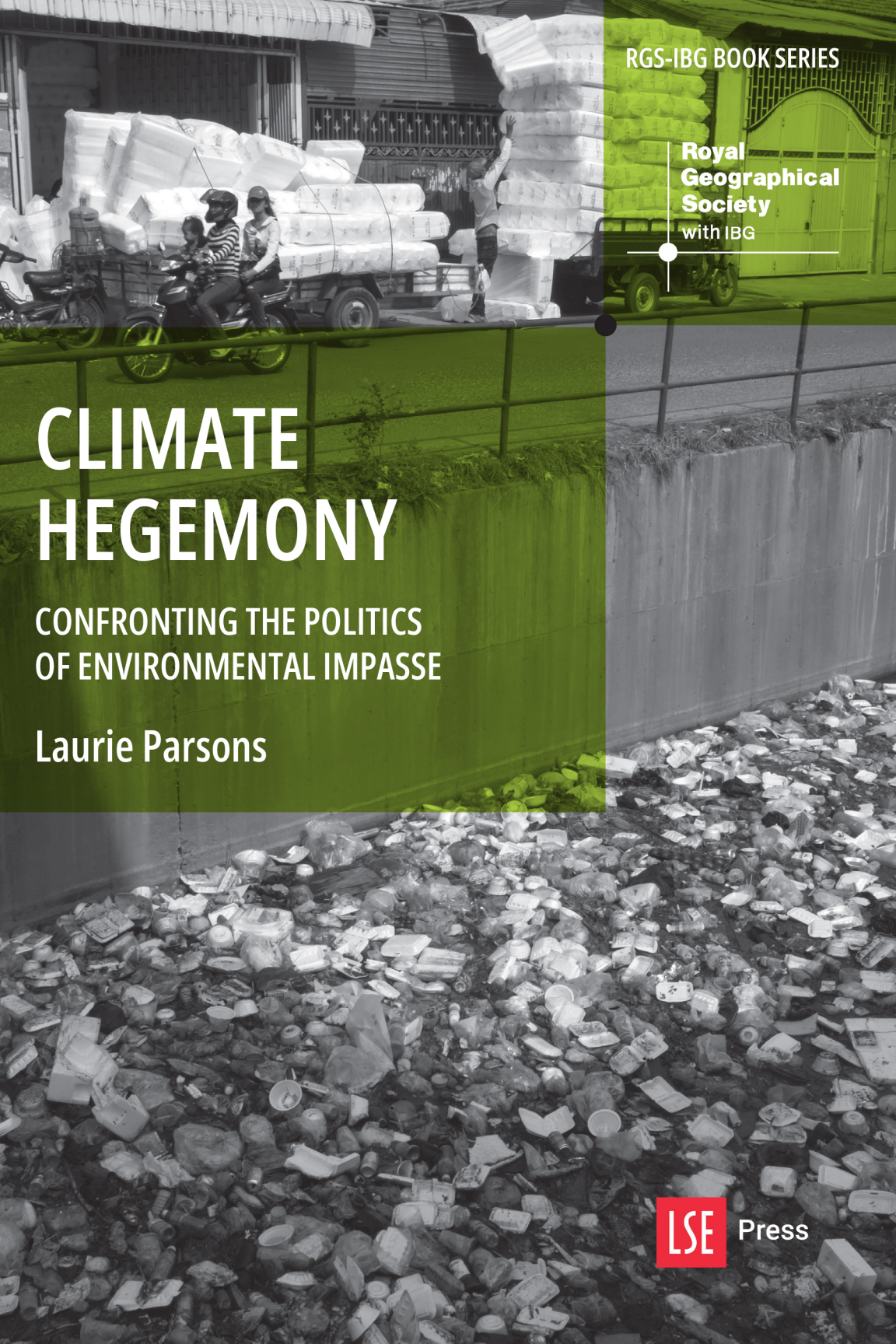


The background of the book cover is a black and white photograph of a street scene. In the upper left, a person is riding a motorcycle with a large load of white plastic bags or containers. To the right, there are more stacks of these white bags. In the foreground, a concrete wall runs across the frame, and below it, a large pile of discarded plastic waste, including bottles and containers, is visible. The right side of the cover has a green vertical band.

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CLIMATE HEGEMONY

CONFRONTING THE POLITICS
OF ENVIRONMENTAL IMPASSE

Laurie Parsons

LSE Press

Climate Hegemony

Confronting the Politics of Environmental Impasse

Laurie Parsons



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About the series

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Dr Laurie Parsons is a Reader in Human Geography at Royal Holloway, University of London. His work explores the nexus of climate change and the global economy, showing how the dynamics of global production shape the unequal impact of climate and environmental change. For the last 18 years, his work has focused on the rapid environmental, economic and social changes underway in Asia, and in particular in Cambodia, where he has lived for over 5 years in the last two decades, as a student, consultant and academic. During this time, he has won multiple awards for his work. In 2020, *Blood Bricks* was awarded the Times Higher Education Prize for Research Project of the Year, whilst in 2024, the book *Carbon Colonialism: How Rich Countries Export Climate Breakdown* was named AAP PROSE Economics book of the year and a CHOICE Outstanding Academic Title. His other books include *Climate Change in the Global Workplace* (Routledge, 2021) and *Going Nowhere Fast: Inequality in the Age of Translocality* (OUP, 2020).

1. Introduction

This is not a book about climate change in Cambodia. It is not even a book about climate change. It is about you. About why your actions against climate change are ineffective, however much you want them to work. About how strong men, big business and big energy are able to bend environmental agendas to their will without the need for clandestine meetings in shadowy rooms. It is about the narratives and axioms that shape the pathways of your thinking on climate change, limiting the options you see and accentuating the pathways that will only make things worse. And it is about climate change in Cambodia.

Before we get to you, though, let's take a look at the big picture. Almost every country in the world has signed up to the Paris Agreement, which mandates a rapid reduction in carbon emissions over an agreed period of time. The timeframes differ, from the 2045 target passed into law by Sweden and Germany, via dozens of 2050 pledges underpinned by varying levels of stringency, to India's recently agreed goal of net zero by 2070. Whatever the target, though, talk to any national politician and you can be pretty sure to come away hearing that they're hitting it. From Britain to Bahrain, the world's major polluters are 'marshalling the might of innovation and human ingenuity to propel a greener and more prosperous world' (Bahrain Delegation to COP26 2021, p. 1), resulting in 'world leading' decarbonisation (BEIS 2021). Indeed, so grand have been the strides made against the threat of climate change that, in the words of countries like the UK, 'our low carbon future is now in sight' (BEIS 2021).

So far, then, so rosy. But, as you may have guessed, this is not the end of the story. In fact, it is not the story at all. This is a story about what it means to get serious about climate change, about the processes and practices behind the rhetoric. And this is, after all, a pressing issue. The world is at present 1.2°C warmer than it was in 1960. Few people, if any, believe that limiting warming to 1.5°C, as stipulated in the Paris Agreement, will be possible – and 2°C is in serious danger of joining it in unfeasibility, if it hasn't already. Indeed, a rather disturbing, rarely spoken, truth is that the world will be 2.1°C degrees warmer in 2100 than it was in 1900, even if every signatory to the Paris Agreement adheres rigorously to their commitments – something that has not so far been the case. If policies remain as they are today, that figure will be 2.6 °C at best (Climate Action Tracker 2025). And this is a long way from the doomsday scenario. Even in theory, it is difficult to make the numbers match the high-flown political rhetoric, and many challenge the need to limit climate change

at these levels at all. William Nordhaus, for example, awarded the Nobel Prize in 2018 for ‘integrating climate change into long-run macroeconomic analysis’ used his own acceptance speech to declare a 4°C rise as the ‘optimal’ balance between growth and environmental damage.

Shocking though that number may seem, world leaders are queuing up to pursue Nordhaus’s green growth policies, which is one reason why understanding the impacts of climate change has become such a hot topic. Apocalyptic forecasts of mass environmental displacement have, for example, proliferated in recent decades. Estimates may vary by orders of magnitude, from tens of millions to billions. Yet the one thing they can agree on is the enormous scale of the problem. The ‘barbarians’ (Bettini 2013) are coming soon, we are told, in huge numbers. Only the details remain to be addressed.

In part, this book will be concerned with dissecting these numbers, by peering under the bonnet of the predictions that guide policy, but it does so with a particular aim in mind. The embattled, alienated, person under climate change, subject of a thousand statistical models, is to be removed from their petri dish under the microscope of scientific analysis. In their place, this book places the analyst: that globally variegated, multi-scalar hierarchy of frames, narratives and assumptions that stretch from a hazard like a flood, drought or heatwave, to you. The goal is therefore not to answer questions about climate change, but to interrogate why it is seen this way, to analyse climate change analysis in all of its political, scientific and contested complexity.

In doing so, the aim is twofold. On the one hand, it addresses one of the great frustrations of climate scholars in recent years: the apparently inescapable inertia of our present trajectory; or otherwise put that ‘capital’s drive for profit locks in policies for growth, whatever the cost’ (Wainwright and Mann 2018, p. 17). Yet as this book will show, this ‘locking in’ does not simply happen. It requires a vast array of norms, assumptions and agreements working in unison. So, the first goal here is to understand somewhat more about the many scales of practice that shape not only climate change policy, but also how climate change ultimately manifests. This means not only interrogating the assumptions of climate scientists and academics, but of people under climate change themselves and – crucially – the often-forgotten matter of everything in between. From village governance to provincial environmental monitoring organisations, to state meteorology departments, every scale and every place at which the issue of climate change is considered brings its own set of frames, narratives, assumptions and prejudices to the topic. Yet by assessing, as we too frequently do, only those that materialise at the largest and smallest scales, we remain blissfully unaware of the maelstrom of contestation governing human interaction with the environment.

Linked to this goal is a second intention: to oppose the hegemonic assumptions that govern our global environment, by rebalancing the value of climate change knowledge away from the weighty domination of global figures, in favour of a human’s eye view. As Wainwright and Mann (2018, p. 29) put it, ‘the present demands a theory of a movement still in formation, to oppose

a power still inchoate'. Yet it needs more than just theory. It needs the nitty gritty also: the details and empirics to connect the broad outline of change to the lived realities that embody our shifting political sands. So to this end, this book will examine and communicate climate change through the eyes of scholars, politicians, farmers, fishers, journalists and factory workers. And in doing so, it will deepen understanding not by refining global models, but by highlighting the scale of the disjuncture between how climate change appears in a newspaper, or a policy bulletin, and how it appears to those immersed in the sites it concerns. Beyond seeing such situations in sharper detail, this is a question of occupying the frames through which the environment is viewed by those who live in it, and of recognising the plurality of this viewpoint: an interested, contested and diverse collage of perspectives, which underpins the wider geography of climate knowledge.

This book will confront these dominant frames which shape our thinking on the climate by elucidating the tensions, elisions and contradictions concealed within apparently stable environmental logics. It will do so through the lens of hegemony, drawing on [Laclau and Mouffe's \(1985\)](#) conception to capture the dynamic contestations that restrain and reinforce environmental pathways. And what follows will be far more than mere description. For Mouffe, the fundamental characteristic of hegemony is its 'mutual collapse – between objectivity and power' ([Mouffe 1999](#), p. 753), yet underlying any hegemonic project are tensions that undermine that constructed objectivity. First, the tensions created by telling a universal story across ever greater spaces and scales; second, the tensions created by governing local actions from the global scale; and third, the tension of subverting the interests of multiple climate leaders beneath a single hegemonic banner ([Broto et al. 2023](#), p. 973). These tensions create disruptive opportunities, both practical and conceptual ([Broto et al. 2023](#), p. 973), yet their impact is inevitably sidelined by the politics of scale. You cannot undermine a hegemon with a single case study. Yet neither can you do so by appealing to the global, where the visibility of structural contradictions is faintest.

