunities for people *to learn for themselves* about these elements of the climate and political system though several means: by freely providing systems-level information consolidated into accessible tools and games; by providing experiential learning games and workshops that have proven more effective than simply lecturing, for example, and, finally; this effectiveness is due partly to how these learning experiences use CI's simple, globally aggregated climate modelling that compresses the time and space of complex global system dynamics across a planet-wide geographies and massive timescales, while their games and workshops create a time-and-place set apart from participants everyday lives, where participants are empowered to think and be otherwise.

Systems-level information, free and accessible Firstly, they provide tools and opportunities, for free and all in one place, for people from journalists to decision-makers to schoolchildren, to learn what amount and kind of action on climate change will be needed to meet international goals. "There aren't a lot of resources out there for people to get a good hold on the level of action that we are actually facing down," Ellie Johnston told me in an interview in early 2018.[2] Ellie is Climate and Energy Lead at Climate Interactive, where she landed after taking a class with Drew at the University of North Carolina, Asheville and after some time in

[2] Ellie Johnston, interview, February 8, 2018.

between organizing on climate in the state and region. Ellie's role as Climate and Energy Lead has seen her more firmly establish and extend the reach of Climate Interactive's tools and resources like C-ROADS, En-ROADS and their related games and workshops. C-ROADS and World Climate, for example, can teach users the large-scale action needed to reach international climate goals of limiting warming to 2°C above pre-industrial levels by 2100: according to the best available science, all the nations of the planet will need to peak (halt the growth of) the total the amount of carbon emissions within five to ten years and shortly thereafter will need to cut carbon emissions by three to five percent per year, while decreasing deforestation and increasing afforestation (planting trees) in order to limit warming to 2°C by 2100. There are simply not very many other resources readily available for people to learn the scale of this action in an immersive, experiential, and therefore, as we will see later, effective way. "And so in that sense," Ellie says, "we are filling one of the unique roles in helping for people to be able to really grapple with the [energy system] transition that we need to do and the timeframes involved."

This is an especially important role to fill because of what makes climate different than other, related global problems is its complexity, Ellie suggests. She uses a classic example: the Montreal Protocol (officially known as "The Montreal Protocol on Substances that Deplete the Ozone Layer"), the successful international treaty that went into effect in January 1989 to phase out the production and use of chlorofluorocarbons (CFCs) and related chemicals that were causing the depletion of ozone and a hole to form in the ozone layer of the Earth's atmosphere over Antarctica. While seemingly an international treaty attempting to regulate the contents of the Earth's atmosphere much like the Paris Agreement or the Kyoto Protocol, The Montreal Protocol, was uniquely successful for several particular reasons. It was largely relegated to one sector of business, "so you could bring together the big businesses that were responsible for CFCs and get them to change their ways," Ellie tells me. Importantly, there were also easily available alternative resources to replace CFCs. On the other hand, climate change involves so many different sectors, so many different nations and economies, lives and ecosystems that it takes on a level of complexity exponentially higher than the management of CFC production and use. "So that's one of the things we provide, the systemic, let's-look-at-all-the-inter-connections-across-the-whole-system of climate" perspective, Ellie continues, referencing C-ROADS' and En-ROADS' integration of climate, policy and economic analysis and representation. With this perspective, and with the built-in knowledge about what it will take to meet climate goals,

Climate Interactive is consistently insistent that participants and users can "explore possible futures" within the model (e.g. Jones 2008; S. Jones 2016; Chikofsky 2020). Climate Interactive's tools and resources provide a systems-level perspective to learning about climate change and how to solve it, providing the opportunity to explore possible scenarios for the future.

Computer simulation-based interactive learning experiences In addition, Climate Interactive teaches the systems-thinking perspective of the global climate, economic and geopolitical systems through interactive learning experiences that attempt to engage people at not only the intellectual level, but the affective, social and bodily levels. As MIT Sloan School of Management professor and Climate Interactive senior adviser John Sterman likes to say, "Research shows that showing people research doesn't work" (e.g. Climate Interactive 2016b). Through this pithy and clever turn of phrase, Sterman is summarizing the insufficiency of what is called the "information deficit model" or "science deficit model" for communicating expert knowledge to the public, criticized extensively by experts in the field, but prevalent nonetheless. Under the assumptions of this model, political action on climate change plays out in particular ways, via particular actors: "climate scientists bestow knowledge about climate change upon diverse publics, who are then rationally incited to take action in the form of lobbying, petitioning, protesting and other environmental work. This, in turn, influences technocratic experts to act through legal and policy engagement" (Fleischmann 2016; cf. Callison 2015, etc.). However, as Climate Interactive and other experts attest (e.g. Kahan 2013), simply telling people what "the science says," i.e. explaining what scientific research claims, does not work. In other words, for issues like climate change, telling people what to think or how to act doesn't have an impact in convincing people of the importance of the issue or inspiring them to act.

"What the world needs now around this issue of climate change," CI co-director Drew Jones concurs near the end of a recorded webinar about CI's World Climate game in April of 2016, "is deep engagement at a visceral level, where we can have experiences that don't just touch our brains. 'Cause we clearly have been trying that for twenty to forty years" (Climate Interactive 2016a) Drew continues, articulating both the faultiness science deficit model and his group's alternatives in his own way: "Scientists have been trying to use to brain to engage the world to do something about climate change. It's not enough. We need experiences that touch our brains, our hearts, our spirits. And that only happens when people get to show up in

conversation with others and viscerally experience the impacts of what's going on in the world right now. This game is designed to create those kinds of experiences."

I observed the results of such a philosophy of teaching and learning, combined with the advantages of an integrated systemic perspective, at two games of World Climate I observed John Sterman run for executive business students at MIT in August of 2018. To be able to prepare ahead of time, get acquainted with the interface and play around with the model, students were given a link to an online version of the model the day before the in-person role-play simulation. Perhaps as a result, much sooner than during other games I'd observed and participated in, during the very first round of negotiation the "Other Developing Countries" and "Other Developed Countries" teams were already using the model to test their negotiations and proposals against the overall and team-specific goals they were given by Sterman before the game and on their briefing sheets. "Dan, how's the model going?" one "Other Developed Countries" team member called over to his colleague. "Oh, we're screwed," Dan called back. "There's no way everyone's going to agree to this."

When the time came for speeches at the end of the round, one executive MBA student who had been quietly assigned by Sterman to play Vladimir Putin, leader of the "Other Developed Countries" team, came to the front of the room and made a speech, gaudy Russian accent and all, in favor of his team's proposal: four percent per year reductions in carbon emissions, peaking in 2025 and starting to decline in 2035, with a new deforestation rate of zero percent and an afforestation rate of fifty percent. The team had quickly learned, on their own, it turns out, a key learning outcome, nearly exactly what Climate Interactive's analysis concludes will be needed to limit warming to 2°C. By the debrief session on the game, another student, who Sterman had assigned to play the fossil fuel lobby, articulated his frustration with another essential, if non-intuitive, takeaway of the game regarding the system dynamics of "Developed Countries'" emissions reductions: "See, it's diminishing returns," he sighed when called on to speak. "It's the time you peak emissions, and then start reducing, that matters, not the percentage." What this student realized while testing out proposals during the World Climate simulation was that it will be a lot easier to reach international goals, reducing untold suffering and economic damage, if we start reducing and peak emissions sooner, rather than drastic cuts later; further, once the "developed" world cuts emissions, "it's the developing world that

matters" in completing the rest of the needed emissions reduction.[3] "Five percent works—no need for fourteen percent," he concludes.

Models and games: compression and time and space; a space and time apart Finally, the last means through which Climate Interactive creates opportunities for people to learn for themselves about the climate and climatic-political system: the ways in which their models compress time and place and their games create an imaginative space and time apart from everyday life. As Drew explained in an interview,[4] Climate Interactive's models interact with participants' preconceived notions about the climate and political system, what CI and others call people's "mental models." When using C-ROADS of En-ROADs, participants can compare these notions with the results of the model: "they're testing their mental models against the computer model. When there's a gap, they learn something." Further, users are able to compare their preconceived understandings with simulations run in the models partly as a result of how the models capture complex dynamics of the climate system, simplifying relations that are vastly distant in time and space into a user-friendly simple climate model. Indeed, CI associate and Director of the University of Massachusetts Lowell Climate Change Initiative and professor of Environmental Science, Dr. Juliette Rooney-Varga has written directly about this. Simulation-based role-playing games, she writes, "offer the potential to compress time and reality, create experiences without requiring the 'real thing,' [to] explore the consequences of our decisions that often unfold over decades, and [to] open affective and social learning pathways" (Ledley, Rooney-Varga, and Niepold 2017: 24; cf. iBiology Techniques and Rooney-Varga 2015).

Combined with Climate Interactive's role-playing games, this compression of time and space can also create what has been called, in the social scientific literature on "play," "the magic circle" of the game. Dutch historian Johan Huizinga first wrote about "the magic circle" of play and of the game in 1938 (Huizinga 2016). Nanna Kong Nielsen, a then-Masters student also studying Climate Interactive's game but through field of design, whom I interviewed in 2018, put it aptly: "It's kind of like when you're playing a game, you're entering a different world with its own set of rules and you can act in a different way when you're playing than when you're not

[3] For more insights gleaned via C-ROADS on how after "developed" countries stabilize emissions, it will be "developing" countries that will need to make drastic cuts, see (Fiddaman 2009): "Whether the rich start cutting emissions a little (1%/yr) or a lot (5%/yr) after that makes relatively little difference, because emissions from the rich world quickly become a small share of the total."

[4] Drew Jones, interview, January 24, 2018.

playing."[5] In playing a role, participants are momentarily freed from the assumptions of their community's or their own values. They are able to explore parts of themselves they may not be able to in their everyday lives, or inhabit the perspective of a kind of person or set of values they may not otherwise encounter.[6] The magic circle of the World Climate game is a compressed time and space set apart, where participants are empowered to *be* otherwise, exploring possibilities, based in a rigorous understanding of the best available science, of a future that can live up to the diversity of their environmental, social, economic and political worlds—or whatever vision of the world they wish to inhabit and explore.

These ethnographic observations of mine are consistent with the results of research conducted by CI associates, staff members and users. Their research has shown that Climate Interactive's tools and games are effective at helping people affectively understand climate change and commit to acting on it in their lives. In fact, research led by Rooney-Varga found that, when surveyed before and after World Climate sessions, participants showed highly statistically significant gains in climate change knowledge, affect and intent to act (Rooney-Varga et al. 2018:16). For example, the game "is associated with substantial and statistically significant gains in understanding of" some fundamental aspects of the system dynamics of the climate system, such as accumulation and stock-flow dynamics; this suggests that World Climate "is effective in building knowledge critical to understanding the conditions required to stabilize CO_2 concentrations and global average temperatures" (Rooney-Varga et al. 2018:17-18; cf. chapter 2, this dissertation). Moreover, whereas learning more about the causes of climate change and the dynamics of CO_2 accumulation did *not* lead to increased feelings of urgency to address climate change, gains in participants' affects, what researchers called "hope" and "urgency," were associated with gains in both "intent to act" and "desire to learn more" (Rooney-Varga et al. 2018:19-20). These findings exist in direct contrast to the information deficit model of communication, and suggest Climate Interactive's tools and games allow people

[5] Nonna Kong Nielsen, interview, February 28, 2018.

[6] In fact, along with other suggestions regarding room setup, in order to encourage players to actively play their in-game roles, the World Climate Facilitator's Guide (e.g. Jones et al. 2020) suggests perhaps assigning players in-game roles that are the most unlike the roles they play in their "real lives" in the "real world:" "Let participants choose their groups themselves e.g., 'Choose the group with which you would most identify with'; and afterwards, you redistribute them to the groups unlike their preferred choice" (10).

to learn for themselves what it will take to meet international climate goals, in an effective (read: affective) way that increases their intention to act on what they've learned and to learn more.

2.

After simulation-based, interactive learning experiences helping people to learn for themselves, the second way Climate Interactive produces possibility is focused on the imagination, in a broad sense of the term. They attempt to create the conditions for people to envision a desirable future of their own imagining, from their own perspective, background and situated positionality. In the creation of new possibility, imagination is an essential element. In fact, according to CI associate and system dynamics modeler Tom Fiddaman, with climate change "The whole idea of helping people to have a vision of a positive outcome in the future is much more important than it is in other environments or problem spaces."[7] This is because the point of (system dynamics) modelling, he told me, is usually to articulate how a system works, using the model as a tool to figure out how to make improvements, reach a goal, etc., "without taking [on] big risks and expense in the real world first." However, the climate system is "so much bigger and more complicated than a company or any single organization," Tom said, making an understated reference to his training and the origins of system dynamics simulation-based role-playing games at the MIT Sloan School of Business, where he and Drew met (cf. Chapter 2).

The climate system is a vastly complex and dynamic system with serious governance and inequity challenges, as has been outlined above. Moreover, the dynamic complexity that helps to create these challenges is not intuitive for most people. "It's partly that it's just intrinsically hard. Anything that's dynamically complex is not in our intuition. Anticipating delays, things like that, does not come naturally to people." Climate Interactive's models like C-ROADS aim to help people understand that dynamic complexity, Tom indicated, to experientially learn about equity issues surrounding climate, but also time inconsistency (lags in time between cause and effect, such as carbon emissions and climate impacts) or delays in the system (and how to anticipate them), as well as basic facts about who in the world is emitting. But helping people learn for themselves about these characteristics is not enough if the goal of Climate Interactive's system

[7] Tom Fiddaman, interview, February 13, 2018.

dynamics modelling is ultimately to make a positive difference on the climate crisis. Instead, they must also guide people to envision positive outcomes in the future.

A learning experience built around a model like En-ROADS or C-ROADS can help people to explore other possibilities than the present, within the model's adjustable parameters. With simple climate models, Tom said, you can ask, "what if the system didn't work this way at all, but things were radically different?" Experimenting with global or regional emissions reductions scenarios; adjusting a simulation to test out the effects of a particular change in the global energy supply on CO_2 concentrations or global temperatures; adjusting assumptions for climate sensitivity or reductions in GDP from climate impacts: by simulating these complex relationships in CI's simple climate models, users are invited into a "what if" world, to imagine possible futures and differently organized ways of being. Together with the time-and-space compressing, time-and-space apart from the everyday nature of simulation-based role-playing games, modelling can, as Tom put it, bring together systems thinking and equity considerations "so that people can explore visions outside of the way that things are currently organized."

In fact, Climate Interactive strongly and explicitly encourages workshop and game facilitators to "cultivate desirable visions of success" when facilitating. For example, in the December 2020 version of the World Climate Facilitator Guide (Jones et al. 2020), there is a largely expanded section compared to the early 2018 version (Jones et al. 2018) that guides facilitators through the debrief part of the World Climate game. In the debrief, participants are encouraged to step out of their roles (and their costumes, should they have been included in the roleplay) and reflect on their experience within the world of the model and the game. The updated debrief includes a new 60-second moment of silence after the gameplay's successes and failures, in which facilitators are encouraged to "Invite your participants to take one minute of silence to reflect on future possibilities" (18). The guide suggests facilitators set up the moment of silence with something along the lines of this:

> *"When we talk about future scenarios for our climate, we spend most of the time focused on how bad the worst-case future looks or how difficult change will be. Instead, I'd like for us to spend just one minute silently considering the possibility that we could create this better future"* (Jones et al. 2020:18, emphasis original).

After showing users just what it will take to keep temperatures below 1.5 or 2°C, learning for themselves some of the challenges and inequities of these goals, the guide asks facilitators to envision success. It continues: "Start a timer, stop talking, and don't speak for a full 60 seconds.

This is a very important moment and initiates a period of increasing hope and possibility. Participants may be invisibly prepping themselves to find resolve, a vision of a better future, and commitment to do something about it. Treat the moment with respect." (Ibid.). If the facilitator wants to, the guide suggests following up with a second prompt, answers to be shared with the person next to them: *"Think of something you would love about being part of this sort of future*" (Ibid., emphasis original). Walking the facilitator through the rest of the debrief, the guide goes on to encourage facilitators to explore participants' feelings, not just their intellects, and to recap the key insights of the model, the learning outcomes about the inequity challenges and system dynamics of the climate system like accumulation and stocks and flows. Several times more it emphasizes using the debrief "to cultivate a sense of possibility in the group and share your own reasons to be hopeful" (Ibid.:24).

Climate Interactive's goal of "cultivating a sense of possibility" through exercises to envision desirable climate futures was particularly evident in a series of free public online webinar-based classes, about using Climate Interactive's newly revamped En-ROADS Climate Action Simulator. The last class was called "Confidence-Building in the Simulation, Advanced Facilitation and Other Questions." Focusing on Climate Interactive's proven techniques and expressed goals, these classes, and especially the last one, mirrored many tips written in the facilitator's guides, but ultimately proved to be a more in-depth, behind-the-curtain view of what CI deems most important for running their games and workshops. There was a strong emphasis on using the model to create the conditions for people to imagine otherwise, to feel their feelings about the current global environmental crises and envision their success. The last class was run by Drew, and with him, his by-now familiar ability to cultivate in his audience meaningful, emotional moments of reflection.

Having already emphasized "nailing" key systems thinking insights like the bathtub scenario (cf. Chapter 2), about forty-five minutes into the class, Drew dives into more detail about this goal of envisioning successful futures. He brings us through the first of, what in the literature (Senge 1990) is called, the three pillars of learning in complex systems, "vision."[8] Encouraging us to "cultivate a desirable vision of success," he teaches the hundreds of potential facilitators on the live webinar to make sure to always create a scenario in the model, at some

[8] The other two pillars are to encourage reflective, open conversation about one's assumptions and to build the capacity for systems thinking.

point in the game or after, at or below 2°C, to use the moment of silence and to encourage reflective conversation. He recommends for facilitators to "Share with the world a positive story about the future of the world. One purpose of En-ROADS is just to do this. To share a vision of success, [to] let people talk about this." He brings up the example of successful athletes' envisioning practices, imagining their success before it happens: "a golfer, before they hit a hit a golf ball, for example, they think about themselves in their power." For climate change, it is suggested, we can do the same thing.

He then reads aloud, directly from a 1989 essay by his late mentor Dana Meadows (Meadows 1989), collected in a book of such essays based on a weekly column she wrote from 1986 until her untimely death in 2001, called *The Global Citizen* (Meadows 1991). In this essay, Meadows is answering a question from a reader about how to deal with the anguish and other emotions that come with "being a caring person on this beleaguered planet" we are leaving our children. She encourages the reader to take up the metaphor of a rubber band stretched out between the reader's two vertical hands, holding the tension between the vision of a better future, on the upper hand, and the current reality, on the lower. Pull too strongly toward the hand of envisioning a world you want to live in, of utopia, you let go and the rubber band snaps your hand, and you are out of touch with the current state of the world, all its troubles and its sufferings. Pull too hard on the other end, the rubber band snaps, stings your hand and dreams seem impossible. You are a realist and a cynic with no direction or hope for a better world. Instead, Meadows says, you must hold these two sides in tension.

Drew reads Meadows' encouraging words from the essay to the live webinar audience: "Bear the tension. Hold on tight, firmly in touch with reality, unshakably committed to your highest dreams. Feel the pain, summon your strength over and over to endure it. Stop to rest, if you have to, but pick up both ends again. Only out of an acceptance of the world's—" A swift exhale and a short pause bisect the sentence before its dénouement. There's a strained cough from the invisible webinar host, video muted, followed by a moment more of silence. Drew apologizes, hoarsely, says, "This is getting me all choked up, remembering her saying all this," referring to his relationship with his late mentor. "Okay." He continues, his voice shaky. "Only out of an acceptance of the world's terrible pain and its wonderful possibilities—" he repeats this clause, voice louder and stronger. "Only out of an acceptance of the world's terrible pain and its wonderful possibilities can you anchor your upper hand to vision," he goes on, continuing the

analogy, “while you discover ways to bring your lower hand, the reality closest to you, up toward that vision, slowly, slowly. Your anguish, sometimes—” he stops suddenly, audibly, briefly emotional again. “Your anguish, sometimes so unbearable, is in fact *the force* through which you can help the world come a little closer to being all that it can be.” He speaks the words “the force” with more strength, and then repeats the last sentence for emphasis.

Drew goes on to say that often with a group he’s facilitating through a game or workshop, they will go one of two directions, the first being anguish, “we’re all screwed” feelings. “In that case you [as a facilitator] are cultivating vision, you need to help people cultivate what they really want.” The other way a group will go, Drew says, is they will say, “it’s all handled,” indicating they don’t need to do anything about climate change. “Then you need to ground people in the reality of the huge transition of the energy system against the largest industrial force on earth right now, which is the fossil fuel industry and all the resistance to change.” Allowing people the opportunity—actively cultivating the opportunity, in fact—to envision a world, on track to meet global climate goals, in which they would love to live is the second way Climate Interactive “creates new possibility.” “Share with the world your sense of possibility!” Drew exclaims. The third and final way Climate Interactive creates new possibility is by transforming participants visions of success into a capacity to take action.

3.

The third part of Climate Interactive’s possibility-producing ethical system is cultivating the motivation and capacity for users to take effective action on climate change in their own lives. By connecting an interactive, affective and interpersonally learned understanding of the system dynamics of what will be needed to reach global temperature goals to a cultivated desirable vision for success, they aim to ultimately build users’ capacities to take do something about climate change in their own way, in their own communities—connecting the knowledge to vision to action, and creating new possibilities on climate change.

Early on in Drew’s final class of the En-ROADS webinar series, the class which focused on advanced facilitation tips, there is a presentation slide, full screen and overlaid with Drew’s live voice, of four lines of text, thirteen words. The top of the page reads “Your Goal:” in large golden font, followed by three words of the same size and color in the middle of the slide: “Cultivate their Learning.” In smaller, white text, at the bottom third of the slide is the equation,

"Learning = Building the Capacity to Take Effective Action." Learning about climate change, for the purposes of the En-ROADS model and its attendant workshop and Climate Action Simulation Game, is, ultimately, about taking action on climate change. Later in the hour-and-a-half long class, after the reading from Dana Meadows' book on visioning, Drew is discussing remaining open to uncertainty, to putting the conversation and simulation in participants' hands and staying open to being wrong, as a way to cultivate reflective conversation. He tells us that we have to be open to uncertainty, to changing our minds and others' minds, "if you want invest in true learning as a means of getting effective action in the world."

He then goes on to remind us future facilitators that our goals should not be put first-and-foremost, but that we should be facilitating participants' goals. "You're investing in them, you're the wind in their sails. That is your mission. If you ever get stuck [as a facilitator], come back to this idea and this slide," Drew says referencing the above-mentioned slide that tells us our goal is to cultivate their learning, which is "building the capacity to take effective action." "We're investing in *their* learning," he emphasizes. "You are there and you look out on that beautiful group of people and you envision people taking action toward their goals on addressing this challenge, in the best way that they can." "Not necessarily your goals," he adds, after a pause.

Some of the capacity to take action Climate Interactive hopes to cultivate in the world is not only the ability and desire to take action in one's community, but also the desire to inspire others to do the same by advocating for change. While more explicit about their theory of change and desire to cultivate action in their participants in more recent years, the above advanced facilitation tips are mirrored in earlier webinars, such as one run by Drew and recorded in April 2016 (Climate Interactive 2016a). One of many regular live webinars Climate Interactive puts on every year in order to provide support for new and potential users of their tools, the purpose of this webinar was to introduce viewers to C-ROADS and the World Climate game and to inspire some to facilitate the game in their own communities. The simulation, he says, is about creating experiences where people to get think for themselves about this issue, to "learn about some of the dynamics, but mostly practice advocating for change in the world. Practice talking to other people about this issue." For example, when the MIT Executive MBA student who I observed playing the game facilitated by John Sterman in August 2018 put on his Russian gaudy accent as Vladimir Putin to advocate for his team's proposal of more or less exactly what will be needed to limit warming to 2°C, he was performing advocacy, in specific terms, for what will be needed to

limit warming to 2°C. This practice can translate to, and inspire, advocating for positive action on climate change elsewhere in people's lives. "One purpose of the game is to create the conditions for someone to find that voice inside themselves," concurs a February 2018 version of the World Climate Facilitator's Guide (Jones et al. 2018:30).

Another example of how Climate Interactives provides people the opportunity to practice advocating for positive change in order to build the capacity to take effective action is from the second class of the January 2020 En-ROADS webinar series class. Run by both Drew and Ellie, this class was about how to facilitate the En-ROADS Climate Workshop. After handing out briefing sheets that break down some of what the model does, Ellie and Drew encourage workshop facilitators to acknowledge the action on climate change that people in the room are already doing ("an opportunity for people to brag") in order to "breathe life and excitement into what has already been done" and "not to start from a place of deficit." We're told to ask the workshop participants, "What actions have you or your organization done in the last five years to help mitigate climate change?" To practice sharing one's own excitement about actions ones is taking is part of cultivating a life-in-community of taking action. As Ellie put it in our interview, even in situations where people are thinking about climate change a lot, Climate Interactive provides unique experiences:

> Having a different kind of experience by looking at a computer simulation, which is not normally what a lot of people do, can give them a new perspective and a new orientation on things and can create *those moments that are so fundamental to cultivating a life of taking action on climate*, of realizing what we're up against and being reminded of the urgency of the challenge and all of that [emphasis added].

Ultimately, creating "new possibility" is about cultivating in participants a commitment to new action on climate change based in an affective, experientially learned understanding of what is needed and a desirable vision of the future, grounded in the tension between the vision of a better future and the current reality. When asked directly about his relationship to possibility, what he thinks it is, what it does for him, what he means by "new possibility" in his career-defining question, Drew tells me that possibility is a means to combat the resignation and despair that often surrounds thinking on climate change, "where resignation and despair spring from a deep sense or feeling of *impossibility*:"

> Most of the imagining on climate orients towards doomsday futures—how bad it can get. What I want is for people to see, feel, taste, touch, possible futures for the whole world, and themselves in it, in which we make things so much better. With the hope that by creating these new possibilities in imaginations, in people's minds, they will orient

themselves and their lives towards making it happen. Bringing that possible future into reality.

Rather than building climate action on either naïve positivity or pessimistic despair, Drew looks to create opportunities for people to imagine their worlds otherwise, grounded in the situated understandings and uncertainties of climate system dynamics.

Part II. *But what is possibility, exactly?: Ethics, Open-Ended Political Subject-Making, Cracks in the Wall*

But what is it? What is possibility, exactly? Possibility is central, of course, to Drew's career-defining mantra which opened this chapter. It is also present in recent anthropological writing and political writing on or around climate change, as an end and an object of anthropological practice (Pandian 2019), wild possibility out in the world (Solnit 2016), "the open" and openness (Rees 2018) and the shifting edge of collective capacities for enacting an otherwise (Montgomery and bergman 2017).[9] It is there in Multisolving—Climate Interactive's other half run by its other Co-Director, Beth Sawin, which has largely remained outside the scope of this research project, and focuses on equity-, justice- and co-benefits-based solutions to the climate crisis. It is even in the old International Workers of the World slogan of building a new possible world "within the shell of the old" (International Workers of the World 1906). Often, from these venues it comes in the form of new, wonderful possibilities already quietly at work in the world (or almost so) that could transform things for the better. Yet in the realm of climate change, "possibility" also exists also as a limit to how the world has been able to address climate change.