Aiming to square this circle, this book offers a middle path: an account focused on a single country, which explores the challenges of climate change both in place and in relation to the planetary processes which shape them. Recognising that 'the hegemony of fossil capital works within a multi-scalar regime of obstruction, extending from the everyday to the global' ([Carroll 2020](#), p. 9), what follows will connect the human's eye view on climate breakdown to the architecture of forces that shape it, tracing the thread of local experiences up to the highest scales of governance and power. This is therefore a book that attempts to challenge the intellectual supremacy of large-scale climate analysis by highlighting the value to be found in everyday experiences of climate and environment. It explores the diversity of standpoints that shape what climate change means to different people, confronting these experiences on their own terms, rather than through an externally ascribed analytical frame.

Rather than seeing everyday perspectives on climate change as diverging from a norm inscribed in data, this book instead asks an opposite question: why do the scientific data diverge from the real-world experiences of those affected by climate change? This is an inquiry with a great many dimensions, but at base it is about power, about attempting to interpret the interests and politics underpinning the multi-scalar landscape of climate knowledge. And this is far from the first attempt to examine it. Seminal texts in recent years have emphasised the politics of how we know and respond to the environment, from David [Demeritt's \(2001\)](#) invocation of the upstream politics of climate science, to Mike [Hulme's \(2009\)](#) questioning of why we disagree about climate change, via Lyla [Mehta \(2005\)](#), and Farhana Sultana and Alex Loftus's [\(2013\)](#) explorations of the politics of water, to Kasia [Paprocki's \(2021\)](#) insights into the global anti-politics of adaptation. At the global scale, a number of recent books have also explored the power dynamics of global climate governance: from Andreas [Malm \(2016\)](#) and Jason Moore's [\(2016\)](#) contributions on fossil capital, and the capitalocene, respectively, to [Wainwright and Mann's \(2018\)](#) invocation of climate leviathan and Matt [Huber's \(2022\)](#) exploration of climate change through the lens of production and class.

Yet despite these nuanced expositions, there is a missing middle in our understanding of this much discussed topic. Climate change discourse is, on the one hand, a fixture in Western media, capable of energising the left and right of the political spectrum with equal ease. Less appreciated, though, is its capacity to shape the minutiae of global politics, big and small, to invoke prejudice and action in different and often contesting ways from the local to the global. And this, precisely, is the goal here: to connect the hegemonies that govern climate change; to show the power dynamics governing fossil fuel hegemony to be the same as those shaping the vulnerability of local populations – and in doing so, to elucidate the cracks and inconsistencies that can trouble its dominance.

Written down, this might sound abstract, but the reality is anything but. This is a perspective drawn from – and inextricably connected to – the tangible, visceral experiences of climate change it is the goal of this book to communicate. It is a perspective built from fieldwork in a number of countries, but especially from Cambodia: a country where I have spent the best part of 20 years exploring the nexus of economy and environment alongside workers at the front line of climate breakdown and global development. This personal, situated perspective is the context that grounds the book, anchoring its theoretical discussions always to the real world, real places and real experience, and building up from there. And it is not only conceptually but also practically important. After all, sit down with a farmer in a rural Cambodian village and the abstraction of climatic projections melts away almost instantaneously. Within a few minutes of conversation in the shade of a stilt house, the centrality of resources, community and politics in the management of the environment becomes clear, even obvious. Cambodia, after all, is a country

beset by floods and droughts, the frequency and severity of which have greatly increased in recent decades (World Bank 2022a).

In late 2022, for example, a now commonplace spate of severe floods hit the country after weeks of heavy rain, killing over a dozen people, affecting tens of thousands of others, damaging over 150,000 hectares of agricultural land and displacing 5000 households (Davies 2022). Yet this could in reality be any year. Climate-driven flooding has become an annual occurrence in Cambodia, with major economic damage becoming a growing threat to livelihoods (Phy et al. 2022). Whereas severe nationwide flooding, in which more than a million people are affected (of Cambodia's now 17 million population), occurred only once in the two decades from 1980 to 1999, the subsequent 20 years saw five such incidents, interspersed by droughts and storms on a scale rarely or never seen before (World Bank 2024).

Yet visit one of these flooded villages and you will in most cases not see empty homes, abandoned to the elements. On the contrary, you are more likely to see a community adapting with canoes, calculation and care. Even amongst those households forced to leave their homes to avoid the water, the talk will not be of a final departure, but of how – and when – to replant the rice crops that have been lost. Return a few weeks later, with the waters now subsided and you will likely see a community busier than ever, albeit one in which the unequal impacts of the environment have left their mark. Most will have replanted their crop, many at the cost of burdensome microloans they will struggle to repay (Guermond et al. 2022). These new loans will have been used to cover existing ones, as well as the sustenance that the farm will no longer provide.

This crushing, mundane pressure is the reality of climate change for most affected communities around the world: not the drama of floods or fires, but a tunnel of narrowing, worsening options; of hopes disappearing out of view. Most climate shocks do not, after all, manifest as catastrophic ends, as a clean break to a way of life. They are simply one more thing to deal with. One more failed harvest to respond to. They mean a child taken out of school a year earlier than planned, another plot of land sold, an agri-business venture abandoned, or just smaller, poorer meals for the family this year (Iskander et al. 2022). They are, in other words, a part of the wider landscape of economy, society and culture in which poverty and prosperity play out, because the changing climate does not act on individuals, nor even households. It acts on communities, societies, networks and places that shape how they are affected by environmental pressures. They are not dislocated, atomistic or discrete in their everyday lives, so neither are their responses to the climate. And this is no quirk of Cambodia. The social construction of disasters has been highlighted everywhere from Haiti (Kelman 2020) to New Orleans (Bankston et al. 2010), as well as globally (Floriani and de Moura 2021). Disasters, of the sort ravaging our Cambodian village, are not, as Ilan Kelman puts it, 'the consequence of natural causes; they are the consequence of human choices and decisions' (Kelman 2020, p. 1).

This much we know – and have, indeed, long known. So why, then, do we separate climate change impacts from the politics which shape the conditions that they meet? As this book argues, it is because this is a topic from which we exclude ourselves, to the detriment of our analysis. Ecology, as Francois [Gemenne \(2022\)](#) writes, is not a consensus. It is a fraught and contested battleground. Yet of all the many environmental problems facing the world today, climate change stands apart as an example of ‘the strange non-political politics’ that have marked the terrain of environmental analysis in recent years ([Swyngedouw 2013](#), p. 1). The frames, narratives and views that each observer brings to the topic of climate change make us not simply observers, but actors in this mobile landscape. And ‘us’ here means everybody. Not just Western politicians making decisions over borders, nor only local communities, sub-national governors, funding bodies, journalists in the North and South, each of whom brings their own views. It means you, the reader, without whose deeply embedded assumptions these voices would hold no sway.

1.1 Climate control

What, though, does climate change analysis really have to do with you? Well, it comes down to this. Despite its recent presence in the media, climate change is, in the words of geographer Joe Smith, ‘an ugly story for media producers and consumers – difficult both to tell and to hear’ ([Smith 2014](#), p. 15) due to the misalignment of scales ([Bushell et al. 2017](#), p. 42) between the problem, human interest in it and the potential for action. A graph alone will not capture people’s attention or impel them towards action. At the very least, it will not do so twice. Yet graphs, figures and statistics are the only true representation of climate change as it really is: a deviation in long-term climatic averages due to increased atmospheric carbon concentration. Everything else, from the floods that displaced 30 million people Pakistan in 2022, to the summer heatwaves now regularly killing tens of thousands of Europeans each year ([Ballester et al. 2023](#)), is just weather. The changing climate has made them far more likely. We can even say by what precise proportion it has done so, yet we cannot definitively attribute any one of them to climate breakdown.

Faced with this problem, journalists, policymakers, politicians and scholars are left instead to pursue an uncomfortable artifice, identifying compelling subjects, which *represent* the future plotted out in scientific modelling. Images of untamed storms, sinking cities and barren fields, though a part of our present, are employed not precisely to document, but rather to *portray* our climate futures. And this much, certainly, is necessary. Our capacity to transcend the ‘Giddens paradox’ ([Giddens 2009](#)) – which describes how the incentive to resolve climate change arrives after the opportunity to do so has passed – depends on convincing a great many people of the necessity to act. Climate change narratives are weapons in the ‘climate war’ ([Mann 2021](#)). Yet they also carry the seeds of their own destruction. The more widely appealing

a narrative, the more diverse its interpretation, then the further it departs from the complex realities on the ground. The pursuit of homogeneity, universality and predictability presents climate change impacts as a purely scientific question, atomised and rendered interchangeable. Yet without turning the lens back on ourselves as analysts, we ignore the integral underwiring of our thinking, the cultural expressions that give meaning to what we describe (Offen 2013). This deeply embedded cultural grid shows you what to see and what not to, presenting you with a lens so thickly encrusted with discourse as to render your assumptions inescapable.

The atomisation of climate change impacts is a fine example of this. Whatever part of the political spectrum it emerges from, policy on climate change finds itself resting on the same conceptual fulcrum: that the climate acts on landscapes in which people happen to reside. Anything that gets in the way of that direct relationship is merely a confounding variable, something to compensate for or add into the latest model. This basic, one-way relationship between the climate and the people who live in it is so ingrained that it is inescapable. Yet despite its ubiquity, it is demonstrably wrong. The climate, in reality, has never acted directly on people. Simply imagine the difference that a person living through a Northern European winter experiences if they cannot afford – as many past and present have been unable – to heat their homes. In both cases, the climate itself is the same, but the ways in which it is experienced, and the behaviours that respond to it, are foundationally different.

And this is the same for those who now suffer the worst impacts of climate change. *Who* suffers the cruellest climatic blows is not a question of luck, because one's environment is no coincidence. The world's 1.2°C of warming since 1960 is increasing the likelihood of temperature extremes, both hot and cold, each year, but the climate is far from the only variable in environmental exposure. The climate, as humans feel it, is a social construct. Exposure to both heat and cold is socio-economically determined, disaggregating environmental experience even within spaces and households. Yet it is also global in origin. Despite similar climates, the risk weather brings is incomparable between Cambodia and Singapore. These inequalities of risk are historical and geopolitical, yet they are also dynamic. Society doesn't reshape environmental risk once; it does it continually.

On a fundamental level, we know this. And yet, when it comes to climate change, it appears that we don't. One rule for our own experience and another for the others makes, as usual, for a perfectly comfortable cognitive dissonance. This is why this book sets out not to interrogate the person under climate change, as many before have done (Aspinall 2013; Paprocki 2021; Taylor 2014), but the way we think about them and why. So rather than addressing the question of climate change in the usual manner – which assumes the premises of the problem and thus entrenches the agenda, whatever the result – this book instead adopts an inverse perspective, addressing the assumptions and discursive frames that lead us to construct and foreground this problem. In this way, the book aims to deconstruct and disentangle the knotted web of

interests that lead us to the present climate impasse, revealing the assumptions that shape how we try (and fail) to tackle this crucial global issue.