And what is the possible, exactly, in all these instances that talk about "possibility" as a wonderful potential or limit to overcome? Is it the kernal of some concept or way of doing things that already exists out in the world, a spark of inspiration that has the potential for showing us how the future can be different, more just, better? A sneak-peak into already-existing practices that push against the limits of the current, negative window of possible? Is it a relationship, a feeling? Or something else entirely, much larger, or smaller? How do we access or recognize this

[9] Note that, acting in the traditions of feminist scholars such as bell hooks and adrienne marie brown, carla bergman spells her first and last name in all lowercase letters. See Hyslop 2020.

possibility? Is it like an indicator in bas relief of how much, really, there is to lose if we don't figure out how to do something about this?

Part II of this chapter is a deeper look at possibility as grounded in the description, above, of the system through which Climate Interactive strives to create it. It is an analysis, reflection, theorization based in a dialectic with the field that has affected myself, the researcher, and my thinking to produce an object of analysis, reflection, theorization in conversation with other texts and thinkers, in order to understand an object borne of the dialectic with the field: possibility. Here, I attempt to better understand this actor-category with the help of others whose work makes its definition clearer.

In Andrew Goffey's introduction, as translator from the French, of Philippe Pignarre and Isabelle Stengers' *Capitalist Sorcery*, he remarks on the authors' fixation with the slogan, scrawled in graffiti on brick walls and chanted in the street, echoed around the world from the prominent World Trade Organization protests in Seattle in 1999, just a few years before their writing: "another world is possible."

> Their suggestion is that in the cry 'another world is possible', we need to take the opening which that possibility presents very seriously. *For another world to be possible, really possible, the reality of that possibility effectively implies that we don't know quite how to respond, how to continue, how to inherit* (x; emphasis added).

To inherit new possibility, to take it up and take it seriously, to describe it, even, requires dwelling within an opening that is undetermined. There is risk in the work to be an heir to such a moment or event—of possibility—"against the inexorable allure of the process that has set in," Pignarre and Stengers suggest (2011:4). How can one write or think about something that is uncertainly emergent, perhaps positive or negative, good or bad, just or perpetuating old injustices? Part of the difficulty in answering the question "what is possibility?" as encountered in the field is certainly the uncertainty inherent in the concept itself. But this thorniness is also due to the open nature of the set of actions, new ways of relating, being or thinking that are borne of the creation of new possibility.

If by a simple definition, possibility is the state of being possible, and the possible is something that may or can be, exist, happen or be done, possibility is not purely positive, the potential for results of some action deemed good. Nor is it the striving for, or belief in, a future outcome that will be better—hope. If you're someone who writes or thinks about or researches

climate change for any period of time, especially in North America, you're bound to get the same one question, from friends, family, strangers and colleagues, over and over: *what gives you hope?* Many people have written about, or at least mention, this question we all seem to get (see e.g. Ayanna Elizabeth Johnson on Jane Goodall's podcast [Goodall and Johnson 2021]). But hope is not possibility.[10]

At the end of a World Climate role-play session I observed at MIT, CI advisor John Sterman, cited an old saying: *optimists say 'this is the best possible world.' Pessimists say, 'yes, it is.'* He refuses both of those outlooks. So does CI's conception of possibility. Possibility is not forward-looking optimism or even something as imbued with positivity as "hope." There's also "possibility" as a limit to how we have been able to address climate change. If politics is "the art of the possible," climate change presents a fundamental challenge to the possibility of doing politics in the present. It has presented a challenge to what has been politically and socially possible or successful in the past. It fundamentally challenges the dominant ways we've come to understand how our relationships with each other, with nonhumans, the rest of the planet. The challenge is therefore to understand Climate Interactive's (production of) new possibilities for thinking and acting on climate change, where the thing to be acted up on is the global climate, and the actors are individuals-in-relation-with-others embedded in huge, dynamic global climate-political systems. Can possibility reconcile these seemingly different scales of action and problematization?

Let us go further, then, in an attempt to understand possibility, to define it, perhaps, not only in the negative. In order to better understand the possibility that opens the space for something other than the present situation, I will briefly turn to three theoretical engagements. First, in order to better understand how and in what ways the manner through which Climate Interactive creates new possibility is an ethical system, a manner to think, act and be differently with others, I will turn to Michel Foucault's late turn to ethics and his conception of critique. Next, in order to understand the political drive of Climate Interactive's commitment to possibility, I turn to several thinkers that might find themselves striving in common by the

[10] Hope has its own academic corner already carved out. For example, Ghassan Hage's 2003 monograph, *Against Paranoid Nationalism. Searching for Hope in a Shrinking Society* (Hage 2003), with its focus on the movement and uneven distribution of a social kind of hope, has been an inspiration for many—including a 2016 special edition of Anthropology and History, edited by Nauja Kleist and Stef Jansen. As Hage notes in his concluding discussion of the special edition, "It has even become in Japan a quasi-academic field: hope studies" (Hage 2016: 465; cf. Miyazaki 2004).

glossing of the term "prefigurative politics." Finally, in order to connect Foucauldian ethics and commitments to critique to the political theory and the anthropological stakes of climate change, I look to the nonteleological anthropology-qua-empirical philosophy of Tobias Rees' *After Ethnos* (2018). I begin with Foucault's ethics.

Foucauldian Ethics

The knowledge and practices I have described in Part I, such that they contain a certain degree of internal systematicity, time-and-place specific as they are, can be described as an ethics. I turn to Foucault's relational notion of power and his late turn to ethics-as-the-care-of-the-self in order to understand how Climate Interactive's work to "create new possibility" is a relational, ethical and political practice, involving the practices and aims laid out in Part I of this chapter. These techniques and objectives in all their "cultivation"—of learning, of desirable visions of success and of lives of taking action on climate change—create the conditions of possibility for ways of relating, being and doing that allow their participants to problematize and push beyond the limits of the current politico-climate system.

In his 1983 essay, "What is Enlightenment" (Foucault 1984a), Michel Foucault discusses a notion of critique that offers not only an investigation into "the events that have led us to constitute ourselves and to recognize ourselves as subjects of what we are doing, thinking and saying," but also lays out "the possibility of no longer being, doing, or thinking what we are, do, or think" (315-316). As a historian and philosopher, Foucault was interested in how people have been constituted as kinds of subjects by various discourses, claims to truth, and power relations in the West, from roughly the sixteenth century to the present. In his late turn to Ancient Greco-Roman ethics, techniques of the self and the care of the self in relations with others, he was able to articulate interest in a subject acting in an open-ended, non-programmatic space of *resistance* to the conditioning forces of dominant power relations. Since how people are constituted as subjects is not a given, it is possible to change our current ways of being. In "What is Enlightenment?" Foucault provides some useful articulations of an ethos for conducting one's (life) work, a form of practical critique, that acts "*dans la forme du franchissement possible* [in the form of a possible transgression or overcoming]" of the limits that are given to us as "universal, necessary, obligatory" but that are actually "singular, contingent and due to arbitrary

constraints."[11] Below, I briefly follow Foucault for three steps to arrive at an understanding of how practices to form a political subject of ethics can lead to a relational form of political resistance to the imposed limits, such as those of the current politico-climate system.

Context There are myriad ways to think about the trajectory of Michel Foucault's late work, and the eight intermediary years between the publication of the first volume of *The History of Sexuality* in 1976 and third and fourth volumes in 1984, shortly before his death. It will be important here to very briefly understand it within the lexicon of his previous work. Foucault himself introduced several explanations, articulated in interviews and lectures from those intervening years. In a seminar given at the University of Vermont a few months after his 1982 lectures at the Collège de France, he was unusually forthright. "My objective for more than twenty-five years has been to sketch out a history of the different ways in our culture that humans develop knowledge about themselves: economics, biology, psychiatry, medicine, and penology" (Foucault 1997d: 224). What is more, he continues, the point has not been to take them as self-evident, but to analyze these systems of knowledge "as very specific 'truth games,'" or systems of procedures that allow for claims to the truth, "related to specific techniques that human beings use to understand themselves" (Ibid.). There are four kinds of these techniques, he continues: technologies of production; technologies of sign systems; technologies of power; technologies of the self (Foucault 1997d: 225).[12] Techniques or technologies, for Foucault, involve practices with specific aims. While technologies of power condition individuals, determining their conduct and submitting them to certain forms of domination, it is through technologies of the self that individuals condition themselves.

The Subject of Foucauldian Ethics The subject of technologies of the self appears different than the negative depiction of the subject of knowledge or of domination that sometimes characterizes Foucault's work on the mental health, penal and biological systems for several reasons. Rather than a passive subject whose conduct and modes of existence, ways of life, are primarily determined by techniques of domination, knowledge or discourse, the subject

[11] My translation. The amended translation by Catherine Porter in the Paul Rabinow edited *Foucault: Ethics, Subjectivity and Truth* (Foucault 1997), while noting the original French word, translates "*franchissement possible*" as "possible crossing-over," which, in this author's opinion does not do justice to the figurative definition of the French verb *franchir* [to overcome] nor to Foucault's discussion of exceeding limits that are imposed upon us as given, universal, necessary.

[12] In an April 1983 working session in English (Foucault 1984b: 318), he calls these not techniques, but relations: "relations of control over things, relations of action upon others, relations with oneself."

of technologies of the self is relatively autonomous and not reducible to techniques of domination or knowledge. With technologies of the self, the truth games on which Foucault begins to focus from the eighties involve "a practice of self-formation of the subject" (Foucault 1997e: 282), a conception of the subject beyond the effect of domination-power. One set of interviewers in January 1984 characterized this subject as a "politically active subject," which Foucault opposes to a subject "considered the consequence of a system of coercion" (Foucault 1997e: 291). Note that he also suggests that this "active" subject constitutes itself through practices that are conditioned: invented, suggested and imposed upon it by the subject's "culture," "society" and "social group" (Ibid.).

This notion of the subject is made available by Foucault's concept of governmentality. At the seam where technologies of domination, production and the self encounter one another lies the domain of governmentality, a term that emerged from Foucault's work in the late 1970s, which, arguably, allowed Foucault to engage with a conception of critique, and of the subject as politically active and resistant. Governmentality refers to the ensemble of institutions and tactics that came about in the sixteenth- to seventeenth-centuries, which target a population in order to practice a particular form of power based on the knowledge of political economy (Foucault 2006). This power is dispersed among a population such that individuals are taught to conduct themselves in a manner that renders them governable. Conceived as such, power relations "impact how we know ourselves as subjects through these systems of meaning and control" (Spade 2015: 6). [13]

Yet, as opposed to the "juridical" oppressive conception of power often taken up by twentieth century political anthropologists and philosophers, "there is no escaping" power relations as Foucault understood them.[14] The idea, then, that subjects are made to govern themselves through a process of historical power relations Foucault calls governmentality, provides an escape, and the possibility of agency within systems of power relations. "I believe that the concept of governmentality makes it possible to bring out the freedom of the subject and its relationship to others—which constitutes the very stuff *[matière]* of ethics" (Foucault 1997e: 300). With this understanding of power relations and governmentality, the question of critique

[13] Spade continues, elaborating that this includes "the ways we understand our own bodies, the things we believe about ourselves and our relationships with other people and with institutions, and the ways we imagine change and transformation" (2015: 6).

[14] "One is always 'inside' power, there is no 'escaping' it" (Foucault 2012: 95).

and resistance is not "how not to be governed?" but "how not to be governed *like that*?" (Foucault 2007 [1978]: 44).

With the "politically active subject" of techniques of the self, Foucault's interests veer toward late Antiquity and early Christianity, specifically Ancient Greek and Roman writing on *epimeleia heautou,* the care of the self, and therefore ethics, as inspiration for possibilities in the present. The care of the self is called by a few names in the Foucault of the early eighties but can be understood in general terms as a *rapport à soi*, or relationship to the self. In a 1983 session in English, Foucault explained it as such: "the kind of relationship you ought to have with yourself, *rapport à soi*, which I call ethics, and which determines how the individual is supposed to constitute himself [*sic*] as a moral subject of his [*sic*] actions" (Foucault 1984b: 352).[15] Importantly, Foucault's ethics-as-the-relationship-to-the-self involved relations with others. [16] In Foucault's understanding, "[t]he Hellenistic and Roman care of the self is not an exercise of solitude" (Gros 2005: 536). In *The Hermeneutics of the Subject* lectures Foucault makes it clear that "not being able to take care of oneself without the help of someone else was a generally accepted principle" (Foucault 2005: 496).[17] He concludes that at this time "the relation to the self is always seen as having to rely on the relationship with a master, a guide, or anyway someone else" (Foucault 2005: 496), developed through written correspondence among other means.

Resistance, Wiggle Room, Possibility The collaborative care of the self conducted by a politically active subject was an important part of late Foucault's explicit turn to political resistance through ethics and aesthetics (the latter of which is largely outside the scope of this chapter). Essential to understanding Climate Interactive's concept of possibility, the "active subject," conditioned by both technologies of domination and technologies of the self, open up

[15] For a fuller accounting of the four elements of the Ancient Greek and Roman relationship to the self according to Foucault, see the introduction to *L'usage des plaisirs*, the second volume of *The History of Sexuality* (Foucault 1997a).

[16] The common individualistic misinterpretation of Foucault's ethics and power appears as one reason why so many (e.g. Davidson 1995; Rabinow 1997; Gros 2005) of Foucault's editors feel the need to insist that Foucault, indeed, did not conjecture that the care of the self was a process bereft of relations with others.

[17] According to Foucault, in time of Plato's *Alcibiades I* dialogue, around 400 BCE, the care of the self was mostly a preparation for political life, the methodology in the form of dialectic with a mentor through organized institutional frameworks. For Socrates, this was the practice of a young man. However, by the Hellenistic period shortly after *Alcibiades* and continuing through the emergence of the Roman Empire, "[t]aking care of oneself became linked to constant writing activity" (1997d: 232). By the first and second centuries the concern for the self (involving essential relations with others) was no longer exclusively in service to a future political life; it was universalized.

analyses of institutions of power to focus on the possibility—as Foucault had always insisted existed among the snaking tendrils of power relations—of resistance and freedom.[18]

For Foucault, resistance is always inherently possible in power relations, save for the most extreme circumstances. The care of the self can become a resistance that can be deemed political when the subject resists domination though the transformation of the self. In the exercise of the self on the self, there is an implicit act of resistance to the forces that inescapably, and at the same time, constitute the subject as an effect of techniques of domination. In his 1982 Collège de France lectures, Foucault put it clearly: "there is not a first or final point of resistance to political power other than in the relationship one has to oneself" (Foucault 2005: 251). On the other hand, "I do not believe," Foucault later says in 1984, "that the only possible point of resistance to political power—understood, of course, as a state of domination—lies in the relationship of the self to the self" (Foucault 1997e: 299-300). To deliberately engage in what Foucault calls techniques of the self is to play with *the slippage between conditioned self-constitution and forces of power*—and therefore to resist the type of relational domination through normalization that Foucault spent his career writing against, whether it was in psychiatry, biology, state government or penology. In the wiggle room of (political) resistance in the relationship to the self is the possibility to think and act differently with others. Out of new relations are born new ways of being and new forms of critique.

This kind of self-discipline is oppositional in nature, picking at the cracks where techniques of the self and techniques of power meet. In order to "maintain the self in the space of open possibilities" (Nica 2015: 53), beyond the closed-down realm of techniques of power, the subject needs to transform itself—through a creative, expressive, form-giving "art of living" or "aesthetics of existence" (e.g. Foucault 1984b). As opposed to, for example, Louis Althusser's nearly fifteen-years-prior theory of the subject-making practices of interpellation (the classic "Hey you!") in a context of Ideological State Apparatuses and the class-based struggle to overthrow dominant ideologies (Althusser 2006 [1971]), Foucauldian resistance acts at what one could consider the microlevel of the self and its relations—ethics.[19] Further, unlike Althusser,

[18] A full exegesis of the late Foucault's relational (i.e. nontranscendental) conception of freedom is outside of the scope of this chapter, but for more see the January 1984 interview published under the name, "The Ethics of the Concern of the Self as a Practice of Freedom" (Foucault 1997e).

[19] Foucauldian power relations are never monolithic or hopelessly inescapable, but operate in the micro-level practices that have as their condition a certain amount of freedom: "power relations are possible only insofar as the subjects are free" (Foucault 1997e: 292).

although the relationship of the self to the self can be political in the resistance to domination through techniques of the self, this is not a Politics of parties, platforms or programs. In an April 1983 interview Foucault noted, "the questions I am trying to ask are not determined by a preestablished political outlook and do not tend toward the realization of some definite political project" (1984b: 375). In other words, rather than the upper-case-P "Politics" of formal political agendas, policies, parties or the state, this is an ethics that is political on an axis that is not determined by a pre-existing Political platform prior to the engagement of relations. It is oppositional to the status quo, but it does not approach its object of politics with a preestablished Political framework, e.g. in the context of climate change, the Green New Deal, "green growth" or "ecosocialism."

To sum up, in the 1980s, Michel Foucault focused his work more straightforwardly than ever before on techniques of the self, the means through which an "active" subject constitutes itself in relations with others. In the space between the oppressive subjectivizing of the subject and the patterned self-constitution of relatively autonomous subject (not reducible to domination-power) lies governmentality: a form of power relations that is dispersed among a population in such a way that individuals are taught to conduct themselves in a manner that makes them governable. From the late seventies, this is a concept that Foucault, in turn, is able to complicate further through his study of the care of the self, allowing him to bring out "the freedom of the subject and its relationship to others" (Foucault 1997e: 300). This, then, opens up possibilities for transgressing or overcoming power relations that subjectivize in oppressive or undesirable ways, for transgressing the limits of what we currently are, do or think. He set about this work through an exploration of the Greco-Roman practice of the care of the self, taking the latter, of course, as inspiration for possibilities in the present in ways beyond a prescriptive template.

The Care of the Self and the Production of Possibility

If we are to now understand the practices and objectives described in Part I as techniques of the self-in-relation-with-others and goals for relating differently, of being governed differently, we can understand how Foucauldian ethics helps us make sense of Climate Interactive's creation of new possibility and why all this political philosophy matters. In exploring how Foucauldian ethics helps us to understand Climate Interactive's creation of new possibility, I am less interested in strictly defining CI's ethical system as a Foucauldian ethics, as

he defined by the four major elements of the classical relationship to the self laid out in the introduction to *L'usage des plaisirs*—though certainly, I could.[20] Instead, I am interested in how the politically active subject of Foucauldian ethics, acting in resistance to political power through the relationship of the self to the self, can help us define both the work of Climate Interactive's "creating new possibility" and the possibility, itself, that is opened up in that work. My understanding of Climate Interactive's work to create new possibility through Foucauldian resistance-through-relations shares certain affinities with not only some anthropologists interested in the possible already at work in the world, but also academic-adjacent political theorists and activists. Their perspectives on their visions of the possible can help us bring together Foucauldian ethics and Climate Interactive's ethical system.

Movement It is useful here to consider the critical opening or space created by Climate Interactive's ethical work between oppressive power relations and forging new relations of the self in terms of movement. Like Foucauldian ethical resistance, the new possibility created by CI's work is a form of critical resistance that is open, not pre-determined, transformative without being programmatic. CI does not advocate—they are actively against advocating—for particular political programs, such as the Green New Deal, "green growth" or "ecosocialism," to use the above diverse examples. By acting as facilitators in an emergent, relatively always-new process of forging relations, CI's ethical system does not seek to create a new climate movement or particular kind of Political climate actor. Facilitator training materials are adamant in their

[20] This classical relationship to the self has four major elements, which are laid out in the introduction to *L'usage des plaisirs*, the second volume of *The History of Sexuality* (Foucault 1997a). First is *la substance éthique*, or ethical substance, through which "the individual must constitute such and such part of itself as the principal material of its moral conduct" (Foucault 1997a: 49-50 [my translations]). In other words, the ethical substance is "the material that's going to be worked over by ethics" (Foucault 1984b: 352). In the case of CI, the ethical substance is the self's relation to a changing global climate. Next, *le mode d'assujettissement* is the mode of subjectivation, or the way in which people are enrolled "to recognize their moral obligations" (Ibid.). For CI, the mode of subjectivation is the mode of their interactive learning experiences, and more specifically the facilitator practices. The third aspect of the relationship to the self is *l'élaboration du travail éthique* or ethical work that we practice on ourselves "in order to become ethical subjects" (Foucault 1997a: 51; 1984b: 354). The ethical work of CI can be understood as the learning and the visioning that are the goals of CI's facilitators and which lead to people form new relations and ideally, a life of taking action on climate change. Lastly, *la téléologie* or telos of the relationship to the self is the process by which one becomes "the kind of being to which we aspire when we behave in a moral way" (Foucault 1984b: 355). The *telos* for CI is the formation of subjects that learn, envision new possibilities and enact them in their lives—a subject that "cultivates a life of taking action."

suggestion that facilitators' goals are to take a back seat to participants' goals. Rather, CI seeks to inspire people to create new solutions, take new actions or forge new relations to act on climate in their own way, in their own lives and communities. "Share with the world your sense of possibility!" Drew insisted during the advanced facilitation webinar class, while helping "people sit with the tension between their vision and their current reality." Part of understanding possibility necessitates understanding that it is a critical intervention based on a certain degree of open-endedness; movement, not fixed political or Political programs.

Activist intellectuals Montgomery and bergman offer a helpful academe-adjacent articulation of this kind of open-ended critique, at home with the kind of uncertainty that characterizes possibility and the climate crisis alike. As theorists and activists invested in the project of anarchism as an open-ended process, they ask, "How are we to affirm and explore spaces where something transformative is taking place without holding them up as ideals to imitate or telling others to be a certain way?" they ask (Montgomery and bergman 2017: 28). In their writing and activism, they seek out instances of the transformative already at work in the world, but not to hold them up as ideal or grounding concepts: "Not a new direction for movements but the process of movement itself" (Montgomery and bergman 2017: 28). Activist and historian Rebecca Solnit, too, writes of the political potential of uncertainty and open-ended questions to connect the unexpected changes away from oppressive power relations in the near past with the possibility of changes for the better in the future: "Perhaps we should not talk about a movement, or movements, but about movement: to apprehend these wild changes is as though to see many, many groups of people get up and move around from the position they sat in for so long" (Solnit 2018: 91-92).[21]

Similarly, though perhaps surprisingly so, in his critique and research anthropologist and interdisciplinary scholar Tobias Rees argues for an empirical, field-based analytic of nonteleological movement in order to understand real-time conceptual mutation and emergent phenomena already at work in the world, the particular quality of which remains undetermined and singular. He seeks out "non-teleological movement that reigns when an established form of knowing—of organizing—is undermined while no new one has yet emerged that would give it

[21] Solnit's metaphor recalls an interview with Foucault from 1981. "Critique," he argued, consists of "showing that things are not as obvious as we believe, making sure that what we take for granted is no longer taken for granted. To critique is to take movements that were once too easy and make them difficult" (Foucault 1981 [translation by this author]).

direction (a telos)" (Rees 2018: 44). For Rees' *After Ethnos*, the stakes of "an analysis of movement / in terms of movement" are based in the commitment to an anthropological practice that seeks to cease reproducing the 19th-century European concepts on which the so-called social sciences are based (such as culture, society, the human/Man). Rather it seeks to describe the scenes one is exposed to in one's field-based research in the terms of those scenes only. This is not a facile task, though it can be an ethical one itself, poetic, joyful and free(ing) (cf. Rees 2018: 110-112). While the aims of this chapter are perhaps less ambitious, and certainly rely on Foucauldian conceptions of relations and ethics from outside of the direct discourse of the field site scenes, to speak of remaking ordering concepts, visions of the world and, ultimately, relations is not at all outside the purview of Climate Interactive's inspired ethical system of climate system-dynamics education.

All of these thinkers, Montgomery and bergman, Solnit and Rees, put forth a vision of power relations, critique, resistance and change that can be understood in the wake of Foucault. For each of them, in order to strive for the cultivation of new possibility, whether in open-ended, question-based political or anthropological projects, one needs to do so in the spirit of uncertainty and movement. For all, the work of critique creates movement or space for new possibility, enacted via a sort of becoming, relational to the real-world encounter. As Pignarre and Stengers put it, "The nuptials of becoming and of critique: knowing that one doesn't critique in the name of whatever it may be, but in the very movement by which one becomes capable of thinking and feeling differently" (2011: 50). To create and strive for movement, in this sense, is an essential step in creating (and helping us to understand) the possibility Climate Interactive, and others, activists and anthropologists alike, aim to create—create, and cultivate.

The movement that Climate Interactive creates with its models and games is a movement of relations—of the self to the self in necessary relations with others, where those others include, are also embedded in, the dynamic politico-climatic system. Through engaging learning experiences, CI's work allows people to form immediate relations between their lives, the global climate and future ways of being in the world. In teaching people what it will take to meet international climate goals, in helping people envision livable and desirable climate-safe futures, and in cultivating lives devoted to taking action on climate change in participants' communities, Climate Interactive is facilitating, cultivating new techniques of the self. In teaching people to envision the world, their place in it and their relations differently, Climate Interactive is

facilitating new *rapports à soi*, new ethics. If Foucault's resistance through techniques of the self can be articulated as an "art of living" or "aesthetics of existence"—where resistance is partly aesthetic, an exercise of the self on the self in relation with others such that it involves one's whole way of being, making life into an aesthetic oeuvre of sorts—CI Climate and Energy Lead, Ellie Johnston's goal of "cultivating a life of taking action" among World Climate users focuses less on aesthetics and more on political action.[22]

Already at work in the world For all three groups of authors and for Climate Interactive, their open-ended possibility is based firmly in the empirical, observation and action in/of the world. Creating new possibility is about, in one way or another, tapping into a potential already at work in the world. This requires cultivating imaginative labor. Climate Interactive's goal is not only to inspire political action on climate change but also to inspire new imaginaries for healthy future worlds, connecting vision to the current reality. "Not only *can* things be otherwise;" write Montgomery and bergman, "they already *are*, and it is a matter of tuning, tending, activating, connecting, and defending these processes of change that are already in the making. People are always enacting alternatives to the dominant order of things, however small" (2017: 27). Solnit makes a similar claim in her call for proactive building on the possibilities already at work in the world: "Activists often speak as though the solutions we need have not yet been launched to invented, as though we are starting from scratch, when often the real goal is to amplify the power and reach of existing alternatives. What we dream of is already present in the world" (Solnit 2018: xvii). Similarly, Rees' anthropology after ethnos and its attendant concepts is, firmly, empirically grounded. His anthropology-quo-empirical-philosophy attempts to capture, in movement, emergent possibility out in the world, starting with the idea "that elsewhere it could be different, that other ways of thinking and being in the world exist, that there is no intrinsic necessity to our forms of living" (Rees 2010: 898).[23]

All of these practitioners of the possible work with the contention that possibilities, alternative to how it is right here, right now, where we stand, are already at work in the world.