The remainder of the book will frame its answer to this question as a problem of power circulating in institutions and ideas. ‘Truth’, as Michel Foucault (1972, p. 133) attests, ‘is linked in a circular relation with systems of power which produce and sustain it’. And climate truth is no different. The power to see and to know the climate, to define climate change and to enact policy in response is, this book will show, exercised in the frameworks through which we view the world – and in this case, through the lenses, attitudes and policies through which we interpret and attempt to tackle it.

As Matt Huber (2022, p. 8) succinctly put it, ‘what matters is real progress in a rapid and wholesale transition from fossil fuels. And this is simply not happening’. And the reason for this is, moreover, clear enough: the internalisation of the political-economic might of the fossil fuel industry within the practice of science and policy. Yet whilst this is simple enough to say a lot more work is needed to understand what is actually happening. You may correctly say that you are well aware of the greenwashing claims of big oil and gas, of the red herring green policies of major governments, but this in itself is only a microcosm of the issue as a whole. Power may, on the one hand, circulate as a ‘mushy mixture’ of the discursive and the non-discursive (Deleuze 1999, p. 38) or, as James Ferguson (1994, p. 274) terms it, ‘a knotting or a coagulation’. Yet it does so at more than one place and scale. The power of a government manifests not only at the scale of global geopolitics, but also in the household norms that shape individual actions. Which we choose to look at is itself an ‘inherently political’ choice (Ahlborg and Nightingale 2012, p. 16), eliding much of the negotiation and contestation that shapes the politics of the environmental possible.

Elucidating this multi-scalar mush is challenging. It is, by its nature, a totalising endeavour: an effort to trouble the preconceptions undergirding climate change scholarship and policy by upending our relationship with them. Even to begin such a task is immediately to fail at it. You can’t, after all, plan research without assumptions; less so still obtain any funding to undertake it. So, a degree of artifice is required here too. Assumptions can’t be stripped a priori, but they can be discarded by degrees. What is necessary is first to puncture the objectivity of those assumptions, to reveal them as partial and contingent by emplacing them in time and space; and finally to elucidate the choices that underpin those frames. Only then can the full ‘cosmology’ (Sultana 2022, p. 6) of alternative choices be envisaged, with all its implied pathways. But this uncovering is far from easy. Hegemonies are durable precisely for their capacity to guide interpretation away from such alternatives. Forging new pathways is possible, but the secret ingredient is time.

And so time is the tool applied here, in order to get under the skin of climate thinking as it lives and functions in the wild. In the first instance, the research that constitutes this book builds on considerable time spent pondering the questions it addresses, long before the first word of this manuscript

was set down in type. I have been doing research on the nexus of environment and migration in Cambodia since late 2008, initially for the Royal University of Phnom Penh, as part of a two-year project funded by the Canadian international development office, the IDRC, followed by a PhD, then two years of research for numerous NGOs, and returning once again to academic work in 2017. Across these many years I have conducted work in 23 of Cambodia's 25 provinces, much of it – though not all – with an environmental focus. This history has provided me with a familiarity with the practical politics of generating and using knowledge in Cambodia and the global South more generally, as well as a familiarity with many of the contexts described in the following pages.

One of the aims of this book is to draw together the knowledge gleaned across this span of time. Yet it is not a reflective or post hoc account. The data you will encounter in the remaining chapters were sought, constructed and woven together between 2019 and 2024 for the purpose of exploring the questions laid out here. In the main, these data consist simply of conversations, led either by me alone or by myself and my long-term research associate, Ly Vouch Long. Over several years, these conversations answered some questions and raised others, pointing towards new avenues of inquiry, highlighting key informants of value and a great many dead ends. Ultimately, they began to raise questions around the way we measure and understand the environment, and alternative ways of understanding how we relate to it.

These many years of research have developed over time into a theoretical frame grounded in the field, but nonetheless situated within wider debates. And central to all of this is a concept of hegemony which structures and connects the great, varied and multi-scalar landscapes of the unspoken, unseen and unasked in the environmental sphere. As outlined in the subsequent pages, it is a concept of hegemony which pays homage to that of Gramsci (1971, p. 137), in viewing discursive dominance as the dialectical political-economic foundations of a 'historic bloc' of accumulating capital. Yet seeking to draw in more of the discursive dynamism of Foucauldian relationality, wherein power is reflected through discourse, the theoretical foundations of this book are built predominantly on Laclau and Mouffe's (1985) later conception of hegemony.

By extending their conception of hegemony to elucidate the power struggles that result in discursive exclusion, this 'post-Marxist' conceptualisation of hegemony (Laclau and Mouffe 1985, p. 4) sets out specifically to reinvigorate and reactivate a terminology that had become 'sedimented' (Laclau and Mouffe 1985, p. viii) by the 1970s, no longer receptive to theoretical and empirical developments elsewhere. And it is in this spirit that this book sets out to explore the various ways in which the concept of hegemony has been applied to environmental and climate change in recent years. Rather than a theoretical development emerging directly from Gramscian hegemony, it is instead employed here as a means to interpret and cohere the numerous hegemonies identified in the governance of, scholarship on and public opinion around climate change.

This means engaging not only with Foucauldian analysis, as do Laclau and Mouffe (1985), but also with more recent developments in the theoretical armoury on environment and climate. The role of metaphors and frames, of narratives and sophistic argumentation, of climate subjectivities and subaltern environmental cosmologies, has in recent years enlivened understanding of the various environmental impasses against which we flounder (Flusberg et al. 2017; Nisbet 2009; Sultana 2022). And running through all of these contributions, the idea of hegemony has been a familiar but diffuse presence; often suggestive of a wider compact, but never quite connecting across the vast and ragged field of climate scholarship.

Indeed, it is a contention that underpins this book that coherence amidst a conceptual landscape of this baroque diversity cannot be satisfyingly sought from the base up. The foundations are, after all, built to different specifications. Yet it can be evidenced *functionally*, by showing how each lens reveals historically contingent assumptions as to the validity of climate knowledge and common-sense governance responses. By highlighting, as do Laclau and Mouffe (1985), the explicit struggle for power through which a bloc of consensus is formed and competing perspectives excluded, a key goal of this book is thus to deconstruct the conflation of objective climate knowledge and hegemonic climate power, by interpreting 'how hegemonic knowledge-power relations squeeze out other ways of doing climate governance' (Machen and Nost 2021, p. 555). In other words, it will conduct an 'archaeology of silence' on climate alternatives (Laclau and Mouffe 1985, p. 7).

According to Laclau and Mouffe (1985), this silence – and hegemony more broadly – is built on three foundations: objectivity, universality and necessity. First, the contingent and political nature of a given pathway is concealed; second, an appearance of universality facilitates the expansion of a given viewpoint, and third, the natural, inescapable necessity of that perspective is asserted. The result is a 'knitting together of disparate demands and identities so as to forge assemblages that can contest a particular practice or policy' (Griggs and Howarth 2019, p. 465). In other words, a strong bloc united in opposition to a defined and narrated exclusion. The resulting objectivity can seem impermeable. Yet, as I aim to show in the subsequent chapters, it rests on insecure foundations, not only in 'the apparent removal of human subjectivity but also in the removal of historical and geographical relations, allowing only the sensing of effects to matter' (Griggs and Howarth 2019, p. 465). So, by tracing a clear line of sight between hegemonic climate narratives, the assemblage of governance they inform, and the lived experience of climate change in place, clear fault lines can be identified in the logics and practices of hegemony. With this in mind, the book itself is structured to hold up a mirror to these flaws. Within each of its three sections – *Subjectivity*, *Partiality* and *Choice* – are three chapters: the first a theoretical intervention, followed by two empirical expositions of the point.

Each of these empirical chapters is itself structured to reflect its function. Recognising the 'panoply of hegemonic practices at different scales'

that ‘extend between and connect civil and political society, environmental governance, and local communities’ experiences’ (Carroll 2020, p. 2), each empirical chapter will exemplify its theoretical intervention as it manifests within and across multiple scales. From the perspective – common to both Laclau and Mouffe (1985) and Foucault (1972, p. 133) – that scholars must adopt a bottom-up perspective by ‘retracing how the object of governance and the circumjacent regime of practice are articulated in discourse’ (Stephan et al. 2013, p. 53), each empirical chapter inverts the conventional top-down scalar progression, resisting the scalar domination of the global by situating the local as the scalar norm from which to depart. Each of the six empirical chapters thus begins at the smallest scale, situating subjective viewpoints and individual struggles as the primary objects of focus. As each progresses, it will move upwards in scale, in order to interpret the divergence between everyday experience and the structures that govern it.

This structure is first introduced in Chapter 2, where the first of the book’s interventions, *Subjectivity*, challenges the hegemonic conflation of objectivity and power upon which many forms of climate governance rest by exploring some of the most commonplace tropes of climate discourse. From military metaphors like the ‘fight against climate change’ to universalising expressions such as ‘we’re all in it together’, this first tryptic of chapters will explore the role of these frames in shaping and delimiting theory and policy around climate change. Revealing, in this way, the contingent and political nature of these frames, Chapter 2 will trouble the objectivity on which climate hegemony is situated in geographical as well as conceptual senses. Highlighting how metaphorical containers centred on the nation-state frame a container logic that foregrounds certain actions and policies whilst sidelining others, it will elucidate the landscape of power underpinning the construction of environmental categories. This categorical domination, it argues, as well as the powerful metaphors that underpin it, is key to the severity and persistence of the environmental impacts felt by local communities on the ground.

Chapters 3 and 4 will then exemplify this argument, rooting the theoretical interventions outlined in Chapter 2 in the empirical realities of environmental pressures. The first of these, Chapter 3, will tackle head on one of the most compelling and politically redolent facets of climatological modelling: climate migration. Rather than debating the many enormous numbers attributed to the phenomenon, though, Chapter 3 will deconstruct the frames we use to understand it, placing the analysis of climate migration, rather than its embodied object, centre stage. Building on this, Chapter 4 will broaden the base of this argumentation, highlighting how the analysis of climate migration is in fact a microcosm of a far wider phenomenon, whereby the reliance on implicit geographical categories and environmental metaphors actively segregates the economic and environmental dimensions of environmental degradation, resulting in a conception of climate vulnerability which is dislocated from the political economic context within which it sits.

Building on this analysis, the second part of the book, *Partiality*, troubles the appearance of universality that underpins climate change policy, often to the elision of the contested politics that underpin it. Highlighting how the ability to shape the terms of reference that underpin climate change communication allow environmental planners to project a historically situated and local project as universal, this section shows how interested framings encourage certain questions, whilst discouraging others. Emphasising the agentive role of these narratives, these chapters explore the idea of sophistry as a means to highlight the techniques employed in discursively producing the person under climate change. In effect, the multi-layered complexity of climate and environmental policy constructs its own ‘fog of war’ around the policy landscape, delimiting the range of available actions.

Obscured as they are amidst this fog, wicked problems become wicked opportunities for universalisation. Their capacity to play down particular differences in favour of opposition to a ‘common enemy’ (Griggs and Howarth 2019, p. 465) is a useful policy tool, helping to construct ‘collective will’ or ‘common sense’ (Gramsci 1971) positions that are all the more stable for their fogginess. By hiding tensions that might otherwise undermine the position (Broto et al. 2023), responsibility is deflected from the most powerful actors, whilst the human at the centre of all this is both elided and foregrounded; vilified but de-personified; robbed of a right to reply.

The empirical chapters in this section will flesh out this point through the lens of the Earth’s most vital resource: water. First, Chapter 5 will do so via a focus on the Tonle Sap Lake, an environmental asset as central to Cambodian livelihoods as it is ecologically unique. In exploring this precious, but rapidly wasting, national asset, Chapter 5 will show how narrative is employed to cut through the ‘wickedness’ of complex environmental problems, generating politically expedient policy pathways whilst masking more challenging but more effective environmental strategies. Remaining at the nexus of water and environmental policy, Chapter 6 will then further develop this theme via the politics of irrigation. Showing how the ‘vast discourse’ of sustainability leaves ‘significant room for manoeuvre at the local level’ (Broto et al. 2023, p. 986), it will highlight how the politics of scale shape environmental analysis, positing certain scalar decisions as a form of sophistry: a rhetorical toolbox that brings down a fog of war on resource contestation.

The final section of the book, *Choice*, explores how the preconceptions, knowledge gaps and interests through which we interpret the world support and entrench the power dynamics of climate policy. Elucidating and exploring the ‘necessary exclusions’ of climate hegemony (Laclau and Mouffe 1985, p. 753), it examines the limitations of environmental thinking and offers alternative viewpoints beyond these thresholds. Developing the concept of thumbnail knowledges – areas of understanding that are vital to facilitating our lives, but about which we know very little in depth – this section shows how the hidden subjectivities of environmental terminology provide a blank canvass for policymakers. As it will show, this tapestry of implicit

assumptions is malleable, adaptable and thus powerful precisely because it can be employed from various angles towards various ends. On the level of sensing and measurement, this results in a political geography of environmental thumbnails: a landscape of data collection that is ostensibly complete and objective, but which upon closer inspection loses its clarity. Seeking, in response, to flatten the analytical hierarchy connecting local experiences of environmental breakdown to global narratives on climate, this final section offers a new set of viewpoints to elucidate ‘the Other that blocks or impedes the hegemonic project’ (Nyberg and Wright 2024, p. 251).

Exemplifying the precarious and unequal experience of climate change through the real-world politics of environmental sensing, the subsequent pair of empirical chapters, 9 and 10, highlight the constructed limitations of environmental knowledge. By illuminating the alternative knowledge frameworks not foregrounded in environmental science and policy, these chapters reveal the pathways of our thinking to be a choice that could be made in other ways. Specifically, as Chapter 9 will show, the gaps in the landscape of environmental data reflect political economic inequalities at a number of scales. As a result, our climate record is an account not of objective, neutral environmental processes, but of curated and governed environments: a political microcosm, in effect, of a far more complex context. Extending this intervention, Chapter 10 begins to elucidate something of this vast tapestry of the unknown and unsensed, by highlighting the value of climate perceptions as a means of interpreting the environment. Far from being poor estimations of environmental processes, it will show that individual perceptions of environmental change represent a subjective, but highly sophisticated interpretive lens. By returning validity to the human’s eye view on the environment, Chapter 10 thus offers a counterpoint to the weighty dominance of large-scale modelling, and an entry point to the value of new, bottom-up perspectives on our changing world.

In the book’s concluding chapter, the key theses outlined in its three sections will be drawn together to confront and disrupt the hegemonies of climate governance. By foregrounding the *whom* in favour of the *how many*, it will return politics and weight to the question of *who specifically* will win and lose from climate change and why. Above all, though, it will challenge this question’s absence in climate change analysis. To paraphrase James Ferguson (1994, p. 256), those frames that exclude from environmental analysis questions of inequality, marginality and power perform ‘nearly as good a trick’ as the anti-gravity machine of science fiction: ‘the suspension of politics from even the most sensitive political operations’ through which resources are distributed and redistributed in an environment of growing scarcity and risk.

Climate change, it will show, is an arena in which systems of thought abut and contest one another, providing profound analytical challenges, but also huge opportunity for insight. Indeed, it is precisely in such zones that the assumptions and priorities of a particular way of thinking emerge most clearly. Climate change thus provides a mirror in which to explore the power

dynamics that structure our world. So, by encouraging the reader to reflect on their perceptions in this way, this book will return gravity to a topic long suspended in the realm of theory, by emphasising, above all, the weight of the choices it involves; the ‘unbearable heaviness’ (Brickell and Chant 2010) of decisions whose implications are not confined to atomised individuals, but woven durably into the fabric of family, community and place. It is a call to place flesh on the bones of environmental modelling and then faces on that flesh. Yet beyond even this it is a call to recognise the fleshy power of analysis: of the ways in which climate scholarship and policy shapes the world it describes, embroiling lives and bodies in the politics of adaptation. This will be climate change as seen through the lives of those who live it.

PART 1

Subjectivity

2. The tyranny of environmental metaphors

My war—and I have yet to win a decisive battle—is with the modes of thought and conditioned feelings that prevail in psychology and therefore also in the way we think and feel about being. Of these conditionings none are more tyrannical than the convictions that clamp the mind and heart into positivistic science (geneticism and computerism), economics (bottom-line capitalism), and single-minded faith (fundamentalism).

James Hillman (1999, p. 61) *The Force of Character and the Lasting Life*

‘Listen to the science’ has become a mantra of environmentalism in recent years, an entreaty to set aside partisan differences in favour of the cool rationality of charts and figures. Yet as well as neutrality it is also a call to recognise the value of expertise and systematic knowledge. Simply imagine the effort involved in analysing a single ice core: drilling it from amidst the howling winds and groaning ice of Antarctica and shipping it thousands of miles to a laboratory in which a scientist analyses minute isotopic differences of air bubbles trapped for hundreds of millennia. All of this to achieve one data point in one chart of historic temperature change. Climate science truly is a marvel.

Yet whilst each data point in our climate record represents a distillation of innumerable hours of expertise, rigour and innovation in the world, it is able to remain so only under laboratory conditions. Once that data point is called upon to enter the world in all its messy politics, its taught objectivity is enveloped in a subjective carapace of communication and comprehension. Global climate change is experienced very differently across race, gender, class and nationality (Norgaard 2012). It is also stratified by politics. In the US, for example, there is a 63-point difference between the most conservative Republicans (32%) and the most liberal Democrats (95%) in the proportion of Americans claiming to be ‘somewhat’ or ‘very’ worried about climate change (Gustafson et al. 2019).

In other words, as the realities of climate change are brought out into society to confront, climate change is transformed from a purely statistical phenomenon into a social one replete with contested and often mutually exclusive meanings (Asplund 2011). Yet this, perhaps, should not be entirely surprising. After all, the idea of the climate as a statistical phenomenon is a nascent newcomer in the context of a cultural history of climate extending as far into antiquity as human records remain (Behringer 2010). In the past few hundred

years, the standardisation and regularisation of the natural world opened up new ways of describing climate and thinking about what it meant (Hulme 2009), but they did not supersede what came before. The cultural history of climate remains alive and well, shaping how statistics are absorbed and interpreted and structuring action in response.

Our efforts to reconstruct climatic histories are therefore inseparable from the social and cultural meanings attributed to climate in the world beyond the laboratory (Behringer 2010). Yet an 'idealized vision of scientific truth as the God's-eye view from nowhere' (Demeritt 2001, p. 309) continues to distract from its embeddedness in many of the same social and geographical categories, metaphors and processes that structure the societies in which science takes place. The result is a privileging of certain (predominantly Western) concepts over others: an implicit acquiescence to dominant underlying logics, whereby the predominance of certain ways of climate thinking serve to undermine the local knowledge and experiences of marginalised populations (Keikelame and Swartz 2019).

In a general sense, this means recognising that the same power relations which have served to marginalise certain populations up to the present – whether according to gender, economics, politics or geography – serve also both to mask those vulnerabilities and render adaptation to escape them difficult (Whyte 2017). Yet it also means turning attention to the metaphorical and logical constructions that, both implicitly and explicitly, shape climate policy. In particular, key questions emerge, such as the following: which metaphors undergird climate policy? Which parts of the metaphors are emphasised? What aspects of climate change do the metaphors stress and neglect?

In exploring these questions, the goal of this chapter is not to collate a definitive set of answers. Indeed, given the breadth of the topic, such a task would be both impossible and undesirable. The intention is rather to reveal the influence of conceptual metaphors, containers and axioms. In doing so, we may highlight the value of a lens sufficiently reflexive to identify their influence, highlighting how environmental metaphors and geographical containers combine to progressively reinforce their own position and thus diminish sensitivity to local contexts and knowledges. What tyrannies, in other words, do these metaphors conceal?

As this chapter will show, metaphor is a key mechanism underpinning the objective character of hegemonic climate governance. Indeed, articulated through the tools of computerised modelling, and the policies that shape and derive from it (Edwards 2013), these metaphors bring the climate into being as a global object for governance. Metaphor conceals not only the decisions which shape this governance, but the very 'knowledge architectures' (Machen and Nost 2021, p. 560) that articulate them. So, in order to trouble this hegemony, this chapter will lift the metaphorical curtain from these architectures, to reveal the unequal politics beneath. It will do so first by revealing the metaphorical fallacy that underpins climate discourse: in other words, the

concealment of the metaphor itself as ‘common sense’. Having done so, it will turn from environmental metaphors to geographical ones, highlighting how space is produced and managed through discursive formations. Finally, it will draw together these insights to unpick the ‘collapse of objectivity and power’ that results (Mouffe 1999, p. 753), laying the groundwork for the subsequent two chapters, by setting out the discursive foundations on which the tyranny of metaphors rest.

2.1 Climate change and metaphorical fallacy

Metaphors exert far more power over our imagination than we tend to realise. They are one of the key mechanisms by which we understand both weather and climate. It is a part of everyday life to remark that ‘it is raining cats and dogs’, allude to ‘foreboding’ or ‘angry’ skies, or decry an ‘act of God’ in the wake of a disaster. And this is no mere feature of casual speech. Those debating climate policy may refer to ‘the elephant in the room’ to indicate an undiscussed area of emissions, whilst activists have long declared that ‘our house is on fire’ to connote the urgent need for action on climate change.

Extended didactic metaphors such as these are an everyday part of climate discourse, drawing power from their capacity to ‘activate mental representations that structure how people perceive the message’ (Armstrong et al. 2018, p. 70). Nobody expects a real elephant, but metaphors of this kind are useful because they invoke not only a mental image, but previous experiences where the same metaphor has been used. By enveloping contemporary events in a metaphorical descriptor, novel situations such as these are fleshed out with an immediately accessible array of preconceptions, ideas and emotions drawn from personal and cultural experience.

Yet, though common, metaphors like these are also the exception rather than the rule. Though heuristic and often powerful, they are crucially also identifiable, announcing themselves with a construction that demonstrably departs from one context to signify meaning in another. As outlined in Lakoff and Johnson’s (2008) classic text *Metaphors We Live By*, for example, the influence of metaphors direct our thinking down certain pathways, whilst implicitly cutting off alternatives. Axioms of climate discourse such as ‘climate change is a battle’, ‘we are all in this together’ or ‘we must stop climate change for future generations’ play a key role in shaping climate change politics and policy, even where they do not ostensibly appear. Whether *fighting* pollution, *uniting* on climate change or ‘investing in a green future’, the core metaphors of climate change structure and direct climate change thinking in subtle, but fundamental ways.