[22] In fact, anthropologist Naisargi Dave argues that Foucault's ethical exercises of problematization, invention and creative relational practices are what constitute activism (Dave 2012: 8).

[23] This, among other things, is a very anthropological commitment to the world. The assertion that things *could* be different relies on the incredible but simple fact that things have been different in the past, are different now in some places on Earth and therefore can be different in the future. That alternatives are "already at work in the world" speaks to a humility in the face of known and unknown diversity, past and present.

Climate Interactive, too, works with this contention; hence their encouragement of participants' cultivating a life of taking action in their own ways. The assumption is that in their communities, situated in their life experiences, there are already alternative possibilities at work, if only they are actualized. For Climate Interactive, possibility, born in the new movement opened up by their ethical system, is created when participants take the new knowledge and vision of the future to their lives and the forms of living, forms of political action, of relating already at work in the world. And while the creation of possibility exists within certain limits for Climate Interactive, such as the international political and climate negotiation system, or the system dynamics of climate science, CI's ethical system seeks to resist other limits, other power relations and ways of relating within the dominant political and economic system so reliant on fossil-fuel energy. These are systems in crisis, breaking down as they drive impacts that are causing havoc on human and ecological systems. In the words of Montgomery and bergman, "there are cracks everywhere" (2017: 25).[24]

Climate Interactive's ethical system, described in Part I of this chapter, creates new possibility by cultivating a space for participants to enact new relations in the slippage or wiggle room between oppressive power relations and the care of the self. As participants learn about the dynamics of the global climate and international climate political systems, they learn to tease apart, problematize, and re-form their understandings of their place in the world, their relationships with themselves, their communities and the global climate system. This can take many forms: as they learn during a game that, for example, once "developed" countries cut emissions, "developing" countries will have to make significant cuts, too, to limit global temperature increase, or; when a facilitator uses one of CI's models to guide participants' understanding of how tree planting will be a part of climate change solutions, but keeping coal in the ground will make a monumentally larger difference, and how this difference translates to improving equity issues like poor health for already vulnerable communities located close to fossil fuel development, or; when they understand that it will likely take many solutions, rather

[24] Important to note, though, is the kind of climate change actors with whom I work. If I were to study grassroots climate action organizations, perhaps the wiggle room of resistance, in the cracks of bergman and Montgomery's Empire, Solnit's spaciousness of uncertainty in which there is room to act would look like the anarchist direct action and living, mutual aid in the midst of disaster of bergman and Montogmery, Solnit and Spade. But instead, I work with mesolevel experts and the slippage between conditioned self-constitution and forces of power in which they act is specific to the space in which they work on climate—one of system dynamics, modelling and role-play simulations.

than one quick fix, "silver buckshot, not a silver bullet," as Drew lives to say. In each instance, Climate Interactive's ethical system of teaching, learning, envisioning and enacting shows participants the way the world is, and the way it could be otherwise. This work creates a space of movement, an opening, between techniques of power and techniques of the self, where participants can themselves create new possibility, envisioning and enacting new relations with themselves and their communities. As Solnit puts it, "in the spaciousness of uncertainty is room to act" (2018: xiv). While Climate Interactive doesn't tell participants how to act, they expand the spaciousness of the opening, allowing people to spend some time in the imaginative space it creates.

This ethic recruits people into new relations with themselves, their communities, the global climate and the political system governing it. In doing so, it facilitates a type of subject-formation that pushes to transgress the limits of what we are, do and think, limits presented to us by current politico-climatic system. Crucially, it does so in a way that remains open to diverse possibilities, with the goal of helping people explore and enact possible futures, the seeds of which are already growing out in the world. In other words, through dynamic systems thinking and simulation-based interactive learning experiences, they promote an understanding of the limits of the climate system while pushing against, and imagining worlds beyond, the limits of the current fossil-fuel based, climate change-causing political and economic system. By teaching people about the politico-climate system, they are teaching people to see the world anew, relating in new ways to themselves and their communities, in resistance to the status quo tending toward global climate disaster. This creates an opening, an indication of an otherwise, "indicating a possible world beyond or otherwise," as Elizabeth Povinelli once described Foucault's philosophical-historical investigations (2016: 15). Possibility is created in the wiggle room, the slippage, the resistance to status quo-fossil-fuel-power relations and their imaginaries. That possibility consists of a cultivating a desirable vision of success within the parameters of the climate system, whatever that may mean for particular people, and connecting that imaginative labor to the skills, knowledges and relations of people's own lives.

Chapter Conclusion. *To Bear the Lightning of Possible Storms*

In the spring of 1980, France's leading *Le Monde* newspaper printed an interview with one of the country's leading intellectuals, with a curious twist: the philosopher decided to remain

anonymous. Only after his death in 1984 was it revealed that the anonymous intellectual was Michel Foucault. Entitled "The Masked Philosopher," the short interview consists of Foucault sometimes-cheekily answering questions about curiosity and philosophy, the role of public intellectuals and critique, the vicissitudes of attempts to hold the public's attention. He speaks against a kind of academic critique that hands down judgements and in favor of a creative form of critical intervention that traffics in "scintillating leaps of the imagination" (Foucault 1997: 323). Rather than based in lack, it is a critique that would function on an abundance of generative curiosities. "It would bear the lightning of possible storms," he proclaims (323).

As the lightning—and rain and flooding and subsequent disasters—of very real, climate super-charged storms increasingly bear down on people's homes and lives in this third decade of the 21st century, Foucault's proclamation takes on a different valiance. Climate Interactive's work aims to slow climate change, to make the world more inhabitable, lessening the occurrence of extreme weather events, very real storms with very real impacts, like Hurricane Maria, the storm that Drew left a climate action summit to deal with back home in September of 2018. CI's ethical system of teaching and learning via simulation-based learning experiences also aims to create new possibilities. Like a lightning rod, meant to not only bear but direct the moment when ambient forces condense, Climate Interactive creates experiences that open a space for resistance, for tapping into what is already at work in the world. It is an ethical resistance that functions as a practical critique in relation with others, enacted through pushing against the inherited limits of the current systems— "*dans la forme du franchissement possible* [in the form of a possible transgression or overcoming]," as Foucault put it in *What is Enlightenment*; possible transgressions of inherited limits. To bear the lightning of possible storms in this context is to carry forth flashes of insight and imagination and possibility through the messiness of the sometimes chaotic, sometimes frightening tempest of future uncertainties.

In its currency in uncertainty, possibility is aspirational, probabilistic, already at work in the world. Yet as opposed to hope as it is usually construed, possibility holds within it, too, the potential of destruction. The fact that another world is possible, that making a difference on climate change is not impossible, but that every bit of warming—or warming prevented—matters greatly, does not preclude the possibility for much destruction. There are many forces working against these more positive possibilities, capitalistic, system dynamical or otherwise. Uncertainty reigns.

Part of this uncertainty demands a certain amount of faith from possibility's practitioners. To work on oneself and one's communities so as to remain open to possibility, in spite of its lack of guarantee of a positive future outcome, is to move forward, through the uncertainties of our times and those to come, acknowledging the massive injustice and suffering of our times, nonetheless sure that another world can be, exist, happen, the seeds of which have already sprouted in the cracks of the dominant order of things. "Holding on to the vison reveals the path," says Climate Interactive's mentor Dana Meadows in her keynote at a sustainability conference in Costa Rica in 1994 (Meadows 1994). More than simple optimism, this openness and acceptance-of-uncertainty is about having the humility and knowledge to accept that the future may not look anything like the dominant systems in which the problems of our time were wrought. It is the humility to accept "that we don't know quite how to respond, how to continue, how to inherit" (Pignarre and Stengers 2011: x), something that makes defining possibility itself quite difficult.

Yet this is what I tried to do in this chapter. In Part I, I described Climate Interactive's ethical system of teaching and learning, via ethnographic interviews, textual analysis and participant observation at in-person and online simulations, webinars and facilitation trainings. Based in the history of system dynamics education described in Chapter 2, this system aims to create possibility in three ways: 1) they help people learn for themselves what it will take for the world to reduce carbon emissions and reach climate goals; 2) they create the conditions for people to envision a desirable futures from their own perspective, background and situated positionality, and; 3) they cultivate the motivation and capacity for their participants to enact their positive visions of success on climate change in their everyday lives. These three ways through which Climate Interactive attempts to create new possibility make up an epistemological-ethical system that forges relations between individual participants lives, their communities, the global climate and their own capacities.

In Part II, I attempted to answer the questions of what this possibility is, exactly, and how it therefore intervenes in the world. I turned to how others have thought of possibility and political resistance through ethics. I began with a brief exegesis of Michel Foucault's late turn to ethics and the care of the self, in order to examine his understanding of political resistance enacted through the relations of the self to the self necessarily with others, in the movement where relations and techniques of oppressive power and of the self meet. Movement was key

here. In Climate Interactive's emphasis on facilitation as opposed to prescription, I found resonance not only with Foucauldian political resistance but with Montgomery and bergman, Rees and Solnit's understandings of open-ended critique and noncoercive political movement. They are interested in a way of relating with others and the dominant order of things in a way that is amenable to openness, to "wild possibility," to non-prescriptive politics that is relational and transformative.

One of Rebecca Solnit's challenges for herself and her readers when writing of the difficulties facing the world, including climate change, was to "recognize a world that will remain wilder than our imaginations" (2018: 2). If possibility is to reconcile seemingly different scales of action and problematization, to bring together the vast scales of the dynamic global climate system and meaningful scales of action for the care of the self in community, it must do so, as Climate Interactive insists, open to participants' own goals and capacities. Likewise, as first indicated in the Introduction, if we as anthropologists are to justly attend to a bleeding edge of possibility already at work in the world, I believe we must remain open to forms of being-in-relation-with-others that look radically different than the organizing principles that helped give rise to the climate crisis. At a moment when imagination is essential for doing (climate) politics, we must attend the crises at hand "with an imagination adequate to the possibilities and the strangeness and the dangers on this earth in this moment" (Solnit 2018: 5).

Chapter 4 "To hold a mirror up to the Canadian climate movement:" Climate Action Network-Réseau action climat Canada's ClimaCon 2018

Early Saturday morning, October 6, 2018, push notifications lit up phones across the eastern half of North America just as the rising sun hit the weekend coast. Messages were coming in from a time zone half a world and more than half a day away–from Incheon, South Korea. The 48th session of the Intergovernmental Panel on Climate Change (IPCC) had just come to a close. North American climate civil society organizations—never a cohort accused of respecting normal business hours—were writing home in exhausted celebration. The victory being celebrated? The approval of the IPCC's Special Report on the impacts of 1.5°C (or 2.7°F) of global warming.

They were not celebrating the results of the research, per se. The report outlined new and disturbing revelations for the very future of humankind: if we keep on the current trajectory, we will reach a global temperature increase of 1.5°C much sooner than anticipated, sometime between 2030 and 2052. This 1.5°C warming, the report warned, is more dangerous than we ever knew. An Earth of 1.5°C above pre-industrial levels is an Earth of intensified droughts, wildfires and food shortages, inundated coastlines, increased poverty and a likely loss of 70-90% of tropical coral reefs. At 2°C, we would very likely lose 99% of coral reefs (Masson-Delmotte et al. 2018). The situation is more dire than we ever thought, the report read; we have to get our act together immediately.

So what was *good* about this news, worthy of writing home about so early on a Saturday morning? In fact, the victory for civil society groups was their successful effort to meaningfully include a powerful and honest description of the impacts of 1.5°C in the report (specifically in its Summary for Policymakers [Masson-Delmotte et al. 2018]). Hard-won was the inclusion of the very real human and non-human suffering, ecosystem devastation and biodiversity loss due by around 2040 if we as a species continue living together as we currently do.

And, importantly, the report laid out the scope of efforts needed in order to halt warming below the 1.5° threshold: nothing short of an overhaul of our economic, social and cultural institutions.

Heading that delegation of observer civil society organizations sending daybreak dispatches from the end of the IPCC meeting in Incheon was Climate Action Network-Réseau action climat Canada (CAN-Rac)'s Executive Director, Catherine Abreu (Climate Action Network-Réseau action climat Canada 2018). In her role at CAN-Rac, Abreu was described to me as, among other things, "a wizard at taking research and evidence and translating it into good policy." Acting as a convener and coordinator of disparate groups and interests, Abreu and CAN-Rac played the important role in Incheon of bringing diverse voices to the table and civil society to scientists, who would then write the Summary for Policymakers.

This chapter brings to the fore the work of Climate Action Network-Réseau action climate (colloquially called CAN-Rac or CAN Canada), the second of two organizations in the network that served as locus points for studying the network concerning this dissertation project. If Climate Interactive makes climate science politically actionable for its participants, then CAN-Rac does the work of making climate action scientifically accurate, through shaping policies, grassroots organizing and climate-impact solutions alike. To use Knox's articulation of different climate change actors' relationship to science, in CAN-Rac's work, just as Climate Interactive's work, "the contours of climate change" are informed by climate science; however these contours are "not structured by scientific data in the same way" as that of Climate Interactive (Knox 2020: 224-225).

In other words, the network of organizations who operate between climate change science and climate change politics exist along a continuum: some organizations more than others work more closely with the data, modelling and dynamics of climate science; others perform their work closer to the advocacy, policy work and activist organizing of climate politics. If Climate Interactive, of the previous two chapters, in its role as data analysts/technology developers and communicators/educators, is located relatively close to the science, then CAN-Rac is situated closer to the political action end of the continuum. As I will lay out below, their role as conveners and policy analysts situates CAN-Rac in the unique position of simultaneously supporting and convening the activist work of its member organizations, as well as acting as a key civil society player in the realm of domestic and international climate politics (though the latter will not be a focus of this dissertation, cf. note 5, this chapter).

This chapter homes in on this work of CAN-Rac. In doing so, it also pivots form focusing on the roles of data analysts, technology developers and climate educators to centering the roles of policy analysts and conveners. The first part of the chapter describes the work of CAN-Rac on national and international policy stages and as a convener: of activist organizations from the local to the national, of faith-based, humanitarian and physicians groups, of First Nations assemblies, unions and more**.** The second half of the chapter tells the story of the remote organization and in-person implementation of the ClimaCon 2018 conference. This conference helped to reveal where CAN-Rac lies on the continuum of networked organizations and the extent to which the organization and conference functioned as (conveners of) activist organizations. This part of the chapter then enters into conversation with the work of, especially, Candis Callison, Tahltan Indigenous media scholar with a background in journalism, anthropology and STS, and queer and feminist studies scholar Sara Ahmed. The events of the conference revealed something greater about the Canadian climate change movement at the time: about its place in the history of the institution of white settler-colonial environmentalisms in Canada; the state of the diversity of the movement in the late 2010s, and; the diverse visions, ethics and epistemologies of climate change and its futures at work in the movement. The events described below also speak to climate change's challenges to the relations made constitutive between epistemology—knowledge, its history and how we know what we know—expertise and political action. This chapter therefore addresses itself to larger questions of longstanding anthropological interest, about the individual's relations to larger collectives, global systems, settler colonialism, difference and ethics.

Introduction to CAN-Rac Canada

Climate Action Network-Réseau action climat Canada is a network of more than one-hundred and thirty non-governmental and local non-profit organizations across Canada. Its name, bilingual owing to Canada's two official languages, is often shortened to CAN-Rac, pronounced "can-rack," or sometimes, in the anglophone world, "CAN Canada," in line with the abbreviations of CAN International and USCAN for the international and United States offices. CAN-Rac is a coalition: of activist organizations from the local grassroots group to the national NGO, of faith-based, humanitarian and physicians groups, of First Nations assemblies, labor unions and more.

Just as importantly, though, CAN- Rac staff also act as network conveners and policy coordinators at the sub-national and international levels. It is here that they play a disproportionately large and significant role in the Canadian and international climate action spheres—considering their size of just a half a dozen staff and Canada's relatively small population. For example, CAN-Rac's executive director was head of the delegation for non-state presence (civil society groups) at the 48th session of the Intergovernmental Panel on Climate Change (IPCC) in Incheon, South Korea in 2018. This was the meeting that announced, as this chapter opens, the infamous SR1.5 report outlining that if we keep on the current trajectory, we will reach a global temperature increase of 1.5°C much sooner than anticipated, to catastrophic results. CAN-Rac staff also act as a bridge between large international events and what needs to happen on the ground—making sure provincial plans add up to Canada's Paris Agreement pledges and helping keep climate change on the docket during the last federal election in 2019, to provide two examples from my time of fieldwork. Having expanded their staff since that time to include more policy analysts on the domestic and international side, communications and network engagement experts, CAN-Rac continues to make bridges, produce grey literature reports, with analysis, positions and policy advice on climate policy and action in Canada and international, and represent civil society in the international sphere. In the language of this research project, described in the typology of actors and organizations outlined in the Introduction, Climate Action Network-Réseau action climat Canada primarily fulfills the role of convener and policy analyst/coordinator at the domestic and international levels. In their internal, organization language, their work can be organized into three avenues or workstreams (Climate Action Network 2020).[1]

First, CAN-Rac is a network. A large avenue of their work involves convening members, providing resources, coherence, coordination and the institutional space for cooperation among a diverse body of network member organizations. They share information and resources with network members, and provide a space for members to do so among themselves, through listservs, newsletters and, periodically, in-person conferences. In addition, they convene several caucuses within their network, providing the space and coordination for members to collaborate on climate work in cities, on adaptation or on conservation. They provide information, resources

[1] In addition, this information comes from informal conversation with Eddy Pérez, on July 13, 2018 and beyond, and a formal interview with Teika Newton on September 20, 2018.

and coordination for members to participate in "policy advocacy for government action" (Climate Action Network 2020), such as organizing lobbying days to make sure member voices are heard and amplified or providing the space for coordination for a local climate Toronto city-level climate demonstration, for example. The next CAN-Rac workstream works in conjunction with this last element of network convening.

The second workstream for CAN-Rac revolves around domestic policy in Canada, at each of the levels, federal, provincial and municipal. In providing a space to convene and coordinate, CAN-Rac creates platform from which Canadians can, "in speaking with a unified voice, ensure federal-provincial climate ambition at the scale science requires" (Climate Action Network 2020). They write and publish reports and updates on action on climate change from within Canada, they network with Canadian thought leaders to insert climate change into public dialogue and they strategize with and mobilize their membership to aim for election outcomes that would make a difference on climate. They also work on policy development and advocacy by offering policy advice and analysis domestically and internationally, signing on to other policy work and amplifying and supporting network members' own policy work, all backed by the impact of their broad network. Their final workstream takes this work to a larger sphere.

Can-Rac's third workstream is at the international policy level. "Bringing Canada to its fair share of the global effort to confront climate change is the core purpose of CAN-Rac's activities in the international realm," they write on their website (Climate Action Network 2020). At the international level, CAN-Rac advises Canadian governments on international climate policy and uses the international stage to push Canadian government to lead positive action on climate change. During the time of my research, CAN-Rac staff led and supported civil society delegations at the yearly Conferences of Parties (COPs) meetings of the United Nations Framework Convention on Climate Change (UNFCCC); at Pre-COP meetings such as the official high-level "ministerial meetings" on specific themes; at some of the Talanoa Dialogues meetings, an inclusive, facilitative dialogue process launched by Fijian leaders of COP 26, meant to help countries enhance their Nationally Determine Contributions to reducing carbon emissions; at various climate- and environment-related G7 meetings, and; at several Intergovernmental Panel on Climate Change (IPCC) conferences, such as the Cities and Climate Change Science Conference in Edmonton, Alberta, Canada on March 5-7, 2018. On the opposite side, they use this experience and knowledge to share information with Canadian civil society

and produce briefings from the COPs and, for example, about climate-related legislation in Canada, often in collaboration with other organization.

Yet, at the time of this research, they surprisingly did the work of all three of these workstreams, of all of these roles, with a staff of only four people.[2] The organization is headquartered out of an office on Albert Street in downtown Ottawa, the nation's capital, less than half a kilometer from Parliament Hill, the seat of the federal government and the Parliament of Canada. The office was shared with a number of other "E-NGOs working on climate"[3] (i.e. environmental non-governmental organizations), with about a dozen staff of these organizations occupying the Albert Street office: at the time, Environmental Defence, Pembina Institute and Equiterre shared the same suite, with Nature Canada right around on the corner on the same floor and many First Nations, Inuit and other NGOs in the same building. This space on Albert Street was thus informally styled by staff of these organizations as "the Climate Cave." However, only two of the four CAN-Rac staff members were based in Ottawa, let alone worked out of the office.

Not unlike the distributed nature of its network of member organizations, CAN-Rac Canada the organization was quite dispersed itself at the time of my research. The organization consisted of four full-time staff: Catherine Abreu, Teika Newton, Nhattan Nguyen and Eddy Pérez. Abreu, or Cat as she was called by staff and network members, was Executive Director of CAN-Rac Canada. Having fifteen years of experience in campaigning on environmental issues, including seven years in the global climate movement, Cat grounded her work at the NGO in her experience with and in the values of community organizing. An accomplished public speaker with many television and radio media appearances, she often represented Climate Action Network on stage and in Canadian popular media. Her work as Executive Director led her from Ottawa to the many international diplomatic conferences and meetings at which she, with Eddy, represented CAN-Rac and Canadian civil society more broadly. When she was not travelling for work, Cat was one of the two staff based out of the Climate Cave office on Albert Street in Ottawa. Nhattan Nguyen, though born and raised in Montreal, was the second staff member based out of the Ottawa office. Nhattan acted as Operations and Outreach Coordinator. As the

[2] Roger Coady, formerly working with CAN-Rac Canada as an accountant on a contractual basis, formally joined the staff as Director of Finance in late 2018. The staff in the final months of 2018 and early 2019 also included one Policy Research Intern, Christa Cross, whom I did not ever have the pleasure of meeting.
[3] Teika Newton, interview, September 20, 2018.

operations lead at CAN-Rac Canada, Nhattan made sure the organization functioned as they all wanted it to. This involved administrative and communications coordinating, as well as nitty-gritty logistical labor and notetaking or secretarial work for the planning of ClimaCon 2018, which will be further discussed below. His fluency in both French and English also helped with his outreach work supporting members in their interests and needs and generally ensuring the organization ran smoothly in the day-to-day. The other two staff members worked remotely, from their respective homes in Montreal and rural Northwest Ontario.

Eddy Pérez was the first representative of CAN-Rac I met. Having been given the advice of connecting with Eddy and Cat by another interlocutor working at a US-based climate policy and research consultancy, I met Eddy at the ICLEI – Local Governments for Sustainability 2018 World Congress in Montreal in June of 2018. A native Montrealer, Eddy continues to live and remotely work from Montreal. However, as the International Policy Analyst for CAN-Rac (today his title is International Climate Diplomacy Manager), Eddy's job involved a great deal of travel. In the fall of 2018 alone, his travel schedule was busier than even my own. He traveled to all the conferences and meetings listed above, including Global Climate Action Summit, Climate Week NYC and ClimaCon events I attended, as well as the early September 2018 UNFCCC meeting in Bangkok, Thailand, the G7 Joint Ministerial Session meeting on Healthy Oceans, Seas and Resilient Coastal Communities in Halifax, Canada in late September 2018 and COP 24 in Katowice, Poland. His in-person attendance at these meetings (often, but not always, alongside Cat) was essential for his position as International Policy Analyst for CAN-Rac. In this role, Eddy mobilizes expert knowledge of climate governance and diplomacy to analyze, monitor and report on international climate negotiations in all their various fora. This analytical work involves climate policy coordination between various levels of government and civil society, and advocacy work in the direction of climate justice. Trilingual in French, English and Spanish, he holds an MSc from the Institut national de la recherche scientifique du Québec (INRS), which focused on underrepresented civil society groups' representation at the IPCC, which he analyzed as an epistemic community.[4] Like much convening work that characterizes climate diplomacy and governments' work on climate, much of this policy work involves social, interactional labor in person with others. If international climate conferences and meetings function as in-person,

[4] Personal communication.

social, interactional spaces of convening, necessary for the work of governments, then, following this, work like Eddy's must also be in person at these conferences and meetings.[5]

Finally, Teika Newton's job title was Membership Campaign Coordinator when we first met. As is common in these spaces, her organizational titles have changed over the years with changing roles and responsibilities; Teika was subsequently Membership and Domestic Policy Manager and now, in 2022, is Managing Director of CAN-Rac. Teika's job as Membership Campaign Coordinator began after one year as a volunteer on the ClimaCon Steering Committee, before being contracted by CAN-Rac to coordinate the conference. Then in 2018, she was hired full time as CAN-Rac staff to lead organizing the conference and to more broadly oversee membership coordination. In this role, she also took on new kinds of work, coordinating CAN-Rac's domestic convening, policy and advocacy. She coordinated lobbying efforts by and for network members, completing the follow-up work necessary for successful advocacy work after meetings with MPs (Members of Parliament). She organized the caucuses within the CAN-Rac membership, and reached out to Canadian leaders to bring climate change to the fore in public venues. She wrote action updates about climate activism and policy in Canada. She authored and co-authored domestic policy analysis reports and strategized election outcomes with other CAN-Rac staff. And she provided administrative support with Nhattan and used her experience in project management of a years-long one-million dollar SSHRC grant to help Cat with funding and grant writing. All of this work is accomplished remotely: Teika works for CAN-Rac from her home in Kenora, Ontario in the rural northwest of the province, where she lives in her off-the-grid house with her husband and children.

Thus, with an Executive Director, Operations and Outreach Coordinator, International Policy Analyst and Membership Campaign Coordinator, in late 2018 CAN-Rac Canada's work as network conveners and policy coordinators at the national, sub-national and international

[5] International climate diplomacy and policy has remained largely outside of the scope of this dissertation, it being its own, vast field of knowledge, action and relations. However, much of the work of actors in the network of organizations between climate science and climate politics, including much of Eddy and Cat's work, crossed over into, or was primarily located in, this territory. For work in these spheres by my contemporary early-career scholar colleagues in anthropology and related disciplines, see Magnús Sigurðsson's work on global climate governance, bureaucracy and international climate policy at the UNFCCC Secretariat (e.g. Sigurðsson 2021) and Friederike Hartz' research in human geography on the practices of science and their intersection with policy at the IPCC (e.g. Hartz 2021**).** Alternatively, see the slightly earlier work of former CAN-Rac Canada Executive Director (2012-2014) and current Board member, Christian Holz, whose 2012 PhD dissertation in sociology was on the environmental advocacy work of NGOs like CAN International (CAN-I) at the UNFCCC (Holz 2012).

levels was wide-reaching. Despite having a large network of members and "being a powerhouse in this realm," as Teika described the organization,[6] they accomplished this work with a staff of only four people. With two staff members working out of the office on Albert Street in Ottawa, the remaining two worked remotely from Montreal and Kenora, Ontario. As Executive Director, Cat Abreu led the organization's analysis and convening work and was often its public face in the media and at large national and international climate conferences. Nhattan Nguyen maintained the day-to-day operations of the organization from The Climate Cave on Albert Street, including coordination of logistics and communications. As International Policy Analyst, Eddy Pérez guided CAN-Rac's policy coordination at the international, climate diplomacy level and beyond. Lastly, Teika Newton's role took on coordinating the membership, domestic policy initiatives and leading the organization of the ClimaCon conference. Considering the small size of their staff, it is perhaps thanks to this collective experience and separate expertise, along with the force and backing of their broad network of members, that CAN-Rac Canada were able to maintain an outsize influence on climate work in Canada and internationally.

Yet what goes into the role of successfully convening a country-wide network, of maintaining a broad coalition of organizations? What relationships (to people, to place) condition and undergird domestic policy, advocacy and action coordination—or network membership coordination? In what ways does this labor, seen and unseen to varying degrees, maintain "the force of buy-in" (Climate Action Network 2020) from CAN-Rac's broad network? And, as will be broached by the description of the organization, planning and realization of ClimaCon 2018 below, what conflicts or challenges arise in convening a broad network? In what ways do these speak to broader challenges for the Canadian climate movement and beyond? Next, I will look more in-depth at the work and background of one staff member, Teika, to understand what constitutes the answers to these questions.

Focus: a closer look at one role within the organization

As noted above, Teika Newton had already begun organizing the October 2018 ClimaCon conference by the first few weeks of that year. Having the experience of organizing the previous two ClimaCons as a volunteer and paid contractor, she knew what it would take to pull off and, along with CAN-Rac staff and Steering Committee volunteers, was prepared to take

[6] Teika Newton, interview, September 20, 2018.

on the different, more difficult task of that year's more targeted, ambitious conference. In a September 2018 interview, Teika told me she had had a convening role within the Canadian climate movement for years.[7] Before she settled back in northwest Ontario, Teika lived in Vancouver for ten years. She studied environmental science, ecology and plant biology and related fields as the field of environmental studies was just taking off and got an MSc in evolutionary biology from the University of British Colombia (UBC). Although she went on to work as a cancer and biotech genomics researcher for several years at the British Columbia Cancer Agency's Genome Sciences Centre, her Masters research was on the aster-family California tarweed plants and her academic interests were always based in the environment and ecological science. At UBC, she ran the student environment center and campaigned on campus on issues such as food sustainability and waste. Not long after she moved with her husband, whom she met in Vancouver, back to their same hometown, where she started volunteering for local environmental groups.

She took on research coordination and project management job for a six-year, two-university, one-million dollar SSHRC grant based out of the University of Manitoba, further building connections through the project's partnerships between the Universities of Manitoba and Winnipeg, the City of Kenora, the Grand Council Treaty #3 and three Anishinaabe First Nations, the Obashkaandagaang First Nation, Niisaachewan Anishinaabe Nation (formerly Ochiichagwe'babigo'ining Ojibway Nation) and Wauzhushk Onigum Nation. These are networks and relationships that she continues to draw on for support and guidance in organizing on the climate through CAN-Rac and beyond. Meanwhile, in 2011, she helped found an energy-transition group modeled on the Transition Town model and in 2013 got very involved in the ultimately successful effort to stop the proposed Energy East Pipeline that would have come through the town and local waterways. This is what got her involved in the larger climate movement across Canada as she continued to take on more convening, coordinating and networking roles and skill. When the University of Manitoba grant project ended in 2015, she was able to take on climate activism work full time.

By 2018, beyond her job at as CAN-Rac staff, Teika was an advisor on a litany of local and regional energy and environmental, including as chair of the City of Kenora's environmental advisory committee, a regional electricity planning advisor to the Independent Electricity

[7] Interview, September 20, 2018.

Systems Operator for Ontario, a regional advisory to the watershed board through the International Joint Commission (a U.S.-Canada governing body created in 1909 to lakes and river systems along the border) and more.

Kenora, Ontario is in the northwest of the province, 180 kilometers (112 miles) north of the U.S. border with Minnesota and fifty-five kilometers (thirty-four miles) east of the provincial border with Manitoba. It is a part of North America with many lakes, humid summers and cold, dry winters. Located in the middle of the continent, it is a place of meeting, Teika told me. Teika's off-grid home, along with all of Kenora, is in Treaty 3 territory. That is, it is part of 142,000 sq. kilometer (55,000 sq. miles) tract of land covered by the third numbered treaty between the Crown and First Nations, signed in 1873. The knowledge, connections and cultural fluency that comes with her situatedness in that place, her love for the place that she's from, she told me, has greatly aided her convening work including as Membership Campaign Coordinator at CAN-Rac. In the end, what she sees as her primary skill is building relationships among people, she told me, and "creating magical space where connections happen."

ClimaCon 2018

Conference planning and steering committee

ClimaCon 2018 was a two-day conference convened by Climate Action Network-Réseau action climat Canada on October 10-11, 2018 at Toronto, Canada's York University. Conference organizers targeted numbers of two hundred to two hundred and fifty attendees. Open to the public but focused on network members, the conference was organized around priorities garnered from a poll of members early in the planning process in spring 2018: members indicated that they wanted opportunities for more strategic planning, relationship building and enhanced engagement within the network. The program subsequently involved a few plenary and panel sessions. Those panels and plenaries that were put on the agenda followed these priorities. They were planned as targeted relation-building events, meant to allow participants to reflect on some harder questions, such as who is in the room, physically, that day, but "in the room" of Canadian climate politics more broadly. Primarily, however, the conference revolved around ten two-day issues-based group breakout sessions, with the goal of members leaving the conference with some strategic takeaways by the end of the second day of these sessions. Breakout session

themes included just (energy and economic) transition and labor, international climate policy, legal tools for climate action, Indigenous rights and the climate movement, Canadian climate politics + elections and more.

A Steering Committee consisting, at first, of CAN-Rac staff member, Teika, and two or three volunteers began meeting biweekly in February 2018 to plan the conference, before the Committee expanded in April to include members, volunteers and, to various degrees, all four of the then-CAN-Rac staff. By a few weeks before the conference was to happen, the Steering Committee included sixteen members. I was linked into the process in late August 2018, after meeting Eddy in June, joining the steering committee when it amped up to weekly meetings in early September. At this time, a time before the market dominance of the videoconferencing software Zoom, the Committee met via calls on the screensharing and videoconferencing application, GoToMeeting. Meeting notes were recorded, usually by Nhattan during my participation, in an ongoing shared Google Docs document called "ClimaCon2018 Steering Committee Running Notes." Notes generally consisted of a list of attendees, and a meeting agenda, to be filled in with notes throughout the meeting, usually starting with a welcome and set of introductions at the larger meetings. The meeting agenda often included updates and delegation of tasks on topics such as conference agenda development and activity planning, logistical tasks to accomplish regarding the conference space and facility, funding from grants and registration, confirming speakers, maintaining moral and ethical commitments in planning and more. Open to read and edit for anyone on the Steering Committee, the notes served as a form of archive of the labor and collaboration that went into planning the conference, as a recording of commitments and delegations of tasks for accountability purposes and as a semi-open record of a democratic decision-making process.

I take my first call with the Steering Committee from a large Victorian rowhouse, sublet and rent-controlled, on a steep hill in the famed Haight-Ashbury district of San Francisco, where I'm staying with a friend, MB, and her roommates during the second half of the Global Climate Action Summit. The meeting begins with a welcome and introductions, though it wouldn't be until the next meeting, following my conversations and interview with Teika the following week, that we would dive into a more intense introduction on my part. At that meeting, where I would eventually get their approval to join, committee members got to ask about my background, interests, research, especially the two or three other academics—one professor in environmental

studies at the conference's host university, one University of Toronto PhD student in adult education and community development studying anti-oil pipeline campaigns and one professor of sociology from University of British Columbia, also studying the Canadian climate movement.

Following introductions, nearly all the meetings then discussed funding and the financial situation—as if to get it out of the way early. As it was, by my second or third meeting there was a demand for scholarships for registration, travel and accommodation, honoraria for Indigenous elders and those who need it to attend in lieu of their wages, that was two or three times more than the revenue from registration so far. However, by a few weeks before the conference, the registration list was looking quite diverse, with an interesting mix of members and broader public, and a good amount of last-minute York student registrations expected. This would boost the funding pool. As it was, much of the funding for catering was coming from a grant from the cosmetics brand LUSH, who had a strict policy that they only fund event catering that is vegan or vegetarian. Discussion was had among committee members about finding a separate funder to provide protein for a "culturally appropriate diet," e.g. chicken and salmon for some of the First Nations elders that were invited. The indication here at the base of this discussion was a recognition of a potential difference: a different ethics of, a different way of relating with, food. This difference was assumed to be one in which the consumption of food animals is connected to one's spirituality, one's way of relating in the world, and one's sovereign right to (culturally appropriate) food—all of which, within the context of the ongoing violent history of settler colonialism, were often denied First Nations peoples. As an organization with staff whose work was based in grassroots organism, it was an important part of their ongoing activism to make such a recognition, even if in a small way. Further, in recognizing and discussing this point of potential incompatibility between catering funding and First Nations speakers and conference participants, CAN-Rac staff and steering committee members were already identifying the potential for conflict in their corner of the climate movement, conflict of culture or values, between on the one hand majority European settler member organizations and sponsors and First Nations allies and speakers on the other. This was a conflict that would later arise, be openly recognized and worked on, during the conference.

The rest of the GoToMeeting Steering Committee meetings were usually occupied with discussion of various logistical details that needed to be worked out and updates from those who

had been delegated certain tasks or had taken the lead on one part of the upcoming conference. Discussions were held, for example, about transportation and housing for the speakers for the opening and closing ceremonies. Details were finalized about the format of the breakout sessions, the idea to have rapporteurs for each group to report back the findings of the discussions (a role I would volunteer to fulfil), how to bring the groups back together for a broader full-group. Updates were given on the delegated tasks and confirmed speakers and venue for the Pecha Kucha event for the first evening conference. To take place at a local pub over dinner and drinks, it would follow the presentation format meant to be dynamic and equitable, where presenters give a six minute and forty second presentation with only twenty slides of only twenty seconds each. Report backs were usually also delivered by committee members Amara and Anjali regarding the "theater of the oppressed"-inspired, performance-based facilitated exercise planned for the first morning of the conference. At the last pre-conference meeting, five days before the conference, the agenda was being finalized, loose ends were being tied up, volunteers were being coordinated. By the time of the conference, the Steering Committee Running Notes document ran fifty-five single-spaced pages and came in at almost sixteen thousand words.

CAN-Rac Canada ClimaCon 2018

The two-day conference took place in Toronto at York University's main campus in the North York district of the city. North York is part of what is sometimes called the Inner Suburbs, having been officially incorporated into the municipality of Toronto along with Etobicoke to the west and Scarborough to the east as recently as 1998. It is a multicultural district, highly diverse, linguistically and ethnically, with large populations of Black Canadians, Canadians with ancestry from parts of West, East and South Asia, Eastern Europe and more. A forty-minute subway ride from Downtown Toronto, the neighborhood of Willowdale, where I stayed with my friends, siblings S and P, is a snapshot of North York. Older single-story, suburban style homes and streets are contrasted with high-rise apartment and condo buildings from the last fifteen to twenty years: like two visions of what the neighborhood should be and look like, as S put it. With large populations of Iranian-, Chinese-, Russian- and Korean-Canadians, the residential areas were matched by bustling zones of commerce on streets such as Yonge and Finch—sushi restaurants

next to bubble tea shops down the street from Iranian bakeries and the large chain pharmacy, Shoppers Drug Mart.

Situated on a sprawl of former farming plots in the western part of the North York district, York University's main campus, the Keele Campus, is the second largest post-secondary education campus by acreage in Canada. A large public research university, which includes Canada's largest and oldest environmental studies program, York is a reputable Canadian university also known for its campus activism. The conference was to be hosted institutionally by York Faculty of Environmental Studies[8] professor, Dr. Jose Etcheverry, a fellow member of the Steering Committee. The conference was to be located in the New Student Centre: a large, bright modern-looking building, dominated by glass windows and christened with LEED Gold certification, according to the U.S. Green Building Council sustainable building rating system. Full conference plenary sessions would take place in the second-floor conference centre, while breakout rooms would meet in smaller, seminar, group study or meeting rooms.

I arrive to the York University campus on a forty-minute westward bus from Willowdale. I wander around the large, largely empty campus on the early Wednesday morning of the first day of the conference. Despite the directions Teika had sent out to conference participants and volunteers the previous evening, I am momentarily lost, before asking a passerby for directions and eventually finding and following the yellow brick road of words, doodles and arrows written in colorful sidewalk chalk on the concrete pavement by Teika and a gang of volunteers from Jose's pool of students the previous afternoon.

I enter the building and follow the signs up to the second floor and the conference centre rooms, where I meet Nhattan for the first time in person at the top of the wide stairs. His genial smile is topped with round wire-framed glasses and a kind but busy demeanor, as he is rummaging around in bags and finding camera equipment, tripods to set up for photography of the event. Nhattan is an experienced event and protest photographer, I would learn. Soon enough, Teika glides over to us, having spotted me across the second-floor atrium. I am greeted again incredibly warmly as I begin to understand the sociality of the group in which I have found myself caught up. The GoToMeeting calls of the Steering Committee might have been more business-like; though an undeniably open and attentive setting, it was bound to the agenda and

[8] In 2020, the faculty rebranded and regrouped with the Department of Geography and other units to form the new Faculty of Environmental & Urban Change.

respectful of committee members' time. The affect here, in person, however, proved to be a familiar one: the genuine warmth and good faith of some activist circles, where people are happy to be there, working with others toward a common good. In this way, I think they also appreciated my genuine interest and willingness to help—a volunteer wanting to see them succeed. As we speak, Teika herself radiates this warmth and trust, some of which has no doubt lead to her success in all the convening and coordinating in the paid or unpaid activism work discussed above.

The strange experience washes over me—the second time in as many months during this fieldwork, but an experience that would become familiar to many within and without academia during the vicissitudes of the global novel coronavirus pandemic—of meeting people in person for the first time after working with them on videoconferencing platforms for weeks or months. As I settle into the day's tasks at hand, Teika leads me to the registration table and I'm given a CAN-Rac t-shirt of thick, high quality cotton with the CAN-Rac Canada logo and names on the left breast, and a small sewn-on embroidered tag further down indicating it is fair-trade cotton. I put on my shirt, stow my bag somewhere and, with small gray fieldnotes notebook in my pocket, ask where I can be of service. After completing a few miscellaneous tasks, greeting Eddy as he arrives and meeting Cat for the first time, the first day of ClimaCon 2018 is to officially begin.

The conference begins with an opening ceremony, initiated with a territorial welcome conducted by Anishinaabekwe (Anishinaabe woman in Anishinaabemowin, or Ojibwe languge) elder Kim Wheatley. Seated at stage left at one of the fifteen or so round, ten-person tables in the conference hall, I listened and wrote in my fieldnotes as Wheatley then stood at the narrow podium on the short stage and framed the events of the days ahead. "This is all our land," she began. "We've been welcoming for five-hundred years and I want to continue to be that." She mentions the Mississauga Treaty of 1805, the 13th of the Numbered Treaties, sometimes called the Toronto Purchase Treaty, which included surrounding areas of what are now Etobicoke, Toronto, North York, York and Vaughan—and which, in 2010 was subject to a $145 million dollar settlement between the Government of Canada and the Mississaugas in 2010. Swept up in Wheatley's words, I write in my notebook later how wonderfully articulate, passionate and patient welcoming speech it was, explaining the basics of Indigenous sovereignty and stewardship on those lands. "Mother Earth never makes mistakes," Wheatley declared, continuing, "the Western science module is only one. There are other ways of knowing." For

thousands of years, she notes, “We [Indigenous people] did really good job at stewardship. There were not species at risk.” In 200 years, this has all been undone. Perhaps there are other, older ways of knowing and governing to which we can turn.

After Wheatley’s opening ceremony, CAN-Rac Executive Director Cat Abreu emphasizes that what Wheatley spoke of is an important part of the context of ClimaCon 2018. Before the ClimaCon can continues, a CAN-Rac member, Mitchell Beer hops on stage to give a gift to Cat in congratulations of her achievements at the 48th session of the Intergovernmental Panel on Climate Change (IPCC) in South Korea, ending just four days prior. “Eddy, get up here!” she calls, as Beer congratulates their efforts in leading civil society groups at the meeting “to make sure the IPCC released a *real* 1.5°C report.” Setting the stage for the global stakes of the rest of the conference, “the difference between 1.5° and 2° is the difference between the paradise we live in now and climate catastrophe,” Cat emphasizes. With the group of conference goers welcomed onto the territory by and the stakes articulated for the work laid out for us, the conference had begun.

It would not be an activist conference without a participatory introductory exercise to break the ice, so to speak, and ClimaCon 2018’s icebreaker, facilitated by Amara Possian, was “Resistance Bingo.” From the stage, Cat says that pretty early in the conference planning process she and Teika had brought in the facilitation expertise of Amara, a member of the conference Steering Committee, Toronto community organizer, Toronto District School Board Trustee nominee in the local election and, as it turns out, friendly colleague to S, my North York friend with whom I stayed during the conference. She was to run the icebreaker and, along with Anjali, planned and was to run the facilitated theater-based exercise later in the morning.

Created by a group of several San Francisco Bay Area activist groups, the Resistance Bingo cards were titled with the name of the game in marquee writing at the top under which read the words, “Resistance Bingo is the best way to keep everyone involved in resisting fascism and building power to defeat it. *When you win, we all win!* [emphasis original].” Conference participants were asked to wander the space meeting new people, filling out their bingo cards by finding someone who has recently accomplished one of the tasks on the cards, introduce themselves, write down their names and hear their story. Squares on the bingo card included community-building actions like “Shared skills with newly politicized folks” and “put a political poster in my window,” creative and care-based actions such as “Brought a neighbor a treat,” “got

enough sleep," "wrote/read a poem," "provided childcare" and more standard politic actions such as "went to my union meeting," "filmed the police," and "marched/protested with family."

After the icebreaker was the morning's opening keynote presentation. It was by the Environment Commissioner of Ontario, Dr. Dianne Saxe. An independent officer of the Ontario legislature, the Environmental Commissioner of Ontario is not appointed, but voted in by the people, Saxe told us. Saxe's term was 2015-2019, after which she was voted as Deputy Leader of the Green Party of Ontario in 2020. A lawyer recently rated as one of the top twenty-five environmental lawyers in the world, I knew from Steering Committee meetings that Saxe had asked to speak at the conference. She had asked to speak first due to her availability; and had agreed to speak on two of the conference themes, building stronger movements and building capacity for Canada to meet its 2050 decarbonization goals.

Her presentation was rather technical, I noted in my notebook. It covered the state of provincial action on climate and the energy transition, risks and vulnerability particular to the province and what the government is doing about it based on a report authored by her office. Calling attention to the short-term political cycle of, for example, provincial elections compared to the long-term timescale of the climate, Saxe recalls that there was once a cap and trade in Ontario in the recent past, if only for eighteen months. While that is not enough time to turn an economy around, Saxe claimed, it raised almost $3 billion, two-thirds of which was spent on reducing greenhouse gas emissions; and, importantly, every company in the province had to know their greenhouse gas emissions. Unconvinced that the federal carbon tax would last through a change in administrations through a federal election, Saxe ended the presentation ended with a slide titled "What can we do?" It included one bullet remarking, "Climate cannot be left entirely up to the government," and three rounded rectangular boxes of green, blue and red, one on top of the other, reading "Reduce your carbon footprint," "Get ready to adapt," and "Speak up." The presentation ended with stolid applause and Saxe make her exit shortly thereafter.

Facilitated exercise: holding a mirror up to the movement

Next up was Amara and Anjali's much-anticipated facilitated theater exercise. A creative community-building exercise meant to open up a space of vulnerability and reflection among conference participants, it was entitled on the final program, "Cultivating our Strengths, Building

our Empathy: How to make a stronger, better, climate movement." Its goal, as I knew from Steering Committee meetings, was "to hold a mirror up to the Canadian climate movement" and improve the practice and relations of grassroots Canadian climate politics. It's about the elephants in the room, Amara or Anjali continued, pulling "elephants, or parts of them, out from the weeds and into the room," here at ClimaCon. Framed as a series of monologues in two parts, the scripts to be read were based loosely on interviews from Anjali's PhD research on non-Indigenous climate activism in Canada.

I am enlisted to participate during a brief period during Resistance Bingo, along with five others, including Cat, plus Anjali. I am handed the script; told I would play Person 4. When the time is right, I hop up, myself and five women, including three or four women of color, setting up in a line on the low stage. The monologues open with Cat. She is handed the microphone and reads from the text. Excerpting someone's frustrations in organizing a rally, Cat as the activist recounts how the rally was organized by a team of all older white men, who didn't want to cede space at the rally for Indigenous speakers, opting instead to allow one Indigenous speaker, with the rest of the speakers from ENGOS (environmental NGOs), one of whom had to be a woman. "You can't tokenize like that!" the activist replied. The organizing team seemed to be functioning, the activist said, under the banner of "Why do we have to include First Nations?" until the day of the rally, several of the visiting elders wanted to speak and the activist forced the reluctant organizers to allow them on stage. "Things have been shifting, but we have a long way to go," Cat-as-the-activist sighed. Four short monologues later, the mic is passed to me and the text I read amidst the other statements and testimonies includes one medium-sized paragraph and a single line later on. "Part of the thing that makes my brain hurt in all of this," it starts, is how in order to change oppressive systems, we have to interact with oppressive people in those systems. But sometimes the characters and personalities that are best at interacting with oppressive systems are those that share some of those systems' oppressive characteristics, I read loud as Person 4. "I don't know what to do with that. I don't want to run an oppressive organization."

The monologues of Part 1 continued in similar veins until we had read through all of them. The second part of the exercise, "Monologues Part 2," as it read on the script, was the more interactive part. New people, not involved in Part 1, were placed around the wide conference room and read a script of interview-like excerpts or less person-specific descriptions of feelings and observations about the Canadian climate movement. After the monologue was

read, the rest of us participants were asked to move around the room, into groups to form standing circles of people, three or four groups according to how much we could or could not imagine saying something like the content of the monologue ourselves. We would then discuss how we felt. Teika read first, a short monologue from a First Nations organizer on the difficulties with acquiring funding for the work they do. Another monologue expressed worry about "call out culture," a tendency of practice among many varieties of leftist North American activism and beyond to publicly decry perceived wrongdoing of various scopes in an effort to bring about accountability and improvement, or, perhaps sometimes, to ostracize. "We cannibalize ourselves," the monologue ended.

When we moved ourselves around the room following the monologue, my group was made up of myself a handful of other people, including: Judy, an older white women in her 50s or 60s with tight gray curls, a woman in her 40s named Carla from a religious environmental group, Larry, an elderly white man with closely cropped gray hair who identified himself as part of a faith group and Kat, a woman in her 30s, a former software engineer, new to activism, who came into environmental activism wanting to make something meaningful of her life.[9] We as a group had felt somewhere in the middle of the spread of groups identifying with the monologue's worries about call out culture. After a few stumbles, for the sake of some of the older group members we first discussed what the concept of "call out culture" entailed, exactly, after which the discussion went more smoothly. Conversation then revolved around diversity among organizations, with Carla and Larry emphasizing how one can fairly easily agree to be in friendly disagreement with someone personally, but between groups, it becomes more difficult. Judy agrees, saying how different organizations have such different methods and opinions. "Environmental activists can be so critical of each other," Kat adds, especially when there are significant interdisciplinary, intersectional differences between different activist organizations.

After a few more rounds of Monologues Part 2, Anjali and Amara bring the groups back to the whole. They conclude the exercise with a reflection and a summary, an emphasis on the need to be vulnerable to get better and continue fighting. Amara reads from a passage from a

[9] All four of these names are pseudonyms.

framework for a just transition,[10] a section entitled "If it is not soulful, it is not strategic." She reads:

> Our movements must be irresistible and rooted in the wisdom of our ancestries. We should aim to create the culture that can hold us through both the best and hardest times—so that as we struggle, we do not need to seek respite via the trappings of consumerisms and the privileges of empire. This is how we heal from the crisis of disconnection. This is what it means to decolonize. (Movement Generation Justice and Ecology Project 2016: 24)

After these encouraging words, the exercise is over, a few announcements are made and the entire conference group breaks for lunch before the afternoon's first day of breakout sessions.

Breakout sessions

Before the full group of conference participants splits up into our breakout groups, a CAN-Rac staff member goes over a series of principles, projected on the three of four large screens of the conference room, high up near the tall ceilings. The slide reads: "Group Agreements." Not unlike ground rules, guidelines or group norms I had established with students before leading undergraduate seminar discussions—or, more closely, calls for attention to who is making and taking space in other activist settings—these agreements were meant to induce reflection in participants and establish welcoming spaces for open discussion in milieux with people of diverse backgrounds and gender, class, race and other positionalities. The Group Agreements laid out here in two columns on the large projection screens included, "Challenge the concept, not the person" and "Engage tension, don't indulge drama." Others included "Assume best intent – attend to impact" or "W.A.I.T. why am I talking," to encourage reflection before speaking, especially for those for whom our society often gives time and a platform to speak. The emphasis was on community-building, and creating caring, open spaces of conversation, despite the differences in the room.

My breakout session is led by Eddy. I chose to volunteer for this breakout room because, besides genuinely liking Eddy, I wanted to learn more about his work as International Policy Analyst in CAN-Rac's workstream at the international level, something that was a bit of a black box and, to some extent, remained so for the duration of the fieldwork. After lunch and our

[10] "Just transition" is the terminology in climate, environmental and other social movements used to identify frameworks for an equitable shift away from fossil-fuel based production and economies that also addresses climate change and protects workers' rights and the environment.

instructions and Group Agreements, my breakout group gets directions and splits off from the main conference hall to the building next door where our breakout session will be held. As we go around the room introducing ourselves, leaders and participants alike I learn more about Eddy's fellow breakout group leaders: Nimra Amjad, a movement veteran with fifteen or so years of climate action and research experience including with YOUNGO (the Youth constituency to UNFCCC), representing Global Shapers, a worldwide network of young organizers founded by the World Economic Forum; Shaughn McArthur of CARE Canada, an international development charity with "a dual mandate on climate and health," he says, and; Christian Holz, a postdoctoral researcher at Carleton Univeristy's Climate Equity Reference Project, former CAN-Rac Canada Executive Director (2012-2014) and current Board member, who completes a PhD in sociology in 2012 on the environmental advocacy work of NGOs like CAN International (CAN-I) at the UNFCCC (Holz 2012). The rest of the participants include myself, two other rapporteur volunteers who are York University graduate students, J from my Monologues Part 2 group on call out culture and two other, a young professional from the British Columbia Council for International Cooperation involved with YOUNGO, another from Canadian Foodgrains Bank, a church-based food security non-profit and, lastly, a University of Toronto undergraduate in environmental studies. A few others slip in after we've started.