The traditional means of examining the influence of such metaphors has been purely linguistic, relying on sets of examples to highlight the widespread influence of an undergirding context. For example, as Lakoff and Johnson

(2008, p. 3) set out, the metaphor ‘argument is war’ may be ascribed the following descendants:

Your claims are *indefensible*.
 He *attacked every weak point* in my argument.
 His criticisms were *right on target*.
 I *demolished* his argument.
 I never *won* an argument with him.
 You disagree? *Shoot!*
 If you use that *strategy*, he’ll *wipe you out*.
 He *shot down* all of my arguments.

The same technique can naturally be used to identify the influence of core metaphors in climate change discourse. For example, the metaphor ‘climate change is a battle’, one of the more ubiquitous underlying axioms in climate discourse, can be found both in early climate writing and scattered throughout contemporary political statements and commentary. It is a metaphorical frame used by academics and political leaders to indicate the need for radical investment of resources, often incorporating sacrifice and loss. To pick a few of the numerous available instances:

Winning the *Battle* Against Global Climate Change (European Union 2005)

If we wish to *beat* the climate challenge – and I will conclude with this point – we need to move more quickly to protect biodiversity. The *fight* is the same; it *is a fight* for the planet.

(Emmanuel Macron, Leaders Summit on Climate 2021)

We must *fight* climate change like it’s *World War III* – here are *4 potent weapons to deploy*.

(Blair et al. 2020)

The New Climate War: *The Fight* to Take Back Our Planet

(Mann 2021)

Each of these examples leans heavily on the terminology of warfare to make its point about climate change. Yet, crucially, the metaphor is employed in each case to denote quite different actions. Where it is used by political leaders it tends to be used in much the same way as the ‘war on drugs’: to indicate large-scale, international state intervention and resource allocation, whereas when applied by academics it is closer in sense to the idea of civil war: a struggle against vested interests and powerful groups in society. This is often but not always the case. For example, the metaphor ‘we are all in it together’ reflects a relatively consistent position in climate change discourse, indicating principles of collective action inherited from earlier environmental movements:

Maori wisdom puts it best: He waka eke noa – *we are all in this canoe together*.

Ban Ki Moon, UN Secretary General, Address to the Pacific Islands Forum ([UN News 2011](#))

As we say in China, ‘*When people pull together, nothing is too heavy to be lifted*.’ Climate change poses pressing, formidable and long-term challenges to us all. Yet I am confident that as long as *we unite in our purposes and efforts and work together with solidarity and mutual assistance*, we will rise above the global climate and environment challenges and leave a clean and beautiful world to future generations.

(President Xi Jinping, Comments to Leaders Summit on [Climate 2021](#))

Climate Change *puts us all in the same boat*.

(Kofi [Annan 2015](#))

Metaphors on this theme are used to indicate collaborative international efforts, especially in relation to the idea of common, but differentiated responsibilities. Given its declining usage in the climate discourse of major Western emitters, which view themselves as having made significant progress in reducing domestic emissions in recent years, its uptake in Chinese climate discourse is perhaps instructive, as too is the invocation of ‘future generations’: a metaphor that, in obscuring the temporal and social inequalities built into climate change ([Graham and De Bell 2021](#)), is generally favoured by leaders advocating a slower, less radical policy approach. For example:

EU launches big climate plan for ‘*our children and grandchildren*’

(EU Fit for 55 Plan, reported in [Abnett 2021](#))

Folks, it’s up to all of us to protect the right to life, liberty, and the pursuit of happiness; the right to equal justice under the law; the right to vote and have that vote counted; the right ... to breathe clean air, drink clean water, and know that *our children and grandchildren will be safe on this planet for generations to come*.

(President Joe [Biden, South Lawn Speech 2021](#))

What right do they have to sacrifice *our children and grandchildren’s future*? Even with overwhelming support, global leaders face a tremendous challenge to respond.

(Prince [now King] Charles, cited at [Prince of Wales.org 2015](#))

This conceptual point has far-reaching implications. Indeed, as [Lakoff and Johnson \(2008, p. 3\)](#) outline, ‘the concepts that govern our thought are not just matters of the intellect. They also govern our everyday functioning, down to

the most mundane details'. Metaphors govern what we look for, what we find, and how we react to it when we find it. As well as urgency, the 'war on climate change' connotes exceptional powers, collateral damage and personal sacrifice in the service of a greater good; if 'our house is on fire', the set of implied actions is different, indicating the need to save and protect, preserve and rebuild. Consequently, by structuring 'what we perceive, how we get around in the world and how we relate to other people ... our conceptual system thus plays a central role in defining our everyday realities' (Lakoff and Johnson 2008, p. 3). The climate metaphors we live by have therefore become so commonplace in our daily lives that we no longer think of them as metaphors at all (Asplund 2011). Yet from their undergirding logic stem the sets of frames that guide actions, inactions and perceptions of priority.

It is where metaphors become implicit in this way that their greatest power lies. By dispensing with the explicit comparisons that undergird the analogy, metaphorical frames are able to bypass rational analysis by setting up a suite of assumptions which are effectively above (or beneath) scrutiny. Otherwise put, it 'overcomes the limitations of rational thought ... because its "as-if" function seeks to show how these terms are linked together' (Olson 2014, p. 71). At this point, the metaphor itself has not only disappeared from view, but begins to fade away entirely, as its familiarity leads to an elision of the conceptual distinction between the two comparators. What results is a 'metaphorical fallacy' effected by common usage (Hamington 2009), wherein those aspects of the terms that are alike grow in familiarity and emphasis until the metaphorical comparison itself begins to fade from view (Asplund 2011). In other words, the metaphorical abstraction has become permanent.

For example, where the metaphor 'we are at war with climate change' may initially be employed to denote rapid response and social restructuring, it becomes over time equally adept at justifying policies such as securitisation and migration controls, which may be deemed both temporary and necessary in the metaphorical context of 'war'. Equally, the metaphor 'disasters are an act of God', used initially to denote their unpredictability, may – indeed has – come to denote powerlessness before an unstoppable force and thus a reduced imperative to implement preventative measures or assign responsibility in the wake of disaster.

This hidden power of the metaphors we live by has for decades provided food for social scientific, philosophical and linguistic analysis. Yet as climate change emerges as one of the world's foremost policy issues, it is an analytical theme that requires re-examination due to the huge weight that climate metaphors possess. This is all the truer for the complexity and breadth of the topic, which lends itself to the clarity of cross-cutting, sometimes simplistic, metaphorical frames. The interconnectedness, depth and complexity of environmental systems precludes direct experience beyond a tiny fraction, leaving a phenomenon as global as climate change to be interpreted largely through the lens of the vast machine of scientific modelling (Edwards 2013). Yet underpinning this enormous array of data is a variegated landscape of cultural

environmental meaning. Climate change may be a scientific construct, but climate in a broader sense is a cultural artefact, with its own diverse library of metaphorical touchpoints to navigate by. As Therese Asplund (2011, p. 2) explains, this means that any metaphorical frame employed to describe the climate implicitly favours certain climatic geographies over others, because:

certain aspects of climate change are hidden and neglected by the metaphor used. Therefore, a dominant use of one metaphorical representation of climate change results in a single dominant understanding of climate change.

There are innumerable examples of how early messaging on climate change continues to shape – or at least justify – contemporary policy. Yet the metaphor ‘we are all in this together’, which emphasises collective (and thus, implicitly, equal) human responsibility for ‘solving’ the issue (Larson 2011), is an especially pertinent example, serving as it does both to allude to individual responsibility and elide differences in impacts and responsibilities between different places and different groups of people. As an undergirding metaphor it supports certain pathways of action at numerous different scales, highlighting the role of international frameworks, as well as personal efforts by businesses and members of the public. It directly opposes also the targeting of particular nations, sectors or corporations as bearing a particular responsibility for climate change and employed, as outlined below, by particular actors in particular circumstances: a pathway of scientific communication that serves particular interests and ends.

Indeed, crucial to understanding how metaphors structure climate policy is the relation between scientific concepts and public communication. As a widely known phenomenon whose understanding is driven by science and scientific concepts, climate change communication is replete with metaphors (Armstrong 2018) which play a significant role in shaping how the public think about it. The concept of tipping points is perhaps the most prominent example, being used to communicate feedbacks from certain stages of glacial melting, but which has subsequently become an integral part of the everyday lexicon on climate change, employed by scientists, journalists and politicians alike (van der Hel et al. 2018). Originally used to communicate a specific issue, it has since become embedded in environmental discourse as a metaphor that has largely shed its metaphorical origin (van der Hel et al. 2018): a metaphorical loosening, or ‘epistemological slippage’ as Mike Hulme (2011) terms it, that endows anybody employing it with a broader authoritative power than originally intended.

A second example emerges in the concept of the Anthropocene, an idea rooted in dating evidence of human activity to a durable geological marker (Lewis and Maslin 2015). Although ostensibly a geological formulation, the uncertain start date of the Anthropocene renders it more metaphorical than scientific (Yusoff 2018). From a dip in atmospheric carbon dioxide linked to

mass death of the North American population following European arrival in the 15th century, via the explosion of carbon emissions that followed the end of the Watt Steam Engine patent in 1800, to the first detectable radioisotopes in tree rings following the uptick of nuclear testing in the 1960s, this is a scientific frame intended for public communication, and one which has brought considerable success in promoting the idea of the 'age of humans'. Yet despite a broad and growing uptake, this metaphor, like any metaphor, conceals as much as it reveals. In recent years it has been much critiqued (see, for example, Kathryn Yusoff (2018) and Jason Moore (2016) for extensive discussions on this) for its elision of the grossly uneven human impact on the climate. As Kathryn Yusoff (2018, p. 13) puts it, for example, the Anthropocene concept:

has failed to grapple with the inheritance of violent dispossession of indigenous land under the auspices of a colonial geo-logics or to address the extractive grammars of geology that labor in the instrumentation and instrumentalization of dominant colonial narratives and their subjective, often subjugating registers that are an ongoing praxis of displacement.

Each metaphor emerges from a distinct scientific genealogy. Yet in both cases the price of their sustained deployment is geography. Metaphors are by their nature totalising – indeed, relating partial events to a more generally shared experience is their key purpose – and when the usage becomes widespread and implicit their universalising quality is strengthened further. In relation to a hugely variegated topic like climate change, this creates inevitable inaccuracies. Yet from a disciplinary perspective it brings additional complications also. As geographers, landscape is a metaphor we live by (Kearns 1997). The 'container metaphors' (Lakoff and Johnson 2008, p. 29) that structure our understanding of space play a central role not only in geographical research but – via the influence of geographical logics – on the wider sphere of policy and practice. By framing our investigations geographically and conceptually, we create 'ins' and 'outs' which become self-perpetuating. Certain regions and populations become sites of climate change vulnerability, others of environmental responsibility, others still are excluded entirely, or subsumed within regional analyses which bear little resemblance to the specifics of their experience.

2.2 Container metaphors and climate change geographies

Landscape knowledge, like all knowledge, is power. Control over the truth sets the terms of debate. As exemplified almost daily in relation to climate change, judgements over whose knowledge is worthwhile and whose is not are highly political acts, often leading to an amplification of marginal, climate

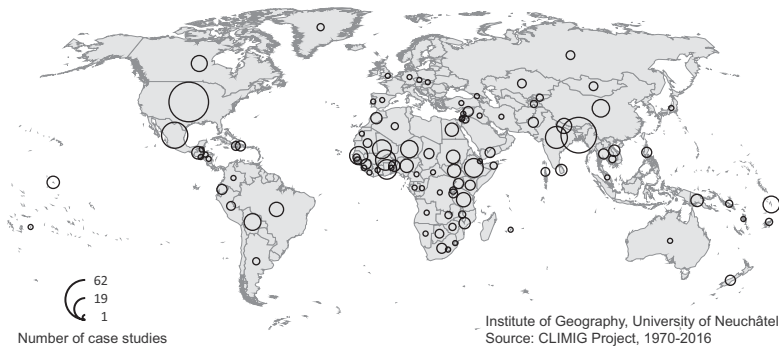
denialist views. Yet these battles for control over knowledge have their own geography. Often framed as occurring between scientific and lay knowledge, ignorance versus objectivity, the delineation is in reality far less clear.

Two decades on from David [Demeritt's \(2001\)](#) seminal paper on the 'upstream' influence of politics on climate science, climate policy retains a dis-embodied, delocalised character. Terms such as 'data gaps' and 'adaptation pathways' convey an anti-political sense of impartiality, the product of circumstances rather than agency. Yet the politics of these gaps and pathways are crucial, facilitating in some cases a political blank slate under the neutralising banner of environmental policy. What's more, it is often at these margins that scientific and social scientific disciplines meet, opening up a second epistemological front in the battle for legitimacy. Which data are collected, how and where, reflects not only scientific priorities, but academic contestations: subjectivity versus objectivity; the scientific method against the cultural turn.

This politics of knowledge shapes the geography of climate change, structuring it at multiple intersecting levels through the container metaphors that underpin climate change policy. Numerous examples exist, but the scalar and geographical schism dividing work on mitigation – reducing carbon emissions – and adaptation – responding to the challenges presented by the changing climate – is perhaps the largest in scale and influence. A dichotomy originally intended by the IPCC as a frame through which to cohere complementary policy on emissions and climate impacts has, since the late 1990s, developed into a durable 'false dichotomy' sustained by dislocated discourses on adaptation and mitigation ([Harry and Morad 2013](#), p. 363). This divide between the two lobes of climate scholarship plays a key role in which questions are asked and where, over time morphing into a 'wedge' which has segregated scholarship far further than its introduction in the late 1990s intended ([Schwanen 2019](#), p. 1). What was originally intended as a call for complementarity and mutual importance has become a self-reinforcing schism, underpinned in large part by an epistemological fissure between the 'hard, indisputable reputation' of mitigation science and the 'soft, uncertain science' of adaptation ([Kongsager 2018](#), p. 11). The result has been a perpetuation of analytical distinction between the two areas' work ([Harry and Morad 2013](#)), a geographical schism between two fields whose lenses are trained on opposite halves of the globe.

In simple terms, adaptation scholarship is focused predominantly on the global South, whilst mitigation scholarship is focused predominantly on the global North ([Piguet et al. 2018](#)). Authors of adaptation and mitigation studies alike originate overwhelmingly from the global North ([Piguet et al. 2018](#)), but the contexts their studies focus upon are selected on the basis of a categorical binary which becomes self-reinforcing through use. Since adaptation – and the environmental pressures that necessitate it – is not regularly observed in most global Northern contexts, evidence of the need for adaptation is built in such a way as to reflect the conditions in which it is collected. As Etienne Piguet and his co-authors ([Piguet et al. 2018](#), p. 358) summarise – and as

Figure 2.1: Worldwide locations of case studies on climate change and migration



Source: Figure 6 from [Piguet et al. \(2018\)](#). Reproduced with permission from Springer Nature.

evidenced in [Figure 2.1](#) – ‘climate change is global and borderless, but climate science is not!’

Adaptation, as a conceptual frame, therefore takes on the characteristics of the contexts in which it is observed, strengthening the categorical fit within the global South ([Piguet et al. 2018](#)). Mitigation, on the other hand, reflecting both higher levels of global Northern emissions, but also the greater observability of those emissions ([Hickel and Slamersak 2022](#)), scientifically reflects the conditions of the dominant global North. These two categorical binaries (adaptation/mitigation; and global North/South) therefore come to reflect each other through use, entrenching a division not only within the geography of climate scholarship, but also in the public and policy understanding of climate change more broadly. Nevertheless, in conceptualising the geography of climate change, this implicit binary is becoming increasingly problematic. The ill-fit of the North–South dichotomy to the increasingly complex interconnections between the two spheres has led, in an era in which environmental processes are structured increasingly by international flows of goods, money and people, to growing analytical difficulties.

As outlined by [UNEP \(2020\)](#), for example, global material extraction has tripled over the past four decades, with this trend expected to accelerate, doubling again by 2050. With such a large and growing proportion of environmental resource usage now channelled through international logistics that transect the North–South frame, global economic logistics are increasingly hard wired into environmental processes. Environmental dynamism is being shaped in real time by the systematic global complexity of trade, industry

and mobility (Schwanen 2019), demanding an interrogation of the conceptual containers structuring thinking on environmental change. In particular, metaphors of commodity spatiality like carbon footprints and commodity chains that implicitly denote spatial characteristics to environmental degradation are increasingly losing relevance in the face of distant landscapes physically interconnected by trade and resource flows. As a result, we are living in a world defined increasingly by a logic in which containers – in both the physical and metaphorical sense – have ‘reconstituted the spaces through which they travel’ (Haugen 2019, p. 868).

Despite the growing need to account for the economic reshaping of the environment, analytical change has proved challenging. A key problem is reconciling the complex interactions between local geographies, usually represented descriptively, and the international economic processes that shape them, usually represented analytically. Whilst in one sense, every map is a metaphor, the function-led nature of economic flow mapping has invited relatively little reflexive attention towards the categorical metaphors that underpin it.

Consequently, spatial containers – in particular those associated with nation states, but also more broadly regional and North/South containers – tend to be accepted *ex ante*, in a manner that privileges existing political entities at the expense of the porosity and flows that shape environmental impacts. This is an issue highlighted in recent years amidst growing concerns over categorical shortcomings of carbon accounting methodologies (Fezzigna et al. 2019; Malik and Lan 2016; Moran et al. 2018), whose overwhelmingly domestic framing has led to widespread interest in consumption-based models, which account for the increasingly borderless nature of emissions generation (Afionis et al. 2017). In effect, national accounting models render international trade a ‘loophole’ through which emissions regulations may be flouted by exploiting the mismatch of analytical categories to the geography of the international economy.

Linked to and supporting this obfuscation is a second set of metaphors concerning time, which explain emissions reductions with reference to development teleologies such as (most famously) the environmental Kuznets curve (Stern 2004). By explaining emissions reductions in terms of predictable technological change over the course of economic development, the Kuznets curve minimises the need for further interrogation of domestic emissions reductions. It is one of the most influential and widely used economic metaphors, yet it is no truer for it. Rather, as highlighted in a range of recent studies (Moran et al. 2018; WWF 2020), societies like the UK and the global North more broadly are not achieving substantial reductions in their emissions – in the case of the UK, a 44% reduction in domestic emissions compared to 1990 levels (DEFRA 2019) – purely by technological and infrastructural change, but by ‘outsourcing’ (Baumert et al. 2019; Malik and Lan 2016) emissions overseas. By moving them beyond the dominant container, they are made, in effect, to disappear.

Yet this is not inevitable. By interrogating the implicit metaphorical frames through which conceptions of climate change impacts and environmental degradation occur, it is possible to reveal their inherent subjectivity, extricating them 'from the straitjacket of the container thinking of absolute space and replacing it with the process thought of relational space' (Thrift 2003, p. 89). This critical frame on the container metaphors of climate scholarship aims to show how these processes are not only linked together but recast by the accelerated global circulation of ships, goods, capital and labour (Markkula 2021). In doing so, they will embed these containers within the wider landscape of hegemonic climate discourse, highlighting the 'tyranny' of metaphors so dominant that they elide the elision of geography, projecting an illusory objectivity between whose cracks the subsequent chapters of this book aim to peer.

How, though, might a metaphor be tyrannical? And what might this *mean* in practical terms? In his exhortation against the 'tyranny' of the metaphor, cited at the start of the chapter, James Hillman (1999, p. 61) identifies a particular set of targets: 'positivistic science (geneticism and computerism), economics (bottom-line capitalism), and single-minded faith (fundamentalism)' which are targeted as 'tyrannical' in their influence over the 'minds and hearts' of those who practise them. It is a position that might seem polemical, even crankish, in isolation. Yet he is making a particular point. Metaphors, once sufficiently embedded, conceal their own subjectivity, facilitating a false but stable objectivity. This is all the more so because those intellectual positions most firmly rooted in the pursuit of objectivity tend to be the least reflexive over the framings that structure their analysis. Objectivity is, indeed, in one sense an abrogation of positionality: an assertion that the terms of analysis have been met sufficiently accurately as to eliminate the vagaries of an individual perspective. Yet, as the above has aimed to show, no environmental frame can be removed entirely from its context. The premises, logical constructions and analogies that undergird it are always identifiable, even if some choose not to examine them. Interrogating this subjectivity is both a scholarly and political imperative.

In this chapter, it is one exemplified through two of the metaphorical axes that underpin climate policy: the discursive and the spatial. In the first instance, core metaphors act as a point of reference around which a wider constellation of positions coalesce. The metaphors 'climate change is a battle', 'we are all in it together', 'we must stop climate change to safeguard our children's futures' are successful because of their capacity to inform thinking without the need for further explanation. They are, in other words, 'empty signifiers' (Laclau 1996), unmoored by abstraction from real-world accountability, yet capable of coalescing political action. Metaphors like this are powerful, yet by virtue of this ephemerality, unpicking the influence of such metaphorical frames is challenging because there need be no direct line of succession to their original intention. Rather, metaphors and the lines of thinking they influence bear a 'family resemblance' (Lakoff and Johnson 2008), which often exists in combination with other metaphors and frames.

Whilst examples like this highlight some of the ways in which metaphorical tropes structure climate policy, it is not the intention here merely to demonstrate the existence of this phenomenon. Indeed, given the undergirding influence of metaphors on our systems of thought more broadly, it would be a surprise if such relations could *not* be observed. Rather, in laying the foundations for the empirical materials which will follow in [Chapters 3 and 4](#), the goal is to fashion a lens through which something of Hillman's 'tyranny' may be observed in the ground-level experience of climate change and climate policy. In other words, to elucidate how the appearance of objectivity is constructed and deployed for political ends.

To this end, the following chapter, [Chapter 3](#), will begin with an exploration of climate migration: a nexus field of vital conceptual importance as a juncture point between social and natural scientific viewpoints on climate. On the basis that, at such uneasy junctures, the fissures in hegemonic logic are at their widest, [Chapter 3](#) will trace upwards from a ground-level analysis of the discursive and empirical realities of climate change towards the larger-scale sphere of Cambodian climate politics. By scaling upwards in this way, the goal is not only to highlight the contingent and political nature of climate migration governance, but also to demonstrate its continual discursive reproduction at multiple scales. The governance of climate migration is not, as [Chapter 3](#) will show, the result of a single, static hegemony, but of fluid and adaptive metaphors (re)realised in multiple scales and settings. Indeed, the very potency of discursive metaphors such as these lies not in their ability to build a totalising narrative, but in their capacity for reinterpretation amidst divergent contexts. This most numerical objective of metaphors is thus *necessarily* subjective, dependent on definitional uncertainty for its power and reach.