The conversation goes well in our breakout session. Before conversation opens up to the whole group on this first of two days, the breakout leaders speak. Eddy first talks about CAN-Rac's work in international climate policy, bringing one of the most active delegations to COPs (Conferences of Parties), their contribution doing bridging work between big events, like that year's COP, GCAS or ICLEI, and what needs to happen on the ground. Next, Christian discusses climate equity in an international context: Canada's part in the conversation on equity between countries, fairness with respect to those who have contributed most to emissions doing their fair share of mitigation efforts, and; equity within countries citing the disparities of wealth (and therefore emissions contributed) between rich and poor and the need to include conservation in this conversation. Shaughn then brings to the table the issues of international migration, gender justice and food scarcity with respect to women and girls, who are statistically most likely to go hungry when food is scarce, stay in climate-vulnerable rural areas when men move to the city for work, he says. Finally, Nimra speaks briefly about youth, who have been at the forefront of grassroots climate action. She discusses youth engagement at international climate meetings, the

usual routes such as the YOUNGO youth delegation to the COPs, the Conference of Youth before each COP, the place of youth at High Level Political Forum, such as on the UN's Sustainable Development Goals (SDGs).

Discussion and questions are then opened up to the larger group. We do a go-round, hearing everyone's thoughts and impressions on Canada's contribution to international climate works; discuss how Canada's international presence is impacted by national politics; identify a focus on equity, youth and adaptation. We consider the importance of Canada moving into empty spaces of action where the US is not. Under Eddy's guidance we end with further questions for our breakout group for tomorrow's more action-oriented focus: Where do we as a community want to go in terms of engaging internationally? How do we get there? What kind of tools can we develop as a community to address these issues and questions we've been discussing? We then pack up our things and happily walk as a group back to the new student center and main conference room, ready for our report-backs.

Conflict

While I was busy taking rapporteur notes for our rather straightforward third breakout session on International Climate Politics, other conference-goers in other breakout groups were having more complicated conversations.

My ClimaCon field notes begin a new page with a pointed question:

"What can I say about the afternoon?"

The question follows a lacuna, a gap in time and notes filled with pointed exchanges and a reluctant intervention. During the report-back period in the conference room, one rapporteur from each breakout group was supposed to present an "ah-ha" moment, one thing our group wants everyone to know and one action point, to later write on a post-it note and stick onto a large easel paper pad with all the rest. The groups go around and eventually it is the turn for the Indigenous Rights and the Climate Movement breakout room. Two women stand up and share

not takeaways but an intervention; a call out and a call in, revealing of the presence, here and now, of the challenges dramatized in the morning's facilitated monologues exercise.[11]

I piece together what happened from various sources: over the course of the initial short intervention during report backs, as well as in multiple hushed conversations at the bar during the Pecha Kucha event that evening with CAN-Rac staff, Indigenous breakout room leaders and some of the more seasoned, professional organizers working for organizations like 350.org and Greenpeace; on the car ride home as facilitator Amara graciously drives me back to my friends S & P's apartment that night; in the next morning's early meeting and during the subsequently reworked agenda of the second day of the conference. Through these second- and third-hand accounts, I learn that in at least two breakout sessions, including the Indigenous Rights and the Climate Movement group, the Group Agreements laid out before we broke out our breakout groups were not respected. I was told later that during the breakout session one Indigenous woman session leader, whom I would later become friends with, had a "very circular, poetic 'auntie' way of speaking" not familiar to some of white participants and rapporteurs. Notetakers in the Indigenous Rights and the Climate Movement room, had complained that conversation was not "linear." Some of the Indigenous people of color session leaders and participants felt their experiences, expertise and ways of speaking were not being respected; they felt that, despite the Group Agreements, space was being taken up by others who perhaps thought that they knew better. In one session, an unfortunate "ugly dynamic" emerged, where white women conference participants were challenging women of color presenters, who themselves were experienced professional and volunteer organizers with Indigenous Climate Action, Red Rising Magazine and Idle No More, for example. In that same session, or perhaps in another, participants contributed to conversation with some "super problematic statements," such as asking "why are we even centering Indigenous perspectives here?"

It was as if the challenges identified in the Monologues exercise had come to life in this very space. It was as if the difficulties of Anjali's Person 1, whom Cat had personified in Monologues Part 1 just that morning, difficulties in getting older, white activists to open space for marginalized Indigenous perspectives, had been a portent—or worse, had fallen on ears not

[11] Note that given the sensitivity of topics and the vulnerability with which they intervene (see below), and considering I did not have their explicit permission, I do not here explicitly name these two women nor the friend who, below, will be described as presenting with a "poetic, 'auntie' way of speaking."

yet ready to hear them. Although the conference organizers and facilitators—and, I imagine, many of the conference participants—were on the same page, many of the conference participants, as it were, were not. I learn that Amara, CAN-Rac staff and some of the breakout leaders have re-worked the conference agenda for the next day to address this conflict. Cat will open the conference tomorrow with "a bit about the context in which we're working" and some framing for how to move forward, and then another breakout leader whom I get to know over dinner at the bar that evening will further address conference participants.

Reaction, resolution, redress

"Time for some real talk," Cat opens the next day's conference. Rather than a standard daily welcome of introductions, announcements and housekeeping, the second day of the conference opens with the Executive Director sitting in a chair, alone on stage, out front and next to the podium, to address the conflict of the previous day. During her intervention, Cat outlines the fundamentals of a political and moral philosophy and a set of operating principles. The primary underlying cause of climate change is not fossil fuels, she insists to the enrapt, silent audience. Rather, it is fundamentally the exploitation of non-human worlds. This is an exploitation and violence toward non-human animals, broader nature and other humans, she says, falling short of naming capitalism and settler colonial, but explaining in simpler terms. At CAN-Rac, she continues, they *always* seek to involve conversations about these underlying issues. In fact, it is "an organizational priority." She emphasizes these last words with a more emphatic tone of voice, and then a pause. However, yesterday, she explains to the group, some Indigenous people and people of color, participants and presenters, felt their experiences and knowledge were not being respected, that space was being taken up and taken over. When Indigenous people, people of color, gender non-conforming people, people whose first language is not English come into spaces such as these, they are coming in with vulnerability and, in participating in difficult conversations about these underlying issues, perhaps traumas. We as activists need to be aware of these dynamics. She next calls on Brendan Campbell, whom I had met last night, to help her open up a broader conversation on these topics. He takes the stage, at ease with the microphone in hand.

Brendan was the leader from a different breakout group, Legal Tools for Climate Action, a young Cree and Métis man representing the RAVEN Trust, a Canadian non-profit NGO

working on Indigenous rights and legal defense. Speaking from the perspective of a gay and Indigenous man, he says that "a lot of us adults don't admit we can make mistakes and our learning is, in fact, just beginning." In situations like this, when one has been called out, told they have made a mistake, accountability can be a guiding framework: "accountability to yourself, accountability to those you've harmed (intentionally or nor) and accountability to communities." If you're first reaction upon being told you've caused some harm is to be defensive, Brendan continues, you have some work to do; self-conscious work on yourself. Instead of feeling defensive, one should recognize that one is being granted a degree of trust: the BIPOC[12] person who calls you out is trusting you to learn, offering you an education. However, not all Native or queer folks are the same; "so how do white or straight people learn?" Brendan asked. "Same as everyone! By active reading and listening." Finally, he concludes that when intervening or calling out one of your own group, for example in conference participants activist member organizations back home, one should be careful not to criticize or ostracize, but to teach. Moreover, that moment is an opportunity to check in with your people, see how they are doing, how their mental health, as organizing work can be stressful, anxiety-inducing, heartbreaking and joyous when the stakes are so high.

After Cat and Brendan's opening for the morning, Amara or another conference organizer announced that four white folks, breakout leaders including the activist from 350.org Canada I had met the night before and Christian from my breakout group, had volunteered to field questions from other conference participants, questions folks felt like they'd never had a chance to ask. This was later described to me as "off gassing" or as a pressure valve for the BIPOC conference participants and breakout leaders, to relieve some of the pressure of having to educate or answer to a barrage of questions from the majority white or straight or settler conference participants. Although I did not hear how this experiment in off gassing went from those volunteers who had raised their hands when their names were announced, I did see a group of people gathered around Christian and others before the second day's breakout room activities.

The second day of the breakout groups went about in more humbled, hushed tones, occupying less than half the time in the morning's agenda than the previous day's afternoon sessions. My two fellow rapporteurs don't make it to the second day's breakout group, so it is up to me to record the conversation. Conversation is more open and we come away with three

[12] Black, Indigenous, Person of Color

priorities for 2019: communications, within the network, with new members and on social media; connections between the inside of the UNFCCC and outside this institutional apparatus, including implementing at home, and; setting up expectations for actions on climate for the upcoming political situation in Canada, such as the 2019 federal elections and Canada's need to revise the goals of their commitments to the Paris Agreement.

Soon after we head back to the full-conference report-back session back in the main conference room. Near the end of the report backs, the two Indigenous women who had first intervened with a complaint, as well as the Indigenous activist who had been characterized as in the "circular, poetic, 'auntie' way," stand to address the group again. They pass the microphone between each other and speak in an intentional gesture at resolution, toward moving forward in a good way. My friend with the "auntie" style of rhetoric emphasizes again that their ways of speaking were not respected, that their ways of speaking are tied to their ways of being in the world. They conclude by reminding the group that the issues at hand at this conference are all connected. Structures of power, histories of violence and trauma connect with one another such that they're not just talking about Indigenous rights and climate change but the issue of what is deemed in Canada as Missing and Murdered Indigenous Women, about land and language and settler colonialism. And with this, these women not only articulate a distinct problematization of climate change, but also emphasized the labor of complaint to prevent the inertial force of the reproduction of an institutional legacy.

Complaint, Climate Change, Knowledge & Ethics Anticipatory of a Future Yet Unwritten

Complaint, its inheritance and disclosure

In Sara Ahmed's recent phenomenology of complaint and ethnography of (academic) bureaucracy, "Complaint!", she characterizes complaint as "non-reproductive labor: the labor of trying to intervene in the reproduction of a problem" (Ahmed 2021).[13] By studying complaint from a queer feminist lens, she is shining a spotlight on the ongoing histories of violence that do

[13] The following citations of Ahmed (2021) are from a non-paginated EPUB file e-book, and therefore do not have stable page numbers. The passages cited here are from Chapter 4 "Occupied," in section titled "Nonreproductive Labor," as well as the conclusion of that chapter.

the labor of reproduction—of themselves, of violence, of types of people and possibilities. It is a reproductive labor that has momentum, against which complaint works; institutions labor to reproduce themselves. As a non-reproductive labor, complaint is the active work to *not* reproduce what Ahmed calls an inheritance. "If you can become a complainer by virtue of not reproducing an institutional legacy," Ahmed writes, "not reproducing an institutional legacy could be described as *the work of complaint*" (Ahmed 2021, emphasis original). Here, the institutional legacy under scrutiny is not that of CAN-Rac Canada as an organization, but that of the institution of environmental and climate activism in Canada, of which CAN-Rac is only a part. This is an institution of activism in Canada that itself is a product of, an inheritance of the "unended and ongoing histories" of settler colonialism (Ahmed 2019).

In intervening after the breakout sessions, the queer and women Indigenous activists at ClimaCon where doing the work of complaint to stop the inertial reproduction of an inheritance. In intervening to change the second day's agenda and open a space of conversation and redress in response to the complaint, CAN-Rac conference organizers committed to the labor of complaint as "an effort to stop something from happening" (Ahmed 2021). Following Cat, Brendan, Amara and others' interventions on Day 2 of the conference, another formulation might name this the work of producing a different articulation of the problem of climate change, its causes and the relations needed to fully address it. Next, to conclude the chapter, I turn more explicitly to this idea in order to better understand the work of CAN-Rac, the conflict at ClimaCon and the visions of climate change and its futures they produce.

Climate Change: Articulations and Relations, Advocacy and Epistemology

In her 2014 monograph, *How Climate Change Comes to Matter* (Callison 2014), one of the earliest single-author ethnographic monographs in the anthropology of climate change, Candis Callison investigates how climate change comes to matter for diverse publics in North America, outlining the advocacy and activist work they do to encourage people to care about climate change. *How Climate Change Comes to Matter* examines how five groups—Inuit at the Inuit Circumpolar Council, the media and science journalists, the evangelical Christian group Creation Care, scientists and researchers themselves and the corporate social responsibility nonprofit Ceres—navigate the political and scientific realms surrounding climate change. In doing so, she lays out not only the vernaculars and imaginaries through which people articulate

and understand their worlds, but also how they produce climate change—shifty and instable as it is—"as object, issue, cause, experience, and body of scientific research, evidence and predictions" (Callison 2014: 11). Of course, the complex global phenomenon that is climate change is more than the global knowledge infrastructure through which we know it. Climate change is produced—and as many things, multifariously.

Problematization The conflict at ClimaCon arose out of differing sets of vernaculars, ethics, theories of change and epistemologies surrounding climate change. Further, as the complaint and its resolution made clear, competing forms of advocacy for the future and visions of shared history were afoot. What can their instantiations here tell us? What are the anthropological lessons to take away from these proceedings? First, put in conversation with Callison and Ahmed, they teach us how "differently configured and articulated notion[s] of the problem of climate change" came into contestation at ClimaCon (Callison 2014: 6). On the one hand, objections from certain white conference participants that conversation in breakout groups was off topic or was "non-linear" indicate an understanding of what does and does not count as part of the issue of climate change. Questions about why it was at all important to focus on Indigenous perspectives are revealing of assumptions about whose knowledge and expertise matter (most), what and whose histories should come to bear on the present. On the other hand, in their interventions the Indigenous breakout leaders and the Executive Director, Cat, insisted on an understanding of climate change as enmeshed in an overlapping series of issues. It is a problem whose underlying cause is not, Cat emphasized in the morning intervention, fossil fuels, but a history of exploitation and of violence toward particular human and non-human worlds. These are articulations of the problem of climate change that enroll differing assemblages of knowledge and relations, past events and political philosophies.

Ethical Reasoning and Relations Second, these contesting articulations of the problem of climate change reveal the existence of "different modes of ethical reasoning" (Callison 2014: 5) and different relations at play among participants and members of the Canadian climate movement more broadly. Put another way, the conflict represented different kinds of co-articulations of the problem of climate change. Following arguments throughout this dissertation (cf. especially the Introduction) and elsewhere,[14] I argue with Callison that a key characteristic of

[14] For more on these challenges see Fleischmann 2020, e.g. "The causes and effects of climate change are long-lasting and distant from one another. It is everywhere and nowhere at once, made up of global, long-term trends

global anthropogenic climate change's conceptual force in the world is a challenging imposition of global relations: "Climate change challenges people to see themselves as part of global environmental, industrial, and capital systems, and in many ways it demands co-articulation of how to locate oneself in a larger collective" (Callison 2014: 23). This larger collective may include groups of people and perspectives with which one is not familiar. While these demands force people to reckon with where they fit into a problem and its solutions that are about beyond individual consumers, they are not easy demands and they are not taken up in the same ways everywhere. Despite (or, more cynically, because of) their ostensible involvement in the Canadian climate movement, for some of the participants at ClimaCon, the conference may have been their first co-articulation with a larger collective that includes diverse Indigenous perspectives and CAN-Rac's articulation of the problem of climate change, which attempts to include those perspectives as an organizational priority. This insight further indicates that although global climate change *may* present a challenge to dominant ways of thinking and being in what is deemed a positive light, it need not inherently do so. As white conference participants' questioning of Indigenous conference leaders' expertise and belonging—along with the latter's intervention of a complaint, the labor to not reproduce a history and institution of settler-colonial environmentalisms—makes clear, global climate change can challenge people to see themselves as part of global systems, while nonetheless allowing them to reproduce institutions and histories of domination and oppression.

Knowledge, Epistemology, Advocacy, Futures Third, and lastly, this problematization of climate change, this new co-articulation, this reckoning with locating oneself in a larger collective in new ways has as much to do with knowledge as it does with relations. As Callison puts it, "how we learn to make 'best judgements' and recognize facts as problems is part of an epistemological and collective process" (2014: 166). What is more, epistemology—how we know what we know, the history and genealogy of that knowledge, and how we express it (Callison 2014: 46)—matters as much a who is communicating that knowledge. ClimaCon's Indigenous speakers were different kind of experts with different epistemologies than those to

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that play out locally in mostly imperceptible ways. Driven chiefly by certain human ways of life, its impacts will affect everyone—some more than others. People produce carbon emissions in the United States or the European Union, yet the effects are seen, much sooner and more intensely, in Bangladesh or Fiji. People produce emissions today, but it is our children, grandchildren, and great-grandchildren who will deal with consequences like sea level rise and increasingly extreme weather."

which the older white members or, even, largely white student base of non-member participants were perhaps habituated. This was *not* the epistemic community of experts that some of the climate activists present were perhaps used to being addressed by. In other words, these were *not* science experts practicing "advisory science" to play the delicate balance of "near-advocacy" as in the case of Callison's climate scientists and researchers (2014, cf. chapter 4); nor was this scientists of diverse expertise wielding the "epistemic agency" of "charismatic data" to translate it for policymakers or an educated public, as in the case of Jessica O'Reilly's 2017 ethnography of Antarctic technoscientific governance via what she calls epistemic technocracy (O'Reilly 2017, cf. chapter 7, etc.). Instead, for ClimaCon participants, the conference involved listening to and centering the leadership of experts whose authority did originate in the scientific realms with which they were likely used to dealing in the realm of climate change politics.[15]

Furthermore, much of the work of CAN-Rac's climate politics is indeed advocacy, in the sense that staff, network-member activists and others are looking to advance a cause and petition decisionmakers who are deemed capable of delivering solutions at scales beyond the individual, at the level of an industry, a nation, the global. In 2001's tour de force *Advocacy After Bhopal*, anthropologist Kim Fortun defines advocacy as the performance of ethics in anticipation of a, or the, future (Fortun 2001). If we understand advocacy as the enactment of an anticipatory ethics, anticipatory of a future yet unwritten, both the futures one anticipates and the ethics by and with which one conducts oneself differ greatly according to how one defines the problem of climate change, the forms of ethical reasoning and relations, and the knowledge and expertise, through which one knows and lives it. At play in the conflict at ClimaCon were competing performances of ethics and politics, anticipatory of competing visions of a climate-safe future.

Chapter Conclusion

The closing panel of the ClimaCon 2018 conference is a "fireside chat" between Cat, CAN-Rac's Executive Director, and Ellen Gabriel, a Mohawk elder, activist and artist from the Kanahsatà:ke Nation. Gabriel came to public prominence in 1990 as the official spokesperson of the Mohawk side during Kanahsatà:ke Resistance, otherwise known as the Oka Crisis. Since

[15] The most facile contemporary example of the power of the discursive recourse to scientific authority in the realm of climate change politics and activism is, of course, the slogan popularized by teenage Swedish climate activist, Greta Thunberg: "Listen to the science!"

then, she has worked as an artist and teacher and has remained in the public eye through her political activist work and public speaking, including at the international institutions of the United Nations. Gabriel spoke about Indigenous people coming into the fight for the climate with ongoing struggles for land and land use rights, for their ways of life and relations with the natural world, all in the face of genocide and trauma. She, like Brendan, emphasized that not all Indigenous people are the same. She highlighted the importance of language, relating that "language is an extremely important part of the environmental movement for Indigenous peoples." It is both the protocol and medium for relations with the land, she emphasized, relating the importance of both Indigenous languages and ways of speaking for human and nonhuman ethics. She concluded with three issues or points of priority the Canadian climate movement leading up to the 2019 federal election.

By a few weeks after the conference, CAN-Rac staff and ClimaCon organizers deemed the conference a success, despite some difficulties. They conducted debriefs with the presenters on what was deemed by CAN-Rac staff as demonstration of lateral violence and uncompassionate behavior, and were content with how they were able to convert these challenged into teachable moments of intervention, brought on by the intervention of complaint. In the end, they felt they had successfully worked to create a powerful space of healing. As of the time of this publication, ClimaCon 2018 was the latest ClimaCon to happen. CAN-Rac staff had wanted to take a year off the labor-intensive planning process to refocus after the lessons learned in 2018. However, when the novel coronavirus pandemic first touched North American shores in early 2020, it was soon clear that the conference would not occur in 2020. Subsequently, as the pandemic raged on in 2021, the conference did not occur the next year, either.

Climate Action Network-Réseau action climat Canada's work as network conveners and policy coordinators and analysts places them in a unique position to navigate their member's—and the broader Canadian climate movement's—diverse articulations, relations, visions of advocacy and epistemology of climate change. As an instantiation of the CAN-Rac network, ClimaCon 2018 was a nodal convergence of the production of climate change through the network. Understood as the work to not reproduce an inheritance of settler colonial environmental relations, the Indigenous women's intervention with a complaint at ClimaCon spoke to the different articulations of the problem of climate change and its politics and knowledge at hand. Yet, how much do these differences matter for the future of climate action in

Canada and more broadly? For the cooperation and collaboration that it will indubitably necessitate? As Callison expresses the question, "What does collaboration mean when goals related to climate risks are differently configured? How much do epistemological differences matter? Configured as differences in epistemology, 'speaking up for the facts' might require as much listening as it does speaking" (Callison 2014: 245). Moving forward, these are questions with which practitioners of climate politics will need to grapple.

Chapter 5 Remote Fieldwork and the Network in Bas Relief: A Reluctant Neologism for a Time of Climate Change

I am back at my father's small apartment in a small city outside of Boston called Waltham, traditional territories of the Pawtucket and Massachusett peoples and important early locus of the American Industrial Revolution and labor movement. In a small room with a bed and desk and not much else, a tiny kitten, black and fuzz and not much else, plays with the cords behind my laptop before settling in beside it like a furry feline ammonite shell, her curled form smaller than the keyboard. Meanwhile, I'm taking notes. "There are many reasons why people in our field work remotely," Todd Edwards, a data analytics coordinator, tells me.[1] We are talking on the phone one afternoon, me from the far East Coast of the U.S., him from the flat Midwest, having met each other at the Global Climate Action Summit (GCAS) on the West Coast. He continues. For one, it's more sustainable. "Plus it's 2018," he says, "we have the technology, so why not?" This allows them to draw from a diverse and well qualified pool of staff and collaborators from all over the globe. Climate change is a global issue. He mentions the practical reason that you need people on the ground in and from local or regional-level communities to understand the socio-political, economic and environmental issues related to his organization's work on climate change. Sure, he finishes, his staff get together twice a year, and they appreciate this face-to-face time, but they really value cutting down on travel. The group he coordinates is "a climate action data aggregation and coordination organization, after all." I nod periodically. Remembering he can't see me, I grunt, give a "hmm" at the appropriate times, thoughts racing at these mundane revelations.

I remember thinking that what my interlocutor was saying about the logic of working remotely made perfect sense to me. It was completely reasonable, and perfectly quotidian. The normality of it, however, was surprising, and also a bit disappointing. I became aware that I was hoping for *more*. I was holding out for a grand organizational philosophy or a complex strategic insight for why he and his colleagues, like so many others in this field space, work remotely. Instead, the same systemic pressures, economic, ecological, practical, that applied to myself

[1] This interlocutor opted for his organization to remain unnamed.

applied to him and his colleagues. Writing down his response in my notebook in the moment, I come to this realization: the mundane logic of telecommuting—working-from-home, remote work—had largely structured my work and emotional life as a researcher for the last year. Did it also structure my object of study?

My interlocutor's organization, a nonpermanent, initiative-based non-governmental organization working on non-national climate action, is not unique in this regard.[2] Not unlike other interlocutors featured throughout this dissertation, in contradistinction to, say, climate scientists or international policy negotiators at the UN, these mesolevel experts bring together the smaller scales of the handshake, the government meeting and the local grassroots initiative with the larger scope and scales of anthropogenic climate change and the solutions it appears to require. As we have seen, as heterogeneous as it is, the network bridging the space between climate science and politics is occupied by organizations often with distributed staff, scattered across the continent or globe. Actors themselves work for the most part from work-from-home offices or, in rare exceptions, from their organizations' home offices, convening at conferences and summits, or the occasional regular in-person meeting. In this way, their work is not based in one place but rather traverses the wires and airwaves of modern telecommunication technologies and the threads of the network with nodes that are mobile and impermanent. As I've shown in previous chapters, like the network itself, research on this network of mid-level climate change actors has, by necessity, included both in-person and remote methods.

Two foci: methods and high-level conveners/analysts

This chapter concludes the body of the dissertation by addressing the themes of this dissertation research project on two levels: the kind of fieldwork conducted and the organizations I studied that necessitated such fieldwork. Firstly, it circles back to subjects related to, but distinct from, that of Chapter 1's concerns with methodology. Once again it reveals methodology itself as a kind of object of study, in order to better understand the network of organizations and actors and global climate change more broadly. In other words, here a methodological discussion functions as heuristic rather than an apology or confession (see De Seta 2020; Introduction). To

[2] A few weeks earlier, Teika Netwon of CAN-Rac Canada was nonchalant and practical about her remote work in an interview: "I've never worked in a central location with other people, I've always been on my own because I live in Kenora [Ontario]." (Teika Netwon, Interview, September 20, 2018).

study networks of organizations such as the one concerned here *and* to study a global phenomenon such as climate, calls for anthropological methods that necessarily mix in-person and remote techniques. While the notion of *mixed methods in-person and remote fieldwork* has been touched upon throughout the dissertation, this chapter elaborates upon recent interest in remote ethnographic methods due to the novel coronavirus pandemic. An anthropological method that uses remote research via digital and other methods together with itinerant and event-based "ethnography," it follows the rhythms and milieux of my interlocutors' telecommuting and itinerant work. Put differently, this chapter outlines how I put to use a hybrid in-person and remote approach to fieldwork, following the shape of the field and the work of the actors I studied. This chapter presents the reasoning of this method, with the hope that this method could be useful for "ethnographic" research moving into the future, especially in the context of the recent global pandemic and the spotlight on "digital" ethnographic methods.