Having outlined this position, [Chapter 4](#) will turn attention to the role of container metaphors in structuring knowledge – and ignorance – about the climate and its impacts. As it will show, the spatial containers associated with political and administrative governance are integral to the systems by which environmental processes are visualised. These analytical containers are more than lenses on the climate. They are actors that shape the landscape of environmental change by bounding and creating the terrain to be governed ([Machen 2018](#)). This subjective geography then becomes a self-fulfilling prophecy, structuring scholarship and policy in a way that supports its claims to objectivity. This is not to say that the containers currently employed are *wrong* – indeed, since containers by definition both include and exclude, none can be *right* as such – but that they describe *and shape* a particular form of (neoliberal) environmental governance ([Machen 2018](#)).

This occurs through two mechanisms: first, environmental sensing reflects the global political economy more generally via the unequal distribution of sensing resources. Wealthier countries tend to know more about environmental processes happening in their immediate vicinity, as they have the financial means to do so more effectively. Yet there is also a further dimension in this regard: environmental knowledge, like all forms of knowledge, reflects

the conditions in which it is generated. The geography of both environmental sensing and policy therefore reflects the realities not of the natural world in isolation, but of a politically governed environment. Both monitoring and policy exist in relation to the political container of the nation state, yet this also applies on the smaller and larger scale of domestic and global regions.

These containers shape lives. As outlined in [Chapter 4](#), those impacted by climate change do not succumb to environmental pressures in a direct sense, but are impacted by a hegemonically governed and articulated climate. This occurs at multiple intersecting scales, as climatic and political processes interact to co-produce complex risks and precarities, shaping and directing how climate change impacts manifest. Simply put, the ways in which climate change manifests in practice have a great deal to do with how we analyse it, a position demanding far greater scrutiny of the processes and frames that underpin the politics of analysis. What follows will begin that scrutiny.

3. I, climate migrant: science, security and stigma in the analysis of environmental mobility

We are not educated people, but I can sense something grave is happening around us. I couldn't believe my eyes – the land that I had tilled for years, that fed me and my family for generations, has vanished. We have lost our livelihood. All our belongings and cattle were swept away by cyclones. We have moved to Sagar Island and are trying to rebuild our lives from scratch. It wasn't like this when I was young. Storms have become more intense than ever. Displacement and death are everywhere here. The land is shrinking and salty water gets into our fields, making them useless. We feel very insecure now.

(Tulsi Khara, 70, Bangladeshi climate migrant; [Randall 2015](#), p. 1)

Stories such as the above, the words of a 70-year-old former farmer from Bangladesh, are a staple of media accounts of climate change, neatly interweaving as they do the three undergirding themes of climate migration scholarship: first, the experience of environmental shocks; second, mobility directly impelled as a result; and third, an awareness of the wider climatic trends within which these events are situated. Yet common as they are in media in policy reporting, encountering an account like this in the flesh is exceptionally rare.

And this, as this chapter will show, is precisely the point. The climate migrant in discourse is not intended to function as a tangible category, let alone a tangible, embodied person. Rather, a large part of the role played by the climate migrant, in discursive terms, is the stabilisation of climate hegemony through the creation of an 'antagonistic outside' ([Laclau and Mouffe 1985](#), p. 125). Whilst [Laclau and Mouffe \(1985\)](#) describe this role as that of a 'common enemy', this chapter will show that enmity itself is unnecessary. Rather, the climate migrant functions most effectively as an 'empty signifier' ([Laclau 1996](#)) of otherness, capable of uniting conservative and liberal environmental discourses through their external negation.

Viewed this way, what makes the climate migrant such a powerful concept is its metaphorical quality. Rather than an empirically derived phenomenon, the climate migrant is, at base, a transferable metaphor: an anonymised allusion to threatening humanity under climate change. Only once this metaphorical frame is brought into contact with the lived realities it describes does a tension arise to destabilise its coherence. Even in the most clearly defined case studies of climate migration – Pacific Island states such as Tuvalu and Nauru whose

low-lying geography amidst rising seas has seen them styled the “front line” of climate change’ (Bawden 2015) – the subtlety, even subjectivity (Parsons and Nielsen 2021), of environmental experience soon troubles objective expectations. Indeed, as argued by Uma Kothari and Alex Arnall (2019, p. 139) in the context of the Maldives, such impacts are best understood ‘through a narration of the ways in which human–environment entanglements are encountered and unfold on a given day, [and through which] everyday expressions of contestation, negotiation, and affordance come to the fore.’

Resources, in other words, are not disembodied, disowned and depoliticised simply because the climate acts on them. Rather, politics remains embedded and even intensified in vulnerable landscapes, shaping conflicts and contestations through which scarcity is viewed. Nature under such circumstances therefore functions more as an interlocutor than an agent in itself, stoking conflicts and stigmas, and shaping inclusion and exclusion in affected communities. As a result, the sense that ‘something grave is happening’ is rarely so cleanly articulated in practice as it is above. Rather, the everyday reality of climate impacts – and thus the responses they impel in affected populations – are far more nuanced due to the ‘entanglement’ (Kothari and Arnall 2019, p. 130) of human, physical environmental and socio-cultural factors that structure how the environment is experienced in place.

This complexity is expressed well in the below story from a female beggar called Yay Mom, from Prey Veng province, who migrated to Phnom Penh to seek alms some years before I met her. She is a person I keep coming back to in my writing for the way that her story draws together so much of the social, economic, cultural and environmental complexity of climate breakdown. Impacted as she is by the combined pressures of climate change, mechanisation and the transition to a translocal rural economy, she experiences the impacts of climate change indirectly, through the lens of local circumstances, everyday politics and personal relations:

I previously did wage labouring, like transplanting rice. [But] because I am a wage labourer, now it is difficult, because now everybody broadcasts;¹ they don’t transplant any more. And even for harvesting, they use a harvester [machine], so there is no more work for me. Now those people [who used to do wage labour] migrate outside [of the village] for work, like to a lotus farm ... [People who don’t leave] just do their own farming. Before they did their own farming and worked for others as well, but now they just do their own. Generally, they all have land. It’s only me that doesn’t ... No others beg. Just me ...

... They don’t criticise the other migrants. That kind of work nobody criticises. I don’t know why, but if you work for somebody’s farm they will lead you and tell you what to do, whilst if you come to beg, then they look down on you ... people criticise me. They say it’s not

good walking along the road and asking for money, but I don't care. The neighbours around my house [say this]. People look down on me, but it's okay. Now I am very lowly. I don't have any children, I don't have anything, I'm very poor. [But] when I get some money, I will offer some money to the monks and wish that the next life will not be the same as this life. (Interview with Yay Mom, 87, female beggar from Prey Veng province, Cambodia, 15 June 2017)

Although the begging perspective offered by Yay Mom is unusual – especially within the context of a literature that has only recently come to focus on internal migration and has had little or nothing to say about begging specifically – her framing of the issues surrounding her mobility has a wider resonance. First, despite living her 87 years in one of the most climate vulnerable provinces in Cambodia, Yay Mom does not mention climate change specifically, noting only the difficulties presented to her livelihood resulting from the widespread changes to farming practices in recent years. Although these changing practices have been connected (Lawreniuk and Parsons 2020) to the growing unpredictability of Cambodia's climate, they are not a directly promulgated adaptation, but one situated within the context of Cambodia's ongoing development. The rapid growth of the garment industry (ILO 2018), the explosion of microfinance throughout the country (Bateman 2018) and the mechanisation of agriculture linked to land consolidation (Diepart 2016) have all contributed to framing the experience of Cambodia's changing climate for those living within it.

And there is more too. Yay Mom's vulnerability may be tied to an array of environmental processes, yet the underlying message of her testimony is the stigma with which her actions are associated. Unable to access formal migrant labour due to her age, lack of connections and capital, she has resorted to the heavily stigmatised informal occupation of begging to earn income. As she bemoans, she is regularly criticised and ostracised by her community for this, isolating her both from her local social ties and ties to other migrants. Socially and geographically dislocated, vulnerable and lacking in assets, she is thus as close as any in Cambodia to the iconic image of the climate migrant. Yet as she herself notes, she is only one of many migrants from her village, all of whom might be expected to have experienced broadly the same climatic changes as herself. In other words, it is only those for whom the climate promulgates economically, socially or politically undesirable patterns of migration who tend to be labelled as climate migrants, whilst those who are able to enter the formal sector, or accrue a steady income, remain largely beyond the purview of climate migration scholarship, not because they are hidden, but because climate migration is an *a priori* category whose members are 'problematic' migrants: those who do work they should not, or move to where they should not be (Baldwin 2022).

Nevertheless, whilst the climate migrant category is ubiquitous at the scale of international governance, it is far less prominent amidst local governance,

where migration is viewed in terms of its relationship to longer-term national strategies, historical and contemporary political-economic conditions both globally and nationally, and only then the undergirding climatic conditions through which the 'push factors' of climate-linked migration are shaped. This is a position outlined in some detail to me by a director of the Cambodian Rural Water Supply Authority, in early 2020:

We are nominally an agricultural country, but as I told you, much of the land belongs to [a certain] group of people. The real farmers, they have lost their land because they need money and they sell it. They come to the city to work in factories, especially garment factories, as they expect to get money to support their family in rural areas. This is the trend: they come from rural areas because they have sold their land. They come to the city for a job. If they don't sell their land, then the land doesn't have an irrigation system, so they cannot cultivate enough ... to make a living because there is no water for irrigation. That is why they decide 'I don't want to earn money from agriculture because there is no water, sometimes I spend a lot of money for fertilizer and fuel', even though they are ... imported from Vietnam and from the other countries. We spend a lot, and if we talk about the cost that we spend on cultivation and the outcome or yield we get from agriculture, between the money we earn after harvesting and the money we spend for cultivation, there is not much we earn, yes just a small amount.

That is why people say 'I cannot depend on this I have to sell it out and go to the country for work like Thailand or Korea for employment'. At the moment, Cambodia relies on other countries coming to invest [here]. If they don't come for investment, how can we earn money? But if Cambodia depends on outside investors [alone], I don't think we can live ... And [on the other hand], agriculture alone is not sufficient to help people or help the country achieve [the national target of middle-income status] in the year 2030, if agriculture depends only on rainwater. (Interview with a director of the Rural Water Supply Authority, 5 March 2020)

In a richly detailed account of mobility as situated within the geopolitics of Cambodia, the director's testimony overarchingly demonstrates two things. First, that migration is a phenomenon linked into a wide variety of factors at the local scale, of which environmental change is only one. Irrigation and the cost of agricultural inputs are highlighted, yet the same could apply equally to a number of other factors, including changing social norms and mechanisation. Economic and climatic circumstances may influence decision making, yet the decision remains in the hands of those who make it. Moreover, of equal importance, there is an acknowledgement that these decisions are

undergirded by choices on the part of policymakers. Irrigation, in particular, is highlighted as a decision potentially aligned to national priorities, but generally passed over in favour of an investment-focused national strategy. Climate-linked migration, therefore, is shown to be a national priority only to the extent that it serves or impedes strategic national goals. In the case of Cambodia, strategically dependent on a high volume of rural–urban migration to fuel a labour-intensive industrial growth model, it is rarely problematic and potentially even beneficial. Maladaptation, under such circumstances, is a term applied only to those, such as beggars, whose labour does not contribute to this system.