Secondly, in order to further demonstrate the in-person and remote methods, in a perhaps more typical, "ethnographic" way this chapter presents an empirical snapshot of some the work of the network's organizations with people and processes at the high-level end of the spectrum of climate action. As opposed to the grassroots organizers, national and sub-national level activists and local leaders of ClimaCon of the previous chapter, this chapter focuses on two organizations working at the high level: The Climate Group's high-level conveners, business leaders, diplomats analysts at the in-person Hub meeting of their 2018 Climate Week NYC and the CAMDA group's internet-based climate action methodology and data coordination Stakeholder Calls. Empirically, this chapter demonstrates how a dispersed network that works largely remotely, with mobile and fleeting nodes (as shown throughout the dissertation) is held together by a dedication to science-based action on global anthropogenic climate change. In other words, the unity of the diverse organizations and actors of this object of study is found in a dual commitment to both taking action to positively address climate change and to climate science as a foundation for knowledge from which to take that action. Together with the first part of this chapter, I thus describe in more detail the object of study and the methods used. These two foci lead me to make the following arguments.

A goal of this chapter will be to make a methodological issue available as a conceptually rich problem for anthropological analysis. To study a dispersed network of organizations that words largely via remote work, and with in-person nodes that are mobile and fleeting,

necessitated field-based research that was *not* based in one more or less stable place, among one more or less homogenous group of people. What is more, the larger problem of climate change encompasses people, processes, knowledges and infrastructures that arguably exceed the bounds of classical modern ethnography. The object of study and larger phenomenon therefore call for non-*ethnos*-based anthropological methods that necessarily mix in-person and remote techniques. Following the distinct "ethnographic" material, based on different organizations, this differs from the emphases previous chapters in several ways. Chapter 1 focused on what the proclivities of in-person fieldwork access and feelings taught me about my interlocutors and the space they occupy in a fleeting, mobile network. Chapters 2 through 4 demonstrate the ways in which a mix of in-person and remote spaces of research was conducted. As a bookend to these earlier discussions, in this final chapter I reflect on what I learned about the network by the methodology it imposed on me. I return to reflections on the nature of fieldwork to explicitly discuss the necessity of both remote and in-person, non-ethnos-based anthropological field methods in order to understand the work of this mercurial network of organizations and actors working in the space between climate science and politics. I do this by focusing on The Climate Group's Climate Week NYC and the CAMDA group's internet-based climate action methodology and data coordination Stakeholder Calls.

The Network in Bas Relief

In New York

It is the first day of the 2018 Climate Week NYC conference, set in late September in New York City to coincide with the meeting of the United Nations General Assembly—and so that the UN people and the climate people are in one place, as one interlocutor spelled out for me. This conference, in contrast with the Global Climate Action Summit a few weeks prior, is much more spread out, in more specific, specialized, cloistered away events. "There are very targeted events taking place a bit everywhere," my friend from CAN-Rac Canada, Eddy Pérez, tells me over text message, indicating the perhaps more high-level intensity of many of this conference's events. I end up seeing Eddy at a conference event three or four days later, a reception in a beautiful courtyard of a Spanish language and cultural center, half a mile from the United Nations Headquarters.

A few days prior, I wake up on the couch in a friend's studio apartment at the northernmost tip of the island of Manhattan, in Inwood. This time, unlike in Chapter 1's aches and pains months earlier with my friends M and D in Montreal, as I slide the couch cushions back into their upright, sentinel positions, my lower back is not so sore—I'm used to the couches and the travel and the fieldwork is moving right along. The place my friend F is subletting lies between the A Line and the 1: to the south, the A Line Bennet Avenue entrance of the 190th Street station (carved right into the Manhattan schist and Inwood marble walls of the raised ridge once known by the Lenape Munsee language place-name *Chquaesgeck*, now called Fort Tryon Park); and to the north the Dyckman Street stations of the A and 1 lines (the subway runs through this chiefly Dominican neighborhood, this stop touching the tectonic Dyckman Street Faultline, down a short cliff side and sloping trails from the Met's Cloisters museum up on the ridge). After saying goodbye to F, who is going away for a few days and leaving me her apartment, I watch the invite-only Opening Ceremonies of Climate Week 2018, alone, from her studio living room/bedroom, via a pixelated Facebook Live stream—lagging, choppy and then quickly skipping ahead to catch up—of activities down at The Hub. The Hub is The Climate Group (TCG)'s first ever attempt, on the second day of the 2018 summit, the year of the tenth Climate Week NYC, to consolidate some of the action of the dispersed summit into one space, at least for one day.

As the choppy stream of the morning's ceremonies plays on, I take notes and in the interstices in action attempt to finish filling my agenda for the week based on events listed on The Climate Group website: going off of interesting titles and event descriptions and the listing of familiar organizations and names I've encountered or interviewed in my attempts to navigate this network of organizations working between the science and politics of climate change. When I receive Eddy's quick response to my text message, explaining the insular, invite-only nature of many of this summit's events, I begin to understand the extent to which Climate Week NYC differs from other in-person events of the network. The next day I would receive an insider's agenda from my main interlocutor insider at The Climate Group, Jody, in the form of an Excel spreadsheet listing all of the officially sanctioned and the recommended affiliate events, a separate tab for those recommended by Climate Week organizers. Eddy will not be attending The Hub.

The Hub: Convening of High-Level Non-State Climate Actors

By the second day, done with yesterday's poor-quality internet streams, I decide to make my way to the Hub, hoping that, by the time I arrive downtown after the almost-one-hour subway trip, I will be able to investigate the high-end convening work that represents the far reaches of the spectrum that is the network between climate science and politics. I take the 1 Train for the long ride toward downtown from the Dyckman Street station, sitting upright in my sport coat and dress shirt, before I transfer to the 7 and emerge from the Grand Central-42nd Street station into the full-on bustle of Midtown Manhattan. The Hub is located in a large office building at Park Ave. and East 46th St. As I enter the building, paper coffee cups emblazoned in a stylish font with the red words "I love meetings" sit abandoned on side tables and on the long, geometric high-backed cushioned benches that occupy the lobby and entrance hall. A place to host a day of events, speakers, panels, networking and announcements, the Hub itself is located in a small convention and meeting space in the back left of the lobby. The space is simply called, belying one of The Climate Group's roles in the larger network I study and conveniently enough for my burgeoning network typology (cf. the Introduction of this thesis and *passim*), "Convene."

At the entrance of the Hub is a large red and white two-sided panel that, on the red side, is emblazoned with the Climate Week 2018 logo and the large white capitalized words "FOR/NEW YORK/FOR THE/WORLD." On the right, white side of the panel are more than two dozen logos of the corporate sponsors of the event or week (see Figure 1). I walk past the reception desk and coat check, crewed by three well-dressed women in their late twenties to early thirties, past the registration table, across from which is an island of coffee and expensive nut-snacks and seed-chips, and into the networking space. I encounter a long and relatively narrow lounge area. Called the Forum, it is flanked on two sides by two or three medium and large-sized meeting or presentation rooms, each of them named, and on a third side by a low stage. The room has a number of couches, chairs and round standing tables and an equal number of communal desks with electrical outlets and padded metal chairs, lined up in rows perpendicular to the length of the room.

Figure 12 The two-sided panel welcoming participants to the Hub.

A sea of well-dressed folks populates the room, bedecked with lanyards of mainly aquamarine, and occasionally grass green and light gray, hanging from each of their necks, a red badge with their names and "Climate Week/The Hub" in large letters dangling at the end. Most are enjoying the end of a catered lunch and networking period before the afternoon sessions start up again. Some sit working on laptops at the communal desks. As I take in my surroundings, I pocket a handful of snacks and some candy from the Mars confectionery corporation (whose CEO I also saw speak at an affiliate event at GCAS in San Francisco in September). While most folks are indeed donning aquamarine lanyards, the grassy green lanyards seem to be reserved for The Climate Group's business partners—Bank of America's Global Environment Executive, Alexandra Liftman, is wearing one of these, I observe. The gray lanyards appear to be for sponsors of the Hub, while it remains unclear who the black lanyards are reserved for. Walking around and observing the crowd, I try to blend in.

Soon the break will be over, and the Hub's afternoon activities will start up again, so I choose a room to occupy and a panel to attend. The event I choose, one of two in that afternoon time slot, is a three-hour panel called dramatically "Ambition. Pace. Scale." Taking place in the room called The Library, the event is described in the events program as "The Climate Group's premier business event at Climate Week NYC 2018 held in the Hub" (The Climate Group 2018).

Combined with the two-sided red and white panel at the entrance and all the Mars brand mini chocolate bars, I am beginning to understand firsthand that The Climate Group US office acts by-and-large as a convener for corporate climate action. These are multinational corporations that are trying to find the balance between profit-making, but planet-destroying, business practices, here at the Hub joining forces with other companies, with the help of middle-people like The Climate Group—or at least presenting appearances in this regard, I think. The corporate action focus of the US The Climate Group office is an observation reinforced from the base of Jody's initial indications in interviews that summer and one-year prior on Skype. At the time, Jody tells me she is nearly the only one working with non-national government actors in the US office through the Pathways Workstream. The rest of the US office dedicated to TCG's work with businesses and corporations: convening, organizing initiatives, incubating ideas and giving them away. I look forward to the Climate Week event she has organized and invited me to the next day. I take more miscellaneous Mars brand mini chocolate bars from the display in the lounge area as I walk past and into the Library.

The Library is wider than the long, narrow main Forum room, and is equipped with a stage with a podium and a long table for panelists, flanked on both sides by large projection screens listing the title of the current part of the panel and the names of the participants. The afternoon's event begins with a panel discussion called "Corporate Climate Leadership"—featuring five or six high-level international business executives, among them Pia Heidenmark Cook, Chief Sustainability Officer of the IKEA Group, Feike Sijubesma CEO of Dutch health, nutrition and materials multinational Royal DSM and Bank of America GEE, Alexandra Liftman, whom I had seen in the Forum and known by her name thanks to her nametag during the lunch break. This discussion is followed up by a one-on-one conversation between Sijubesma and The Climate Group CEO Helen Clarkson called "Corporate Climate Leadership from the Top." All of these businesses, I learn, are part of the RE100, an initiative led by The Climate Group, "the global corporate renewable energy initiative bringing together hundreds of large and ambitious businesses committed to 100% renewable electricity," as the 2021 website of the initiative puts it (RE100 2021). Some panelists' corporations are also part of the EV100, a smaller initiative led by The Climate Group committed to converting companies' transport fleets to electric vehicles. In both sets of conversations, corporate leader panelists emphasize "values;"

that the "amoral" approach of "it's just business" is no longer viable in the current era if we wish to "future-proof our businesses."

The Network in Bas Relief

With my oblique analysis based on Jody's commentary, itself from the perspective of a different workstream, and my "ethnographic" analyses from the Hub, I could determine some of The Climate Group USA's role working with high-end business leaders in the network of actors between climate science and climate politics. In its convening role, The Climate Group is providing a platform for positive corporate public relations and back-patting, certainly, but it is also bringing people face-to-face to share resources and ambitions, imagination and commitments, to inspire and link people together to allow them to problem-solve in their own contexts. For the audience members at the Hub, it is also providing them with an opportunity to learn what leaders in larger corporations in the climate-business realms are doing to lower their impact on the changing global climate. For me, The Hub represented a key moment in understanding the limits of "my" network. By investigating what kinds of actors—even from within The Climate Group USA office—were and were not at The Hub, I was able to understand what parts of the network were *not* represented by the high-end convening and corporate climate action of the hub: the network in bas relief.

As Julianne Yip puts it in her 2019 anthropology of sea ice, "How to delimit the 'field' into a productive epistemic site?" (Yip 2019: 62). In spaces of epistemic uncertainty, in this case, anthropological research unbounded and undifferentiated by *ethnoi*, the field must be produced as *an epistemic site that gives definition to the network*, to its knowledge-and-action work and to the visions of global anthropogenic climate change it reveals. In this case, the definition was provided as much by who and what was not present as by who was. This giving-of-definition to the site is undoubtedly comparable with Annelise Riles' "the network inside out," which attempts to make a set of informational or knowledge practices, institutions and "artifacts" an anthropological object of study through an analysis of that network in the Batesian aesthetic mode of the network itself—an aesthetic, Riles argues, which is, itself, internal to the knowledge practices, institutions and artifacts of anthropology (Riles 2000). Compared to the network inside out, the network in bas relief, seen briefly here, defines the field site of this network through a negative image: inside out, perhaps inherently, methodologically, so, but made visible in contrast

to what has been cut out. From inside the network, a network *not* necessarily burdened, as Riles' transnational issues network is, with the self-knowledge of being a network, the high-level convening work of Climate Week revealed the limits of both this analysis' conception of the network which stops before the international and the methodological tools I had available to analyze it. Next, I turn to the non-ethnos-based mixed methods needed to fill in these gaps, evaluating methodological questions and concerns for the rich conceptual material that they contain, before presenting a story of my remote research with another group of high-level conveners and coordinators, this time in the realm of data coordination and aggregation.

"The anthropological project has been redefined by its subject matter:" A Reluctant Neologism for a Time of Climate Change

Anthropologists attempt to let the shape of what we study dictate the shape of our research. To conduct an empirical study partly from a distance concerning a mobile object and an emergent global phenomenon—in this case an ephemeral network of organizations and global climate change—has demanded a novel methodological approach. To study the network I had to relate to its people in the same way they relate to each other. This has required both remote and in-person research; a dynamic toolkit of anthropological textual and conceptual analysis, mixed with "ethnographic" observation and participation (Ingold 2008), sometimes mediated through the internet. If my interlocutors work partly from home, then at least part of my fieldwork had to be work-from-home as well; if my interlocutors have access to each other at periodic in-person events, then my access to them would need to be the same; if my interlocutors were not in each other's homes, then I could not be either.

When what we study is difficult to pin down, so is the research itself. This mercuriality can also tell us something useful about fieldwork that is mobile, remote or reliant on digital methods—and perhaps about contemporary anthropology more generally in times of both global climate change and global pandemics. Yet these are not exactly new methodological difficulties (though their particular tenor certainly is). The discipline contains a deep history of reflection on such matters. This merits a brief foray of three examples across diverse disciplinary commitments and more than thirty years of scholarship. In 1986, legal anthropologist Sally Falk Moore identified a shift in social and cultural anthropological method and theory, ongoing for

several decades. This shift centered around a focus on irregularities, on "heterogeneity and metamorphosis, open systems and their levels of integrations," on processes of change, rather than on systematicity and patterns of coherence (Moore 1986: 4). "This new focus creates methodological problems," Moore wrote (1986: 4). "The anthropological project has been redefined by its subject matter" (Moore 1986: 50).

Further, anthropologist William F. Fisher wrote about similar topics a decade after Moore and more than two decades before I was doing my own fieldwork on a network of NGOs. Research on such objects of study can produce productive problems that require new methodological tools and expectations, Fisher wrote: "Understanding what is happening within and through organizations such as NGOs and adapting to the changing conditions within which they operate present challenges to anthropological researchers" (Fisher 1997: 459). However, Fisher continues, with increasingly expanding networks of NGOS, in globalizing world, methodological innovations are needed:

> Community-based organizations may be close to the traditional sites of anthropological concerns, but the networks and alliances they increasingly have come to form open up new sites for ethnographic research, and the wide cast of these networks, which may appear only through chaotic public spectacles of ritual performance like international conferences, call for innovative research methodologies (Fisher 1997:459).

Fisher was writing almost twenty-five years ago, when the "wide cast" of NGO networks was perhaps less dispersed than in today's world of widespread digital communications. While "telecommuting" or "teleworking" have certainly existed since the 1970s (Harper 2021), the telecommunication technologies that mark the word's prefix have undoubtedly evolved. "Remote work" and "working from home" or "WFH," too, are practices that have existed for decades, though they have undoubtedly assimilated into the popular lexicon and mainstream behavior at the time of this writing, due to the stay-at-home orders of governments' responses to the novel coronavirus pandemic that swept the world starting in early 2020. Yet the dispersed and largely remote and mobile work life of many of my interlocutors was not the North American norm even at the time of this fieldwork in 2017 to 2019. Nevertheless, Fisher's call "for innovated research methodologies" is perhaps all the more relevant due to the above recent developments. The challenges to anthropological researchers that Fisher wrote about in 1997 were surely felt at the time of this research, as well as for other anthropologists during the pandemic in 2020 and beyond. However, anthropologists throughout the discipline have seen

anthropology and its methods redefined as they have taken on objects of study in new domains in the last thirty or so years.

Interdisciplinary philosophical anthropologist Tobias Rees has identified the consequences of a similar shift as Moore's, around the time of Fisher's writing. In the late 1980s to early 1990s, Rees notes, "a number of anthropologists began to enter—per fieldwork—domains that were formerly believed to be beyond the scope of anthropological expertise or interest, most notably (but by no means exclusively) medicine, science, and technology" (2018: 11). By the late 1990s, these developments flourished in innovative fields of anthropology—"the anthropology of modernity, of science, medicine, media, the Internet, finance, technology, and much more (at home and afar)" (Rees 2018: 11). In other words, anthropologists "have transformed countless sites into fields that were once thought to be far beyond the scope of the discipline" (Rees 2018: 83). These field sites have had little in common with the traditional formulation of anthropology-qua-ethnography, "the fieldwork-based study of ethnos, of territorially imagined societies and their culture or social structure, their symbols and rituals and structures of belief" (2018: 2). The old tools and concepts used to study "ethnos, its culture, its kinship structures, its economy, mode of subsistence, political systems, and religion" (2018: 12) were less useful for these new domains and field sites. For example, Rees insists, these tools and concepts were finding difficulty in being used to study an HIV epidemic, adult cerebral plasticity, transnational companies and neoliberal city planning (Ibid.). These were developments decoupled from what Rees (2018, *passim*) calls "classical modern ethnography." Further these "new research domains brought about the need to articulate new forms of anthropological curiosity, new tools, new ways of thinking about and designing research," experimentation that continues to this day (Rees 2018: 12).

The distributed, event-based, virtual field sites of this dissertation project indeed required a new kind of anthropological study. As opposed to other studies on networks of organizations that also involve network technologies (cf. Juris 2009), as well as Latourian Actor-Network Theory (cf. Latour 1992; Blok 2010), this networked field site had nodes that were mobile and ephemeral, rarely accessed through a single stable place (or, even, a single actant) within the network. How to conduct research on this object? Rather than chasing an object of study I had only a fleeting grasp on, it was the object itself that was mobile and fleeting. As an

anthropologist wishing to work on and alongside[3] this traversing, to recall, my field-based research is by necessity not based in one more or less stable place among one more or less homogenous group of people. It should therefore now be clear that the dissertation project that sees a near-culmination in this chapter, like Rees' developments in fieldwork topic and methods since the late 1990s, has necessitated a foray into field-based research that is *not* based in a study of the society or culture of an *ethnos*: a group of people, more or less fluidly defined, situated with a more or less fluidly defined or bounded territory. Beyond the tools, concepts and interests of this research's methodology, the people, processes, knowledges and infrastructures of global anthropogenic climate change itself arguably exceed the bounds of classical modern ethnography as well, as was discussed in the chapter and dissertation introductions.

A Reluctant Neologism

If this study is, in fact, not a study using the tools and concepts of classical modern ethnography, then what tools does it use? And what should its methods be called? To recapitulate, the methods of this research have included tools such as long-form, open-ended interviews on Skype, participant-observation in steering committee meetings on diverse web-based teleconferencing platforms, participant-observation and observation of live and recorded webinars, combined with in-person periods of fieldwork like participant-observation surrounding events like summits and conferences, meetings at coffee shops and pubs. In addition, an important component to this research has been the sometimes "non-place" of the field. This is what Knox (2020: 10) calls the "nongeographically defined spaces that the research also led to," as demonstrated in previous chapters: "the space of documents produced by" nongovernmental, governmental and intergovernmental organizations; "the space of websites, discussion forums, and email exchanges" and; "the space of technological network," such as computer models.

These methods, tools and interests, and therefore their nomenclature, are thus not exclusively akin with those of digital ethnography or digital anthropology, either. As Niezen (2020) notes in his recent study on communities seeking justice through rights claims via information and communication technologies, "there is nothing even approaching a consensus on what exactly digital ethnography is or of what it consists" (16). However, digital ethnography

[3] Or, perhaps, "adjacent" to this traversing (Rabinow 2007), to use a concept from fieldsites relatively close in proximity to those of this study.

and digital anthropology's emphases have up to now largely been on digital media, digital communications and information technologies, social media, online communities or the Internet more broadly, even when employing mixed in-person and digital or Internet-based methods (cf. LSE Digital Ethnography Collective 2021; Coleman 2010; Hine 2015; Hine 2017). [4] Although this project engages "ethnographically" through the Internet, this engagement is not *with* the internet, per se, as in the case of the heavily mediated online social media environments such as YouTube, as fluid as they can be between online and offline experiences (e.g. Lange 2019). This project certainly did not involve the use of software or mapping methods (e.g. Hsu 2014). It also does not focus on ethnography of virtual worlds, in the sense that the digitally mediated field sites I encountered, such that they were instable, impermanent and itinerant, were not "persistent," "places" that had a sense of "worldness" (Boellstorff et al. 2012: 7, etc.; Boellsorff 2008). Moreover, while involving remote, internet-based methods and nongeographically defined spaces of research, this research did not follow what De Seta (2020) calls digital ethnography's "lie" of the archetypical eager participant-lurker, as one can do to varying degrees on online forums.

Nor did it follow the format of Coleman (2014)'s predominantly online research. Nevertheless, in *Hacker, Hoaxer, Whistleblower, Spy* (2014), Coleman makes it clear that her online fieldwork was supplemented with occasional in-person meet-ups, such as in her Chapter 6's in-person interviews at a hacking conference. Further, she argues that the mercurial hacker group Anonymous' impact, politically and in popular culture, is to some degree measured by its life *offline*: "By embracing the mask…Anonymous took the dynamics of theatrical trickery and transferred them from the Internet to the everyday life of resistance" (Coleman 2014: 399). My own methods were permeated with a dialectical need for both in-person and remote approaches.

One way to designate this methodology could, then, be "tele-ethnography," following the mode and nomenclature of telecommuting and telework, or *télétravail*, as it was sometimes called in my more *québécois*-adjacent field sites.[5] However, the particular neologism of "tele-ethnography" is insufficient in several ways. Most obviously, as has been just established above,

[4] This is not at all intended to be a literature review of this important scholarship, which is outside the scope of this chapter, but only a note to better define the sort of methods and interests that guided this research.
[5] The term telecommuting is often used to indicate part time work-from-home for employees that maintain an office at a physical company building while sometimes also working from home, usually several days a week. Telework is the more general term that is generally understood to encompass all types of remote work.

the tools and interests of this project's methodology largely exceed those of the ethnos-based project of classical modern ethnography. The methods here therefore cannot—should not, perhaps—justifiably be called "*anything*-ethnography." Second, it can be argued that *telecommuting* and related terms are recently and mildly outdated in the age of the Internet, when everyday life for large portions of the planet's population is inundated by the use and influence of wireless and mobile Internet-based telecommunication technologies that do not necessarily conjure up visions of the fax machines and conference calls conducted on landline telephones that were perhaps more prominent in the times when the term first took shape (i.e. the 1970s onward, cf. above). This particular reluctance to use *tele-* could boil down to fashion, or semantics, which, with all due respect to the past, does matter for an anthropologist attempting to understand a particular phenomenon at a particular moment in time. These are ideas and practices calling for us to be precise. In the time of this research (and, ultimately, later, during the time of the pandemic when many in North American and the world would conduct this kind of work) the terms that would dominate were "work from home" or "working from home (WFH)," "distance working" and "remote work."

Could the methods employed in this project be therefore called "working-from-home fieldwork" or "distance fieldwork"? Not precisely. To recall some of the particularities, and perhaps difficulties, of the fieldwork, my interlocutors most often did not work from an office—and therefore I was not in an office. When they did have an office that was used part time in the vein of telecommuting (see note 6) or by only some of the staff (see Chapters 2 and 4), they did not have the institutional infrastructure to receive me. Instead, my interlocutors often worked from their homes. However, I was not in their homes myself. If they were not in each other's homes, why would I be? This would be too intimate a relation with a singular one-person node of the network. Instead, I often related to the people in the same way they related to each other, to other actors and organizations in the network: correspondence over email and Skype calls, on webinars and online steering committee meetings, with meeting periodically in person at the events, meetings, conferences that are often the culmination of months of work. Equally, rather than conduct fieldwork from the comfort of my home—armchair anthropology from a desk or computer chair—I conducted online interviews, participant observation, reading, watching and writing research from various apartments and homes in Montreal, Detroit, Boston and Southern Vermont—ready to hop to the next in-person event in yet other places.

Mixed-Methods Remote and In-Person Fieldwork

Continuing to follow the terminology of the object of study, more recently taken up and expanded upon *en masse* during the novel coronavirus pandemic, I can, finally, reluctantly designate the methodology of this research project with the neologism of *mixed-methods remote and in-person fieldwork* or, more concisely, *remote fieldwork*—with, of course, several eventual caveats. "Remote fieldwork" in particular in anthropological research has been theorized, however minimally before the pandemic. As outlined in more detail in the Introduction to this dissertation, in his 2013 Harvard University dissertation on international humanitarian organizations and interventions in the post-separatist conflict, post-2004 earthquake and tsunami context of Aceh, Indonesia, Jesse Hession Grayman presents a chapter called "Remote Fieldwork" (Grayman 2013). To recall, Grayman outlines degrees of remoteness from his field and research subjects as a PhD researcher and an NGO research coordinator: interviews conducted by NGO researchers, geographic distance between himself and among rural areas, epistemological and ethical concerns as a foreign NGO field coordinator in a context of intense humanitarian encounter, meeting informants only through interview transcripts, his staff continuing fieldwork after he returned to the U.S., etc. While these particularities color his research and write-up in particular ways, Grayman reminds us that "a range of remote fieldwork strategies" (Grayman 2013: 160) have always informed even the most typical image of "traditional" ethnographic fieldwork.

My own meetings were perhaps not as remotely mediated as Grayman's meetings with field sites, subjects and scenarios. Nevertheless, the remote fieldwork of my *mixed-methods remote and in-person fieldwork* speaks to several levels of "remoteness." The knowledge I needed to produce about this network, these actors and organizations, needed to be of a kind with their own mixed-methods remote and in-person knowledge production. This meant much telework-style fieldwork. The remoteness between myself and even some of my closest interlocutors reflected this distance, as many students and educators during the novel coronavirus pandemic's remote teaching and learning can undoubtedly attest, even in the most welcoming online classroom communities. While much of the fieldwork involved remote yet live, synchronous observation and participation in online events such as webinars and meetings, the research also involved remoteness in time, such as asynchronous watching of video recordings,

reading of both previously and recently published publications and reports. As Rees (e.g. 2018: 32n48) argues, fieldwork often requires the distinct method of follow-up (and I would strongly argue preliminary) research: "years of reading, spent in libraries or archives, of nitty-gritty reconstruction" of field knowledge and of construction of field sites. There is, perhaps, an inherent remoteness to the nongeographically defined spaces of anthropological research on complex systems of knowledge. My own distance from, for example, the climate NGO world, the science of system dynamics or climate change and the worlds of policy and data coordination and analytics provided a sense of remoteness to overcome. I am sure this is a sense that is shared among other field-based researchers in science and technology and institutional settings.

Finally, some of the reticence of this reluctant neologism must lead me to admit that if one were to wish for brevity in one's neologism, "tele-fieldwork" could do well if one chose to live with the caveats of the mild outdatedness and nonspecificity of the "tele-" prefix in a time of much work from home (as opposed to living with the analogous caveats that the term "remote fieldwork" necessitates). However, I will move reluctantly forward with the latter for one final reason. The "remote" in remote fieldwork taps into a key aspect of some of the uncertainty of global anthropogenic climate change from the perspective of this network of mid-level climate change experts between science and politics. That the causes and effects of climate change are distant—remote—in both time and in space is a characteristic of anthropogenic global climate change that matters deeply, among other characteristics, to these actors attempting to support, inspire, teach, convene, organize and communicate to diverse groups of people in the hopes of producing or maintaining positive action on climate change.

For example, the nonintuitive knowledge of the remoteness of causes and effects in the global climate system underlies a key insight that Climate Interactive aims to teach its participants before inspiring them to, first, envision other futures than the Business-As-Usual scenario and, then, to enact those positive visions in their lives. Climate Action Network-Réseau action climat Canada convenes diverse and dispersed grassroots organizations throughout the country, coordinates and advocates for climate policies that are in line with science and remote peoples and governments in geographically remote parts of Canada and, finally, advocates for civil society and positive climate action at the international diplomatic summits that are remote, distant, institutions for most of said civil society. Lastly, the geographically remote and unaccounted-for nature of diverse climate action projects worldwide was the catalyst that

inspired a data analytics, data coordination and methodologies group called CAMDA to record, track and understand climate action in states, regions, cities, businesses and investments, as will be explored in the next section.

In all three of these examples, organizations and their people act to address a changing global climate, a global phenomenon remote from human experience—recall: "No one lives in a global climate" (Edwards 2010: 2). They do this mostly through the practice of remote work, working from home, collaborating with their organizational and broader colleagues, each from their homes or occasionally from small central offices in the vein of telecommuting (see note 6). The remote—whether it be remote work or the remote assemblage of global political-climate systems—is essential to the objects, as well as the methodology, of this study. This methodology, following global anthropogenic climate change, necessarily exceed the bounds of classical modern ethnography.

In the next section, I tell the second of two "ethnographic" stories in this chapter that demonstrate—more directly than in previous chapters—how I implemented a hybrid in-person and remote approach to fieldwork, following the shape of the field and the work of the actors I studied. While I understood the limits of the network by attending to The Hub at Climate Week 2018 as an event-based field site, it gave definition to the network as a productive site of knowledge-and-action work on climate change. It did so in a kind of bas relief. Although not based in a physical location, the remote CAMDA Stakeholder Calls, explored below, will demonstrate the anthropological productivity of remote work on climate change.

To recall the chapter introduction, these short fieldwork vignettes also show the extent to which the actors and organizations in the network between climate science and climate politics intervene on climate change at various levels of power and influence. This chapter highlights work at the higher level, closer to centers of power or expertise, including in the realm of data science. However, the extent to which I am "studying up" (Nader 1972) is not uniform in its altitude. The work of the network is not always as high "up" as high-level diplomacy or international scientific collaboration (and indeed, this study did not focus on the international scale). Nevertheless, the network does function on a continuum from, for example, data science work at the level of a 10-person modelling and education team, as in the case of Chapters 2 and 3. Further, the network holds a space in common for convening grassroots organizations, such as in Chapter 4, and the higher-level convening of larger or more monied groups, as in the first

example above, as well as at the level of international collaboration across academic, NGO and others lines, as in the example below.

CAMDA Stakeholder Calls: Remote Fieldwork in Action

I join my first CAMDA Stakeholder Call back in the city of my university. I'm in the middle of moving homes at the end of over sixteen months of fieldwork, and most of my things are still in storage. I am supposed to be done with fieldwork. But I'm dissatisfied, not really sure when it's supposed to end, and potential doors keep opening up after months of unanswered knocking. It feels like things are just gaining momentum.

"I really need two years of fieldwork."

I mumble to myself as I settle in at the low black IKEA desk in the smaller of the two bedrooms, next to the room I would soon make my own, in my friends' old apartment, in Little Italy, in Montreal. Seated at the small desk, my eyeline peaks just above the high windowsill, dusty white slanted slightly downward, toward a frost-covered window facing a narrow street below, under the cover a recent snowfall, minutes before nine AM on a Tuesday. It's the middle of winter.

The CAMDA of the CAMDA Stakeholder Call stands for Climate Action Methodology, Data, and Analysis. There is an "About this group" section of the Google Group listserv email that I receive when I join. It describes the work of the group "to facilitate the coordination across the three data aggregation and analysis workstreams for non-Party climate action." Here, Party refers to one of the Parties to the United Nations Framework Convention on Climate Change. Non-Parties therefore are civil society, NGOs, business, investors, cities, states, and regional domains of governance smaller than the national and the international, etc. In other words, it is a group that looks to track climate action at these levels beyond the nation-state, coordinating the ways different researchers and groups do this, and aggregating and analyzing all that data.

The CAMDA Stakeholder Calls are held online, on Webex, Cisco's internet-based videoconferencing platform. This was a full year before the hegemony of the Zoom software, before people in places the world over would be connecting on videoconference calls for work and for fun during the shelter-in-place orders of the global novel coronavirus pandemic starting

in early 2020. I receive the link to the meeting in an email from the Google Groups listserv. I click the link, sign in and click the green "Join meeting" button. The Webex call flashes opens.

I'm the first participant to join the call, so when the digital meeting opens up it's just myself and Todd, dressed in a blue sport coat, his smooth, blondish hair combed over almost like a young Brian Wilson of the Beach Boys—except Todd is facilitating the call from Iowa, where it is a gray eight AM and the nearest large body of water is due east, the Mississippi River, and past that, past the Illinois line, the southern tip of Lake Michigan, two hundred and twenty-two miles away. The last time we'd spoken face-to-face, in the same place, was at the Global Climate Action Summit in San Francisco in September. The last time we had spoken out loud to each other was during a formal interview for my research, over the telephone in November, me on the far east coast, him on the flat plains of eastern Iowa. Since then, we had communicated through email; decreasingly emplaced communication.

I learn during our phone interview, other calls and emails over the previous months that Todd relates well to the graduate student research experience, in that he has a PhD himself. With an early interest in ecology, an undergraduate degree in economics ("at the time, the field of environmental economics wasn't super popular," he adds in an aside[6]) and a stint completing Masters in International Relations in Brussels, at the age of twenty-five he ended up teaching himself how to do greenhouse gas accounting for a sustainability company in Chicago. His job was to do carbon footprint analysis for Fortune 500 companies, local hospitals and more. He would eventually go back to school, back to Belgium, to do a PhD in political science with a focus on global climate change governance and non-state climate actors—non-Party stakeholders. After some years of work in the climate NGO sphere, he would eventually land in the position within a project that would have him, among other things, facilitate the CAMDA community's Stakeholder Calls.

In our interview, Todd lays out the theory of change for this kind of data coordination and aggregation work, in an explicit way. "What we've seen," he told me, with an Iowan wind blowing and a small dog barking in the background, "is that by aggregating all those non-Party climate actions and commitments, we get a better picture of where the markets are going, sending the right market signals, creating a political space." In this political space, businesses, investors, cities, states and regions could, then, push forward more strongly on climate action

[6] Interview, November 2, 2018.

"for the environmental purposes or because it makes economic sense." In other words, Todd explains when I follow up with a question, in putting together and highlighting non-Party climate action, aggregation work like that of the CAMDA group communicates opportunities and possibilities to businesses, investors and, in turn, governments at all levels. These opportunities come from commitments and contemporaneous actions by cities, states, regions, other businesses, etc. Todd elaborates. "If we have an exponentially increasing number of commitments to go one-hundred percent renewable energy by 2030 or 2040," as we do, he indicates, "[businesses and investors] are going to want to start investing more into the development and supply of renewable energy" in order to profit off of those commitments. This, in turn, positively affects *national*-level climate actions, negotiated at the international venues. The "market signals" and "political space" created by aggregation and coordination work allow negotiators to push harder: "As long as there is political will to move into that space [created by aggregation], then you can get countries to increase their level of ambition. You can say, 'We've got your back, risk-averse politicians and negotiators, it's okay for you to take a step further with your commitments.'" It is almost as if convening the space creates it, I write in my fieldnotes; by bringing together non-national climate action, much of which comes in the form of near-future action, or commitments, they ensure these commitments can be enacted. "So that's the theory behind it," Todd concludes. "And now we're trying to think through how to develop a common set of principles for methodologies in doing the analyses" of non-Party climate action.

Back on the WebEx CAMDA Stakeholder call at my low black desk in Montreal, Todd and I chat briefly, if a bit nervously, before others join the meeting. We exchange pleasantries, talk about the weather, whether I should introduce myself to the group. He's expecting a lot of folks at this meeting, from all sorts of places and time zones, he mentions, so it's unlikely we'll have time to go around with introductions. He mentions this again to the group as the call starts. As each new person joins the call, a grid of rectangles expands on the screen, until it becomes a Brady Bunch grid of two dozen or so meeting participants: a few appear with their computers' cameras on, some with two people sharing a screen; others are rendered alphabetical, just initials within a light circle; others still are represented in their rectangle by a still photo of themselves or a sunset on a faraway, remote beach.

Familiar faces appear: Tom Hale, an associate professor of global public policy at Oxford, whom I had met at the Global Climate Action Summit (GCAS) and subsequently met up

with at Climate Week NYC; J-C Senghers from The Climate Group's International office in London; Angel Hsu, a co-author of Todd's on the paper published and presented at the GCAS event where I met Todd and J-C, and who later appeared at a small event organized by my main Climate Group contact, Jody. Over the course of the next few minutes, more new faces or voices appear along with many new acronyms. The meeting, like most of the rest of the meetings I attend, consists of updates since the last call or in-person meeting, followed by updates from the leaders of each of the CAMDA group's workstreams. Through these Stakeholder Calls, planning emails and an early version of their newsletter, I learned that CAMDA's three workstreams represent not only the three keywords of its acronym but also an almost natural division of labor among its expert stakeholders, as they call them.[7]

In the first call at my low black desk in Montreal, I learn that Workstream 1 is Methodology, in order to track climate action. Workstream 2 is Data, with the goal of creating a global database of actions and commitments. Workstream 3 is Analysis—analysis of the aggregated impact from states, regions, cities, businesses and investors. Thus, the Climate Action Methodology, Data and Analysis (CAMDA) group has covered its Climate Action M, D and A bases. At the time when I joined the calls, Workstream 1's focus on Methodology was led by folks at the World Resource Institute (WRI) and the Global Covenant of Mayors (GCOM). Workstream 2, Data, was headed by stakeholders from the UNFCCC and the Climate Disclosure Project. Finally, Workstream 3 was led by PBL Netherlands Environmental Assessment Agency, researchers at Yale and Oxford and the New Climate Institute.

It's been a while since the last call, Todd says as everyone has arrived on my first call, and not everyone who is on the call or is a member of the group was at their last, in-person workshop and meeting at COP24 in Katowice, Poland in early December. He mentions that the goals of these calls are changing—with the hope of providing more points of connection along Workstreams, more collaboration and more holistic conversations on the calls. This is a "key change" from last year's first CAMDA calls that consisted largely of self-directed updates from the Workstreams. A sizable segment of the rest of the first meeting of the year and the rest of the

[7] Useful here is Knox (2020)'s breakdown of the meaning of "stakeholders" in her work on climate activists in Manchester, England in the seventh chapter of *Thinking Like a Climate*: "*Stakeholder* was a way of describing, then, how relationships that were already in place could be understood to constitute a sphere of action. At the same time, the term *stakeholder* was an open category that indicated those individuals and organizations that were not yet involved in the practices of carbon reduction but might be involved in the future. It was simultaneously a description, an invitation, and a potentiality" (Knox 2020: 220).

calls I attend in 2019 is devoted to discussing the new CAMDA newsletter, which will be run by The Climate Group. The newsletter will be a locus for the groups coordinating work, in order to support Todd's work leading the group and increase coordination between workstreams between calls and meetings. Before the meeting ends, after the Workstream updates, Todd encourages attendees to share the Google Group link with "others who should be on the call." It's an inclusive group, he says, and maybe not everyone who should be part of the conversation is on the call.

I attend the second and subsequent CAMDA Stakeholder Calls from the larger of the two bedrooms, which I had by then made my own, in my friends' old apartment, now my home, in Little Italy, in Montreal. As the year progresses and I attend more of the CAMDA Stakeholders Calls, following updates from the budding newsletter and listserv emails from Todd and other group members, I begin to form a picture of high-level data coordination work that is CAMDA's. I learned previously in my interview with Todd that CAMDA does not only do data aggregation, but data coordination. This includes helping other groups with their reports, according to time availability and expertise, as well as completing peer reviews of each other's reports and lots of original research. For Todd, the day-to-day work of data coordination and aggregation involves communication across the climate community, making sure everyone is on the same page and that organizations are not doing redundant work. By the second call, Todd's "key change" rings true when he lays out four objective for workstreams updates to cover: "What's the objective of your working group?; what do you plan to accomplish this year?; what are obstacles to those goals you are facing, and; what can this group (or other collaborative options) do to help you accomplish those goals and overcome those obstacles?"

By the last CAMDA Stakeholder call I attend, updates from the three Workstreams follow another in-person meeting for some of the members at the Bonn Climate Change Conference of subsidiary bodies to the UNFCCC in Bonn, Germany, the home of the Secretariat of the UNFCCC. Following updates from Bonn, Todd and others share good news from the wider world of climate action data coordination, including that the new Global Climate Action Portal website will be launched soon[8]—"it's a rather sexy webpage if I can say that in the context of the data coordination work," one UNFCCC "Team Bonn" team member pipes in.

[8] For a snapshot of the state of this website at around the time of this meeting, see: https://web.archive.org/web/20190923185933/https://climateaction.unfccc.int/

During the now-standard updates from the Workstreams, a leader of the Workstream 3 provides a briefing on the group's completed aggregation report and discussion is had on the upcoming peer review process for this report, as well as outward-facing communications of its results. Tom Hale from Oxford, also working on aggregation and analysis, shares with the team a new paper of his with sixteen co-authors, under academic review, on how to measure progress or success with sub- and non-national climate actors. Finally, J-C Senghers from The Climate Group International announces the finalized form of the group's newsletter, newly christened "CAMDA Insights," meant for coordination, putting together the work of the CAMDA community, but not necessarily focusing on outward-facing communication, as there are other teams for that already, he says. He also mentions an "action reward" meeting, at the Tuesday of this year's TCG Climate Week NYC 2019, at the second year of The Hub.

By the end of the meeting I feel like I've had a remote field working breakthrough. "This. is. all. data. coordination!!" I write and underline in my field notebook for this last of the CAMDA Stakeholder Calls I attend, at the end of the third quarter, in 2019. While some CAMDA group members meet periodically in person, the work of this community—as I intimate at the beginning of this chapter and as I hope is, by now, clear—is coordinated remotely, each organization working with perhaps a few others at their home offices, or in the case of Todd's organization, at the work-from-home offices. In order to understand data coordination and aggregation work on non-national global climate change action, I had to understand the remote work that filled the interstices of period, in-person meetings and summits. In Chapter 1, I asked: "What does it mean to be thinking and working with these people from afar, a room in my mother's house, in which I passed years of seemingly dreamless nights, slowly growing up as the world grew slowly warmer?" Here, I might provide a partial answer: it means the global is known not through direct human experience, but mediated through science; it means doing research through the methodology the object imposes on you; it means dealing with fieldwork sometimes from home, like my work-from-home interlocutors; it means collaboration and coordination and aggregation in order to produce the political imagination and create the space for action at a scale larger than any of us individuals.[9]

[9] I duly note here that a disadvantage of focusing on a network of organizations rather than just one is that I could not focus on every organization's work in equal detail. While my fieldwork on CAMDA's remote organization and their coordinating work appeared at the very end of my fieldwork time, I could not explore the nitty-gritty content

Chapter Conclusion: What holds the network together? or; Knowledge-Political-Moral Desire

A persistent question remains, however. What holds together, in relative, unbound unity, this diverse network of actors and field sites? What unites, beyond the relative cohesion of the mixed methods used to study them, the online setting of the CAMDA Stakeholder Calls and the in-person events of Climate Week NYC? This project's mixed-methods in-person and remote fieldwork followed the knowledge- and action-work that holds the diverse network together. Let me explain. My object of study was not just a mobile network necessitating multiple field sites; these sites themselves were mobile, fleeting. The network comes together, is instantiated, in meeting- and event-based nodes that are mobile and fleeting. This is one reason, I argue (along with, among other things, governments' and others' need to interact face-to-face), why moments of convening—whether in person or in online meetings and calls—are so important for upholding, reproducing, interpellating (Althusser 2006 [1971]) the network. Riles calls "the much beloved panel-discussion format, a network held within a singular point in space and time" (Riles 2000: 52). Similarly, as instable, impermanent nodes, I have posited, the many panels of the conference or summit, its affiliate events and center stage insider's events (whether they be at the GCAS summit, ClimaCon or the Climate Week Hub), are singular instantiations of the loose network that is the object of this research. As much is true of the convening work of the CAMDA Stakeholder Calls, its attendant newsletter and other digital paraphernalia. What is more, because the network is reproduced in nodes that are mobile and fleeting, digital and in-person, research methods that wish to capture something more of the network than is revealed at, for example, panel-discussions, need to rely on both in-person and remote ethnographic methods, as is demonstrated in this chapter.

Recalling Chapter 3's movement-based production of possibility, its subjectivation and its ethics: if the larger network, too, functions in movement, then the most the anthropologist can hope to capture of such an object of study is a series of impressions, snapshots of parts moving in relation with one another—"like a constellation fashions figures of grand proportions from distant points of light on the sidereal landscape, of which we experience but a fleeting glance,

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of their data coordination, analysis and aggregation work in the same amount of detail as, for example, Climate Interactive's system dynamics modeling. Occasions for further research remain afloat.

already outdated" (Fleischmann 2016: 41). Yet, what holds the assemblage together, what holds its parts in common?

The above two descriptive "ethnographic" scenes in this chapter from Climate Week NYC 2018 and CAMDA Stakeholder Calls provide examples of how this mercurial object is held together. In this particular case, a mixed methods approach like that outlined above was necessary to understand how this network is held together through the unity of these different organizations and actors have in their commitment to science, however uncertain, as a foundation of knowledge and global anthropogenic climate change activism as a way of intervening in the world (through that knowledge) for the betterment of all. Put succinctly, knowledge holds the network together, along with a political-moral commitment to positive change on climate change. This combination of knowledge and moral will creates contested but generally directional striving-in-common and political imaginations for the future.

That the network's mode of knowledge production is a periodic, temporary coming together, complemented by longer periods of static connectivity, allows this network of mid-level experts to work in their own organization, from their own homes, within their own specialties and expertise, and subsequently come together to collaborate and share resources. This functions as a way to address the problem space of global anthropogenic climate change. Further, this is so despite the existence of opposing priorities, contesting imaginations for the future, differing abilities to wield and resist coercive power relations, all of which have real-world, material consequences. We have seen the stakes these consequences at the end of Chapter 1, in the protests outside the Global Climate Action Summit. A goal of this chapter has been to make a methodological issue such as the one described in this chapter into a conceptually rich problem. The dissertation ends with a recapitulation of this project's stakes and a brief cogitation about the conditions of possibility for this knowledge, this anthropological labor in a time, such as during the write up of this research, marked by both climate change and a global pandemic.

Conclusion

> "I have very early memories of an absolutely threatening world, which could crush us. To have lived as an adolescent in a situation that to end, that had to lead to another world, for better or worse, was to have the impression of spending one's entire childhood in the night, waiting for dawn. That prospect of another world marked the people of my generation, and we have carried with us, perhaps to excess, a dream of Apocalypse."
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> Michel Foucault, *Time,* November 16, 1981

I opened this dissertation by leaning into a sense of anticipatory grief and ambiguous loss, the big questions and high stakes of global climate change and the anthropological study of it. What kind of anthropological stories can convey the ways in which future worlds are rendered possible? How can we as anthropologists commit to the happenings of the world, to describing them, without delineating the conclusion of a world that is not yet done being born, without foreclosing its unfolding, overdetermining its possibilities with prescriptions or predictions? When thinking explicitly about the momentous scale of climate change, my thoughts are often launched into the future, forecasting, as Joseph Masco recently wrote "changing environmental conditions out onto distant time horizons" (Masco 2021: 35). Here, however, I would like to begin and end with the intention of tentatively holding together conceptions of past, present *and* future.

In a 2019 essay published on the online platform called ZORA, Mary Heglar expressed a sentiment that has remained, in my view, un- or underarticulated in the sphere of popular writing on climate change: climate change is *not* the first existential threat; it is *not* the first apocalypse, as Black and Indigenous people and People of Color and Jewish folks know well. "History," Heglar writes, "is littered with targeted—but no less deadly—existential threats for specific populations. For 400 years and counting, the United States itself has been an existential threat to Black people," she writes (Heglar 2019). Although climate change is not the first existential threat, "we've never seen an existential threat to *all* of humankind before" (Ibid.). With its global scale, its universal gestures yet differentiated causes and effects, the injustice and uncertainty and complexity of its system dynamics—anthropogenic global climate change is in many ways unprecedented. Yet while we are not exactly "familiar with troubles of this scale" (Pandian 2019: 78, cited in Fleischmann 2021), existential, world-ending threats to specific populations, human and nonhuman, mark even the very recent past and present.

This is so because the existential threat that is ongoing, contemporary global climate change, while affecting everyone, plays out in unequal and inequitable ways—sometimes apocalyptically: from the "beginnings of an apocalypse" for Amazonian Indigenous people under Boslonaro's Brazil (l'Alliance des gardiens de Mère Nature 2019) to the Wet'suwet'en people's struggle to assert their Aboriginal title amidst violent, militarized RCMP raids in support of foreign conglomerates or federal governments set on constructing the Coastal GasLink pipeline on their traditional, unceded territories in so-called British Columbia (Unist'ot'en Camp 2019; Sayers 2019; McIvor 2019). The dilemma of how to think and act through questions about the momentous scale-, common sense- and concept-defying propensities of global anthropogenic climate change, all while not undermining the reality of past and ongoing existential threats for people other than the largely white demographic of Western environmentalist movements—is an ongoing and challenging one. Furthermore, related challenges emerge for those committed to thinking, writing and acting on climate change. The line between realism and "doomerism" can become blurry. A difficult balancing act must occur between, on the one hand, critique based in accurate descriptions of climatic change worldwide and, on the other hand, not advancing a platform for "climate pessimism," apocalyptic and destructive reckless abandon or despair. [1] These accurate depictions show climatic changes that are sometimes quite world-destroying in outlook and often occur in places hidden by or from the privileged Western eye. This "doomerism" is a despair up against which Climate Interactive's Drew Jones says his notion of possibility creates, unveils, empowers.

Much of the work in the background of this dissertation project has been motivated by the tension of questions such as the above lingerers. In particular, one short turn-of-phrase has driven this tension home from the earliest stages of research: "How can the growth of capabilities [*capacités*] be disconnected from the intensification of power relations?" (Foucault 1984b: 317). How to attend—conceptually, ethically, politically—to the empirical and historical

[1] A two-tweet thread by anthropologist KG Hutchins recently summed up a part of this line of thought quite well (Hutchins 2022): "All I'm sayin is don't call it 'climate pessimism' when it's actually 'accurate descriptions of climate change as it is currently being experienced outside of wealthy white enclaves'" and "Also re: 'doomerism,' maybe we should investigate this incredibly culturally specific, predominantly Euro-American idea that the normal response to bad news should be "if there's nothing I can do to fix it entirely, I should do as much harm as possible." This is not... healthy"

contingencies of certain forms of politics or political commitments, certain grounding conceptual frameworks, while nonetheless actively supporting people whose life-worlds are threatened by rising seas, or other injustices? What role can the anthropology of climate change play in the growth of capabilities as we necessarily imagine and enact a climate-safe world? And how can we continue to attempt to critique and conduct research based in alternatives to liberal humanist categories that got us to where we are (Rees 2018; Moore and Arosoaie 2022)? These are categories that nonetheless continue to prove useful for some in the struggle for a better world, but often, increasingly, prove inadequate for understanding topics constitutive of the contemporary, such as climate change and its world-remaking propensities.[2] The questions or dilemmas at hand hold within them some form of long-held tensions, existential and academic: between epistemological experimentation and critique, between ethics and politics, between the struggle in the face of these dichotomies and the refusal of their lasting power. The foundations of this dissertation project appear unequivocally rung though with many of the persistent, long-lasting question and dilemmas that have challenged thinkers, anthropological or otherwise, for the last fifty years or more. "Climate change is a unique problem," as I've proclaimed, and yet it cracks open classic questions. To echo how I opened this dissertation, "what does one even do with that?"

Moves, Themes, Lessons Learned

Fieldwork Shapes, Feelings, Forms

The people and organizations I have encountered throughout this research project work with and through the politico-climatic dilemmas at the core of the challenge to address climate change. Their intimate understandings in this regard drove how they choose to intervene on the problem and how they coordinate their labor, geographically and organizationally. This, in turn, inspired my own reflections on how I coordinated my own work. Particularly in Chapter 1 and Chapter 5, questions reflecting the weight of our times, reflecting the scope and scale of an

[2] To provide one example beyond what has been explored in this dissertation, "social justice" is a concept, a moral direction, with much sway in these times, yet the boundary-crossing propensities of global climate change reach beyond the borders of the nation-state on which are grounded the concepts of society and the social. For another, see Fleischmann and Yip (2019).

object like climate change, bled into questions about methodology and fieldwork. What approaches to fieldwork can do justice to this broad object of study? What methodologies follow from the more specific object of study, anthropological form following content to best understand and convey the work and philosophies of this network? In fact, one route to take has been to draw out the feelings and facets of my own experiences of common fieldwork sentiments and obstacles. Some of these sentiments are those undoubtedly shared among my colleagues who have done multi-sited fieldwork on science and technology, in NGOS and in institutional settings. Others were more specific to my own fieldwork and objects of study. Autoethnographic reflection on the assumptions of ethnographic and anthropological fieldwork played an explanatory and pedagogical role regarding the structure and dynamic of the kind of fieldwork I needed to conduct.

For example, reflections on the conditions of fieldwork access around the edges of a major climate summit taught me which kinds of actors and organizations occupied the space between climate science and action. These reflections also taught me where in the space they were placed. *Observations* about fieldwork access became *participant observations* that allowed me to better map network organization and dynamics: information-rich tensions. Interlocutors and their organizations were placed, imperfectly, in between center and periphery. Meetings—nodes of the network—were both mobile and fleeting; they were field sites that appeared periodically. Meetings were sometimes at annual or otherwise regular events occurring in the same place every year; otherwise, they were in different host cities each year, or at yet other times, they were one-off events or summits, never to be repeated. The question appeared of whether what is necessary for accessing global ecosystemic changes anthropologically are relations of mobile and mixed-methods (field)work. Ultimately, I argued in favor of the necessary dexterity of anthropological fieldwork around climate change, among political or scientific networks and other elusive, emergent objects of study.

Chapter 2 opened with a trickstery description of a field site—actually a website. A purposefully immersive, disordering move, sometimes reserved for the likes of speculative fiction, it is meant to open space: to introduce the reader to nongeographically defined spaces of research, to Climate Interactive and to the interface of one of their online simple climate models. Following the thoughtful arrangement of tables and sliders to the colorful array of graphs and charts, I turn the anthropological eye, and the imagination of the reader, onto the knowledge and

neighborhood of the first of the two organizations with whom I worked most closely during this research.

Climate Interactive and the Magics of Game and Scale

Throughout the dissertation, I take up the classical anthropological positioning and maneuver that empowers the individual person or small group of people to assume significance as a meaningful scale of analysis. This is not any more the case than in Chapter 2. However, rather than Evans-Pritchard's Azande, the relatively small group of interest that I trace is this small nonprofit organization and its origins in a tightknit group of people and their mentors revolving around MIT. Rather than "witchcraft, oracles and magic," the system of knowledge I study is my interlocutors' field of study in system dynamics; the oracles are future-casting computer models and; the magic is, well, the "magic circle of the game" and "the magic of scalar shifting." This chapter is the chapter most beholden to science and technology studies and the anthropology of science. Its interests lie in Climate Interactive's system dynamics, their simple climate models based in this area of systems science and their interactive, educational role-playing games that teach the insights of the models and their mode of thinking. In describing the work and world of Climate Interactive, I did not intent to give a thorough review of the field of system dynamics or even this particular genealogy within it, but rather an analysis and description as relates to Climate Interactive's instant, "decision maker-oriented simulations, and learning experiences that are built around the simulations." [3] The speed and accessibility of these "simple" models are, along with innovative affect- and urgency-building games, Climate Interactive's most forthright contribution to solving the climate crisis. Yet it is rather the lingering artifact of these innovations in participants' lives that is the true crux of the organization's influence.

For, to recall, as Climate Interactive associate and mentor John Sterman likes to say, "Research shows that showing people research doesn't work." If this is so, then climate change is perhaps a particularly unique and challenging issue in terms of education and communication. That is, as a global phenomenon that is known precisely through the institutions, norms and concepts of scientific research, recourse to research (and scientific expertise and information) on climate change, perhaps more than other so-called political issues, would seem most appropriate.

[3] Drew jones. Interview, January 24, 2018.

Yet following Sterman's aphorism, Climate Interactive's contributions necessarily go beyond demonstrating the insights from the Bathtub scenario, the non-intuitive dynamics of global climate change, the pitfalls and power dynamics of the politico-climate system.

The innovation of their role-playing games is an essential part of this MIT branch in the genealogy of system dynamics—the models have almost always had an educational goal, and game, associated with them. Together with the models, the games are meant to allow people to learn for themselves the insights of systems thinking, and in a way that really, magically works: via both the "magic circle of the game," an imaginative time-and-space set apart from everyday life, and; the models' "magic of scalar shifting," the ability of technology to span distances of time and space, the individual and the global. Through these "magics," the models and their games were designed to inspire, to get bodies moving in space and people interacting with one another—and to affect, to produce emotional experiences. After all, the Azande, according to Evans-Pritchard, experienced the magics of witchcraft as feelings more than ideas, (Evans-Pritchard 1976: 31), as rational and logical a system of knowledge, cause and effect, as witchcraft was. Connecting individual people to larger, dynamic global systems, Climate Interactive's are tools designed to make global climate change about immediate, emotions-laden, material relations to the world and knowledge about the future. For many of the organization's participants, these were experiences with which to draw a bridge between delayed and distant cause and effect, between climate science and political action on climate change.

Possibility's Production and Potential

This analysis led to a deeper dive into one aspect of Climate Interactive's world, grounded in director Drew Jones' aphoristic career-defining question: "What are experiences that help people understand, viscerally, the long-term, distant impacts of their actions in ways that create new possibility?" Climate Interactive's models, games and exercises represent some of their work to create possibility-producing experiences. CI's polyvalent system of possibility creation is, at once, an ethical system of subjectification, a system of knowledge, a set of practices to enact a political theory of change and a system of teaching-and-learning. They accomplish this, I break down in the first part of Chapter 3, via the creation of the conditions for participants: to learn for themselves what it will take to address their climate goals; to envision a desirable future of their own imagining, and; to cultivate this knowledge and vision to build

capacity to take effective action in their own way, in their own communities. The second part of Chapter 3 was a foray into political philosophy, an attempt to ride the waves of reverberation between seemingly distant kinds of thinkers and actors, in order to strive to create something new, something critical, both politically and epistemologically.

Possibility is treated here as an actor-category and an analytic. Put another way, it is analyzed as a Canguilhemian *concept*, emerging from the field, with a particular historical construction and systemic context; it is also elaborated as a concept under my own orientations, which includes resonances with others' uses of possibility as a *term*. That is, I have taken up possibility inspired by my immersion in the field and relations with interlocutors, but also other texts and thinkers. As an anthropologist (of knowledge, etc.), my interest in the ways in which possibility travels must necessarily go further, moving adjacent to interlocutors' interests. It is in this sense that I hope to have acted and thought alongside or *with* my friends in the field in exploring the possibilities of possibility.

For my interlocutors are themselves producing the intellectual labor to engage with the uncertain-emergent; they themselves are "trying to bring into being other possible futures" beyond a false division between the analytical closure of action and the open-endedness of critique (Osterweil 2013: 616; Hale 2006). Recall the late Dana Meadows' powerful call to hold taut the tension between the vision of a better future and the difficulties of the current reality, between dreams and despair, "the world's terrible pain and its wonderful possibilities" (cf. Chapter Three). Yet when I write of "possibilities already at work in the world" in Chapter 3, I do not mean to suggest "that a 'better,' more sustainable way of living might be found in the anthropological corpus" (Knox 2020: 262). Instead, I mean to suggest that, in spite of the inertia of dominant structures and institutions, other ways of thinking and acting are always-already in the process of becoming. There are cracks in the monolith of the dominant order. There is resistance in the space where technologies of the self and technologies of governance meet. "People are always enacting alternatives to the dominant order of things, however small" (Montgomery and bergman 2017: 27); "there is no intrinsic necessity to our forms of living" (Rees 2010: 898). As a humble anthropologist, activist, human being, one can highlight, think alongside, collaborate with these movements to be a just heir to a moment of alternative possibilities.

Climate Action Network-Réseau action climat: Grassroots Convening and a Closer Look at Competing Problematizations

I next shifted focus to the other organization on whom this dissertation concentrated, Climate Action Network-Réseau action climat Canada, a network of Canada's grassroots climate organizations—a network within the network. I argued that the events of CAN-Rac's ClimaCon 2018 conference speak to different problematizations of climate change, and their challenges to the relations made constitutive between epistemology, expertise and political action. As opposed to Climate Interactive's proximity to the science of climate change, CAN-Rac's proximate end of the science-politics spectrum is that of action and advocacy. Homing in on the work of CAN-Rac, network conveners and policy coordinators, Chapter 4 sought to understand the work and world of this organization made up of a very small staff with a broad horizon of influence—four or five staff members, only two of them based in the home office on Albert Street in Ottawa. It analyzed the remote planning and in-person implementation of Canada's largest conference of grassroots climate activists. The planning of the conference occurred largely through the online steering committee meetings. The activities of the Steering Committee were recorded in a running stream of notes that documented collaboration, vision, knowledge and relations, all compiled over months to ultimately become a sixteen thousand-word, fifty-five-page document.

The conference itself convened the diverse visions, ethics and epistemologies of climate change and its possible futures at work in the Canadian climate movement. This convening did not always occur without some contention. Different problematizations of climate change sometimes came into conflict—and with them, different enrollments of subjects into global relations. As I have argued throughout this dissertation, climate change and its politics denote a problem domain with epistemic and moral claims mediated through the norms, concepts and institutions of Western science. As such, climate change and its politics are often marked, more than other activist issues, by scientific expertise. At this conference, Indigenous women activists were expert group leaders, providing alternative (to the mainstream) epistemologies, ethics and visions of social transformation. Despite organizers' planning efforts, activists—largely white, middle-class—accustomed to following the lead of "the science" reacted negatively. In breakout sessions, white participants openly questioned the authority and presence of Indigenous group leaders.

The work of complaint then emerged to prevent the inheritance of the institutional legacies of white settler-colonial environmentalisms. The work of complaint emerged as an injection of a contesting form of expertise, a competing vision of the world, relations and knowledge under the influence of global environmental change. This was a form of expertise and a vision of the world—inclusive of marginalized voices, forms of expertise and relations—that the conference organizers themselves strived to enact. The Indigenous women leaders intervened with the whole conference group and conference organizers shifted the next day's agenda to address the conflicts. In this way, they advocated for an alternative problematization of climate change and its location between science and action.

Mixed-Method In-Person and Remote Fieldwork

Bookending my opening interest in methodology, I closed the body of the dissertation with the two-part field-based argument that studying *global* anthropogenic climate change and studying a network of organizations working on global anthropogenic climate change doubly requires anthropological methods that mix in-person and remote techniques. Much of this research project involved studying a dispersed network of organizations that works remotely and via in-person nodes that are mobile and fleeting. This necessitated fieldwork that was *not* based in one more or less stable place, among one more or less homogenous group of people. In other words, this was not a study based in the classic *ethnos* of ethnography. Even further, the larger problem of climate change encompasses people, processes, knowledges and infrastructures that exceed, I argued, the bounds of classical modern ethnography.

The final chapter had two empirical foci: the high-level conveners, business leaders, diplomats and analysts at the in-person Hub meeting of The Climate Group's 2018 Climate Week NYC, and; the Climate Action Methodology, Data and Analysis (CAMDA) working group's online climate action methodology and data coordination Stakeholder Calls. The choice of these two empirical foci follows larger trends of the last forty or so years in the anthropology of science and technology, institutions and the global. A shift occurred starting in the last half of the twentieth century, identified by Sally Falk Moore in 1986, toward studying processes of change rather than systematicity, irregularity and uncertainty rather than patterns and regularities. This only intensified in the late 1980s and early 1990s when anthropologists more broadly took up the study of medicine, science and technology, as identified by Tobias Rees. My

reflections on these matters, furthermore, follow a deep disciplinary history of reflection on how "The anthropological project has been redefined by its subject matter" (Moore 1986: 50).

This research project has followed a form of problematization and an intervention on a problem, rather than an *ethnos*. The mixed methods of this project therefore had to follow the mobile, fleeting, sometimes-remote and sometimes in-person work of those people and organized embedded in this problematization. Reluctantly taking up the neologism of *mixed-methods remote and in-person fieldwork*, I argue that this methodology taps into the inherent remoteness of the nongeographically defined spaces of anthropological research on complex global phenomena and systems of knowledge. It also attends to a key aspect of the uncertainty of global anthropogenic climate change from the vantage point of this network of mid-level climate change experts. It is a network held together by knowledge and a political-moral commitment to positive change on climate change, whatever that may mean for a particular person or organization.

A Few More Propositions

Perhaps more than other "super wicked" problems (Levin et al. 2009) of a certain intercontinental magnitude, the changing global climate is always a combination of phenomena and knowledge.[4] We know climate change because of the global knowledge infrastructure and its history of imperialism and expansion that proceeds it. We cannot know climate change without the "systems-theoretical approaches to emergent properties of massive amounts of weather data" (Morton 2013: 48). Yet what Timothy Morton has famously called "hyperobjects"—with climate change, or Morton's preferred "global warming," as the hyperobject writ large—"are not the data…[they are] not the function of our measuring devices" (Morton 2013: 48-49). An accumulation of forces, real and responsive, work silently or not so silently, at vastly unimaginable scales of time and space beyond the vicissitudes of bald human perception. This, by no means, means that it is not real, nor that it cannot be intervened upon. Perspectives in science and technology studies teach us that it "requires active reproduction at every moment in time" as Dr. Genevieve Guenther in recent years described the fossil-fuel economy (Guenther 2018). To intervene on climate, as an anthropologist or an activist, to grapple with not only the

[4] My thanks to Dr. Zeke Baker for this articulation about the global climate's uniqueness among global problems.

weight of these times, but the classic tensions climate change presents us, will require others: relations, collaboration, the stuff of ethics.

Hannah Knox approaches the challenges of these tensions surrounding climate change and its demands of anthropology (Whitington 2016) by arguing for enacting *with* or alongside interlocutors and the climate (2020: 268). I have articulated this coeval relationship with the field as one of adjacency or diagonality. No matter what, the answer to the question of "how to forge an anthropology that is adequate to the kinds of issues that climate change is producing" (Knox 2020: 268) must come out of relationship with the world—with people, knowledge, institutions and all the nongeographically defined spaces of the field. This is one proposition to be lifted from this years-long research effort.

Another set of propositions to be lifted from my nearly decade-long anthropological investment in this shifty and shifting object of study is about the space between the muddily distinct realms of knowledge, expertise, norms and forms that are deemed climate science and climate politics. It is a messy, murky space, populated by a wide array of actors and forms of expertise that, while often working together, do not always get along. While all approach the problem of climate change at zone of encounter between lower-case-p politics and science, these actors often do so from different perspectives, with different immediate goals in mind: murky, but diverse, in ambitions, expertise and values. This, conclusively, is one aspect of this space-in-between that makes it so interesting—and challenging—to study. What counts as politics, what forms of expertise count, which knowledges should be effectively deploy and to what ends—the answers differ according to whom one asks the questions. Without a doubt, much diverse expertise is deployed to diverse goals, too, at the boundary organizations of the science-*policy* interface, such as the IPCC. However, the much more diffuse definition of the political in the space between science and politics studied in this dissertation makes for a much less programmatic set of conclusions for those who set out to study the latter.

In other words, this has been a study less about the relationship between and co-production of scientific knowledge and Political power (Jasanoff 2004; e.g. Baker et al. 2020) than an exploration of the mid-level experts who already occupationally occupy the space where science and politics already meet in North America, however clumsy and unwieldy an imbrication. Largely located in the NGO-sphere, organizations such as those highlighted in this dissertation engage climate science and action via the systems of knowledge and types of work I

have categorized as convening, policy coordination and analysis, education and communication and data coordination, aggregation and technology development. This work is not always, or often, aimed directly at the policy sphere.

Nevertheless, insofar as one can still claim in representative democracies that the stuff of politics guides and shapes the stuff of Politics, this work is important for enacting change on climate change: not only change in individuals' lives, expanding and strengthening climate advocacy and activism, but policy and regulatory change. The knowledge-action gap on climate change, in actuality rather like an enmeshed intertidal zone, is more densely populated than a focus on the science-policy interface would first imply. As such, if this space is as important to change on climate change as this research would imply, then to study the activities and people of this in-between space is to better understand it, to be able to evaluate, coordinate and reform this essential part of the climate action picture in North America and beyond.

A final proposition, conceivably more of a provocation or challenge for future work. Coming to a close with a proper measure of twenty-first-century anthropological ambiguity, this dissertation concludes with perhaps more questions than answers, consistent with a preference for openings over prescriptions, movement rather than a new direction for movements. An empirical/descriptive goal of the dissertation has been consistent with a goal of Montgomery and bergman: "to affirm and explore spaces where something transformative is taking place" (2017: 28). In this, it is essential we remain critically open to the strangeness of the potentially transformative encounters with the yet-to-come in our work, given the political and ethical stakes. I thus remain encumbered with a sense that in order for both anthropologists and climate action practitioners alike to make real change, we need to question the taken-for-granted, "to take movements that were once too easy and make them difficult" (Foucault 1981). For, undoubtedly, I largely conduct my own work on climate change with a similar ultimate aim as my interlocutors. From my own situated position, my own location embroiled within institutions and systems of knowledge creation, I, too, hold in common what holds this network together: a political-moral commitment to positive change on climate change.

Yet the questions remain: is global anthropogenic climate change made legible in my work and that of my interlocutors? Are we doing justice to it in all its globality and contingencies? In Povinelli's words, have we made room for the not-easy movement of climate change "to disrupt the Logos of demos"—the discourse or logic of the people of a democracy—

"rather than simply to be allowed to enter into it"?; are we allowing climate change to "provincialize us, to become a subject of a shared Logos" with and within which to relate in a global demos of the Anthropocene? (Povinelli 2017: 127; 142) As Yip put it, "What would it mean to let climate change work people over," to change how they view themselves, their relations, their place in the world? (Yip 2019: 11) What about their political organizing or social scientific concepts and groundings, the Logos of politics and the academe? Which of these concepts and groundings no longer work, no longer serve us in the social sciences and humanities? Which received definitions are those, in fact, that helped lead us into an era of climate breakdown?

It is a perhaps obvious claim to note that global climate change in its very *globality* moves beyond the borders of the nation-state and therefore the international. When extending this reasoning to the founding concepts of society and the social that depend on the nation-state, questions—and, perhaps, indignant gasps—emerge regarding the continued utility of this inherited concept for studying climate change. The culture concept, too, I have written elsewhere—with its roots in the colonial counter and, ironically, early legibility in earlier, localized concepts of climate—is "overgrown" by the flourishings of global climate science and its boundary-defying, subject-redefining propensities (Fleischmann and Yip 2019). An example closer to home, resurrected from above: clearly, networks such as the one studied here are not societies. Nor are they cultures, nor *ethnoi*. In their horizontal, rhizomatic distribution of elements, the temporary, itinerant spaces in which I have grown my research are more inconstant still than stable nodes along the latticework of the typical network. Here, there is no stable node analogous to the anthropological village; and there is no geographically defined unit of analysis.

Yet I am not fully assured I have accomplished this task myself, of letting go what does not serve us conceptually, disciplinarily, in this dissertation. I have certainly been fastidious in choosing my words and concepts. However, given my immersion in the field, a dialectic with the people, organizations, knowledge and concepts of global anthropogenic climate change and the network, I remain convinced that climate change demands of anthropology—and politics—different groundings than those that brought it into being and that, arguably, continue to produce harm today. This may mean that anthropologists and climate action practitioners, mid-level experts or otherwise, will need to re-evaluate the grounding of their movement-work and concept-work. Fortunately, this research follows the results of Osterweil (2013) in arguing that

many movements and actors are already doing this knowledge-work. In the context of this research project, Climate Interactive, while convinced of power of climate science and science education or communication, is open to the inherent uncertainty of global climate change. Their theory of change is an open one—thoroughly explained in their multifarious multimedia training materials—and they have proven open to pushback and change in my experience. CAN-Rac, on the other hand, has already placed themselves in a position to be able to step back and have frank discussions and interventions about their own epistemological and moral groundings, theories of change and of "politics" in the lower-case sense.

Attending to anthropogenic climate change will require expertise from the human sciences—even if "the human" might need to be erased, *comme à la limite de la mer un visage de sable*.[5] The challenge here is therefore to take up anthropological methods and perspectives without advancing a complacency with an unjust status quo—and in ways that do justice to our uneasy times. These are practical considerations—about anthropological method and metaphor—that are not easy to address. Historian Dipesh Chakrabarty notes of the standard analytical moves that: "The science and politics of climate change have not rendered these moves irrelevant or unnecessary; but they have become insufficient as analytical strategies" (2012:9). An attunement to "tending an open horizon" (118), as Pandian emphasizes, can be a way forward.

"…perhaps to excess, a dream of Apocalypse"

In order to work toward positive change on climate change, all of the actors in the space of this research, as I have encountered them, act with a certain faith in the possibility of a better world, a commitment to a common good, an expert interest in a complex problem and the knowledge it will take to solve it. Another proposition. In recent years, Drew Jones of Climate Interactive has ended his workshops with the declaration that, "It's not going to be easy, friends, but it's going to be worth it!" This faith, despite an imaginary of possibility that takes into account both positive and negative visions of the future, this striving toward a positive, livable future was a part of what the diverse actors and organizations in the network held together. One likely needs to believe, after all, that what one is working for is achievable.

[5] "…like a face drawn in sand at the edge of the sea" (Foucault [1966] 2007: 422).

However, not every vision of the future with whom we will need to collaborate will be so positive. Michel Foucault's "dream of Apocalypse" that opened this conclusion is a dream shared by many in the West even today. As an adolescent, Foucault, sometimes deemed the theorist *exemplaire* of "soft power" was interested—perhaps influenced by—power of a different kind: rather than the pervasive, looming horror of disciplinary power, the violence and destruction of war and dictatorship. Foucault's adolescence spent "waiting for the dawn" was forward-looking, a reaching for the future through the darkness of a present that could crush you. If I were to extend the train of thought, to conclude, what could it tell us about the questions that opened this conclusion about the tension between the growth of capacities and the intensification of oppressive power relations? What of those that opened this dissertation, about how climate-safe future worlds are rendered possible, and how that movement is described? In thinking of climate change, has "the prospect of another world" also marked the people of *my* generation? Have we "carried with us, perhaps to excess, a dream of Apocalypse"?

In the same year Sandra Burton interviewed Foucault for *Time* magazine, Jürgen Habermas wrote of the anxiety- and terror-inducing conflicts of contemporary life that, he said, "explode the dimensions of the life-world" (Habermas 1981: 35). The fears they produce "function as catalysts for a feeling of being overwhelmed by possible consequences of processes for which moral responsibility can be assumed, inasmuch as we set them in motion both technically and politically, but for which we can in fact not be responsible because of their uncontrollable magnitude" (Habermas 1981: 35-36). Alongside prescient commentary on the storage and centralization of private data, potential military destruction, nuclear power and weapons (as well as atomic waste) and genetic engineering, Habermas might as well have been writing about global anthropogenic climate change. Today, climate change is one of the anxiety- and terror-inducing conflicts of contemporary life writ large. And this is not only because now it is the much more prescient portent of impending apocalypse today than, say, the threat of Cold War nuclear winter, now of an era more than three decades ago. Climate change is terrifying and monstrous, its "uncontrollable magnitude" simultaneously exhorting both clear moral responsibility and ambiguous—or, per some accounts, ubiquitous, sparse, selective and partial (Rojas 2015)—blame. Almost one-hundred years after Foucault's birth, today's generations, too, are "marked by the prospect of another world." As Heglar reminds, "climate change is not the first existential threat" (Heglar 2019).

"The World Keeps Ending, and the World Goes On:" Possibility in the Face of It All

> "By the time the apocalypse began, the world had already
> ended. It ended every day for a century or two. It ended, and another ending
> world spun in its place. It ended, and we woke up and ordered Greek coffees,
> drew the hot liquid through our teeth, as everywhere, the apocalypse rumbled,
> the apocalypse remembered, our dear, beloved apocalypse—it drifted
> slowly from the trees all around us, so loud we stopped hearing it."
>
> From Franny Choi's poem "The World Keeps Ending, and the World Goes On" (2019)

Yet can we allow ourselves to think beyond the prophetic to the problem? How can we take it up to imagine another world, and to see, with evermore clarity, the problems of the present? In moving forth into the future, from this dissertation onward and into a climate-changed immeasurable span of the future, I am not particularly interested in comparing apocalypses. I am not really interested in apocalypses at all, for that matter. However, I am interested in these *dreams of apocalypse* and what they can tell us about how the present is being problematized. To allow ourselves to think *through* the prophetic to the problem in these cases opens up the possibility to take seriously the appearance of this dream of Apocalypse in successive generations without the need for comparing suffering; without having to decide which apocalypse was more threatening, which fears were more real, which prophesy was more accurate. The object of interest here then becomes the problem, the imaginary presented by these dreams of Apocalypse, not the apocalypse that does or does not come.

The dream of a climate apocalypse—an emphasis on the "dream" because we are dealing with creative projection—indicates a particular relationship to the future. If we, today, carry with us a similar dream in regard to climate change, I think this "dream of Apocalypse" has as much to do with world-endings, with revelations and ends, as with "anticipations," trafficking in imagination, possibilities and forward-looking uncertainties. Masco has written recently that the mode of "anticipation" fills the gap, for so many these days, between knowledge of global ecological changes and the actual existing political programs to address them (Masco 2021).

Possibility, too, as an actor-category and an analytic, a concept and a term, indicates particular relationships and obligations to the future, to the past and to our present. My interlocutor Drew Jones' work to create new possibilities for imagining and acting on climate change is "a direct attack on resignation and despair," he told me. The inertial forces keeping the global-warming, fossil-fuel economy going are powerful, no doubt. However, is this a

resignation and a despair that come from a perhaps excessive dream of climate Apocalypse? Solnit writes, "Fire and brimstone and impending apocalypse have always had great success in the pulpit, and the apocalypse is always easier to imagine than the strange circuitous routes to what actually comes next" (Solnit 2015: 21). When Drew Jones asks, "What are experiences that help people understand, viscerally, the long-term, distant impacts of their actions in ways that create new possibility?" he is not looking to sugar coat the current order of things. Instead, he means to convey the stakes, the uncertainties *and* certainties of the system dynamics of the politico-climate system. As it appears in my field sites, possibility is not future-oriented optimism or even something as imbued with positivity as "hope." Yet there is something about climate change itself, I argue elsewhere (Fleischmann 2021), which makes it both open to and, I think, tending, reaching, writhing toward wild, ecstatic possibility—holding together certainty and uncertainty, the positive and the negative, the potential for a better world along with the potential for immense, widespread suffering and destruction.

Perhaps in possibility, the negatively tinged anticipation of an *excessive* "dream of Apocalypse" and the imagination of a better world can be held together in ways that don't traffic in futures foreclosed. Climate Interactive's models and games are some of their attempts to create the movements and openings for possibility-producing experiences: teaching participants what it will take to reach global climate goals; cultivating in them the vision of a better future world, of their own imagination, and; connecting this vision to people's capacity to take effective action in their own way, in their own communities, according to their own strengths and desires and needs. Climate Action Network-Réseau action climat Canada, too, brings people together, "creating magical space where connections happen," as Teika Newton put it. These are relations bound to place but cutting across borders, relations that recognize the power of transformative ways of being, already at work in the world. Since no one lives in a global climate, these movements require imagination. We are at a moment, I could argue, when imagination is essential for doing (climate) politics. "Again and again, far stranger things happen than the end of the world," Solnit opened her book (2016). The wild, profligate, driving forces of chance, relation and repetition that sustain life on planet Earth are not defined by the dominant power relations that got us to where we are. Let us practice an anthropology, an ethics and politics, in service to this vision.

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