What the testimonies of both climate-linked migrants themselves and the planners who shape their mobility highlight is the politically situated nature of migration decision making under changing climatic conditions. In adaptation policy, as elsewhere, political rationalities determine the boundaries of debate (Lindegaard 2018). Whose responses to the climate are deemed to have been ‘driven’ by climatic factors and whose are deemed to be appropriate responses to market forces is therefore contextually, rather than universally, determined. Rather than being an inherent characteristic of migration, to be a climate migrant is to be an undesirable migrant, as contextually determined in place. This apparently universal category is in reality a mirage.

3.1 Climate migration in Cambodia: from ‘great mobility’ to the geopolitics of adaption

Always sensitive to climatic variation due to its dependence on rain-fed smallholder rice production (NIS 2015), Cambodia is consistently ranked amongst the world’s most vulnerable countries to the impacts of climate change (Eckstein et al. 2021). Recent decades have seen substantial evidence of regional heating, as average temperatures have increased by 0.8°C from 1960 to 2005, with further rises forecast of 0.3° to 0.6°C by 2025 and another 1.4°C to 4.3°C by 2090 (MRC 2012). Consistently ranked in or around the top 10 in the global climate risk index (Eckstein et al. 2021) and reaching a peak of number 2 in 2015 (Kreft 2013) following a heavily disrupted monsoon season the previous year, climate change is now routinely described as ‘a major threat’ to the economy and society of Cambodia (Chandara 2017).

Part of Cambodia’s ongoing environmental vulnerability is geographical. Endowed with a topographically flat landscape, within which the main population centres surround a large alluvial plain that bisects the country, Cambodia is a nation historically prone to flooding, but well adapted to it. In common with other parts of Southeast Asia, houses in most parts of the country are built on stilts, allowing the mobilities of ordinary life to continue during periods of heavy rain and high floods. Nevertheless, recent years have broken new ground in term of the scale and duration of flooding. Rainfall patterns have shifted significantly since the 1920s (Doch et al. 2015) with the last two

decades witnessing the increasingly sporadic alternation of unpredictable and intense rains with extreme droughts which have badly affected farmers' livelihoods. Cambodia has experienced 7 out of its worst 10 floods since the turn of the millennium (EM-DAT 2022), including the 'millennium flood' of 2000, described at the time as the worst flood in 40 years (ADRC 2002).

Yet more concerning for many Cambodians than the frequency and intensity of flooding during the past two decades, Cambodia is also grappling with a less familiar issue: drought. The devastating drought of 2016 was declared by Prime Minister Hun Sen to be the 'worst natural disaster to hit Cambodia in 100 years' (Save the Children 2016, p. 3), but similar patterns have since become routine, compounded by El Niño anomalies in six of the ten years from 2014 to 2023 (Climate Prediction Centre 2024). Such persistent climatic instability in the context of a nation where over 80% of the population continue to depend on agriculture, either wholly or in part, has had an inevitable impact on mobility (Diepart and Ngin 2020). Shifts in the pattern of Cambodia's annual rainfall averages away from the traditional bimodal distribution towards a monomodal distribution (Doch et al. 2015) has rendered traditional, labour intensive, but low-capital investment systems of agriculture unfeasible for many. At the same time, the growing unpredictability of Cambodia's rainfall is encouraging farmers into systems of farming – in particular, shorter grain rice varieties, dependency on fertiliser, mechanised farming methods – which are more rapidly reactive to the advent of rainfall (Liese et al. 2014).

Ultimately, the linked combination of these factors has seen external capital become an increasingly crucial dimension of smallholder agriculture: a phenomenon which has played a role in catalysing Cambodia's widespread uptick in the quantity and distance of migration in recent years (Bylander 2015). Remittances have now become a vital dimension of agriculture in Cambodia (OECD/CDRI 2017), embedding translocal systems of mobility into Cambodian livelihoods in fundamental ways. Modern sector wages – both international (Bylander 2015) and domestic (Lawreniuk 2020) – are now a necessary precursor to the practice of rural livelihoods, placing migration in a key structural role linking urban and rural environments. As of 2018, over a million of Cambodia's 15 million strong population were estimated to be working overseas, whilst a further 4 million are internal migrants (UNESCO 2018). No longer a response to incidental shocks, or even slower onset pressures, the changing climate has rendered migration an ongoing imperative for many Cambodians.

Nevertheless, despite its centrality to Cambodia's livelihoods and modern sector growth – especially in relation to the economically dominant garment sector, where over two-thirds of workers are internal migrants (Care International 2017) – migration policy in Cambodia does not formally reflect the role of environmental factors in shaping migration flows. Indeed, in the Official Policy on Labour Migration for Cambodia 2019–2023 (RGC 2019b, p. 8), neither the term 'climate' nor 'environment' makes a single appearance. Rather, in typical fashion, the policy overarchingly states that:

The Labour Migration Policy for Cambodia 2019–2023 responds to the identified need for the Royal Government of Cambodia to introduce measures to ensure that new job seekers can be productively employed and develop their skills to be able to work in emerging, rather than vulnerable sectors in both Cambodia and destination countries.

As such, official policy on labour migration is rooted in an economically framed viewpoint on mobility focused on destination productivity, largely to the exclusion of the factors which might ultimately shape the course of that mobility. And this is no incidental oversight of the Cambodian government. The OECD's analysis of Cambodian migration policy, in partnership with the Cambodian Development Resource Centre ([OECD/CDRI 2017](#)), exhibits a similarly climate-unaware perspective on the environment, with neither environmental nor climatic 'push factors' mentioned in the course of its analysis. In other words, in a country which may be considered a prime candidate for climate migration, the climate migrant is categorically invisible, having no place in policy and thus no formal presence in state planning.

This is a common problem. Whether framed as climate refugees, environmental migrants or climate migrants, the task of categorising whose actions have and whose have not been directly affected by the climate has been a difficult and contested task. Despite the scale of their analysis, the suite of studies seeking to link large-scale mobility to discernible climatic trends at a national scale or greater (see [Horton et al. \(2021\)](#) for a useful overview of these) are now recognised as constituting a small fraction of a much greater problem. The broader reality is that climate migration is messy and uncertain, part of a 'complex interplay of factors beyond climate-related hazards that contribute to people's decision to move or stay in place' ([Stapleton et al. 2017](#), p. 10).

Certainly, this has been an issue in Cambodia. Despite a range of academic literature highlighting the linkages between the climatic pressures and migration patterns ([Brickell et al. 2018](#); [Bylander 2015](#); [Diepart and Ngin 2020](#); [Parsons and Chann 2019](#); [Parsons and Nielsen 2021](#)) the only policy document to consider the environmental dimensions of migration in Cambodia in detail, the World Food Programme's 'Vulnerability and Migration in Cambodia' ([WFP 2019](#), p. 18), is inconclusive concerning the impact of drought – one of the major agricultural pressures of recent years – on migration. As stated therein:

Drought could be a potential push factor for migration, as migrant households report a slightly higher percentage of crop loss (44 percent as compared to 37 percent for non-migrant households). Given the high levels of long-term migration in 2013/2014, well before the 2015/2016 El Niño event, the drought may not have been a key factor in long term migration.

Even in a country as climatically vulnerable as Cambodia, therefore, the complex interplay of confounding factors complicating the relationship between people and the environment render climate migration a rare presence in policy. Moreover, this is far from a Cambodian problem only. Writing in 2008, at the height of the ‘second wave’ of climate migration research (Arnall and Kothari 2015), Oli Brown wrote in a wide-ranging IOM report on climate migration that ‘few countries are putting any plans in place for the prospect of large-scale forced climate migration’ (Brown 2008, p. 38). Specifically, he noted, of the 14 National Adaptation Programmes of Action organised by the UNFCCC in the most climate vulnerable countries,

none of the 14 submitted so far (Bangladesh, Bhutan, Burundi, Cambodia, Comoros, Djibouti, Haiti, Kiribati, Madagascar, Malawi, Mauritania, Niger, Samoa, Senegal) mentions migration or population relocation as a possible policy response.

Eight years later, despite years in the spotlight of media and policy discourse, the ODI (Wilkinson et al. 2016, p. 1) highlighted similar shortcomings in 2016, noting that ‘climate-induced migration and displacement is falling between the policy gaps’, with national and international frameworks ‘yet to make the crucial link between climate change impact on the frequency and intensity of extreme climate events, environmental degradation and human mobility’.

Although the international dimension of this lacuna has been bridged partially by the arrival of the UN Global Compact for migration in 2018, which highlights ‘natural disasters, the adverse effects of climate change, and environmental degradation’ (UN 2018, p. 8), as one of the key structural determinants to be minimised, the scale of the framing is instructive. Climate migration, as a global concept, has tended to be framed predominantly in terms of cross-border migration (Wiegel et al. 2019). Even in the wake of the World Bank’s ‘Groundswell’ report in 2018 (World Bank 2018), which set out in no uncertain terms that most climate-linked mobility would be internal, this methodological nationalism has proven surprisingly durable. Yet the bordering of mobility under climate change elides the complexity of its drivers. The priorities surrounding mobility appear very different in global Southern national contexts like Cambodia, with its long and porous borders with the much larger, dynamic economies of Thailand and Vietnam (Hill and Menon 2014), rendering translocal systems of labour both a common and vital dimension of border economies (Bylander 2015; Lawreniuk and Parsons 2020).

Under such circumstances – and especially in countries like Cambodia, where the drive to migrate is enhanced and exacerbated by a young labour force growing faster than employment opportunities (Thai et al. 2015) – migration policy is guided by a distinct set of imperatives to those addressed in the UN Compact. Rather than seeking to mitigate the number of people ‘driven’ into migration, overseas or otherwise, the agenda remains dominated by the imperative of a population to find productive employment. The

factors that impel migration, viewed thus, are to a large extent incidental: one dimension of a wider national context in which, according to the Cambodian policy on labour migration 2019–2023 (RGC 2019b, p. 11), 300,000 young Cambodians enter the labour market each year, without sufficient work to support them. As a result, the climate migrant as a category tends to disappear with the addition of contextual specificity. Millions of climate migrants exist in definition, but very few can be named as being one, whilst even fewer might consider themselves as such.

3.2 Climate migration in global discourse: securitisation, embodiment and stigma

Despite ongoing definitional difficulties, the language with which the phenomenon of climate migration is associated continues to play a significant role in how the issue is framed as policy. Media coverage of climate migration, focusing almost invariably on ‘war, flight and human ruin’ (Wihbey 2015, p. 1), is in the first instance dehumanising, but – perhaps even more significantly from a methodological perspective – it is isolating and individualising also. Generally pictured alone or in small groups and inevitably depicted amidst dislocation and transience, the climate migrant as a piece of visual imagery has become almost an icon of methodological individualism: one amongst a ‘hoard’ (Milman 2018) of ‘climate barbarians at the gate’ (Bettini 2013) whose statistical (dis)aggregation is compounded and reinforced by media discourse and visual representation.

Numerous descriptive and visual tropes, exemplified in Figure 3.1, underpin this narrative. Raging floods, drought-cracked earth and broken infrastructure contribute to a consistently portrayed ‘aesthetic of abandonment, destruction, and emptiness [which] performs a profound distancing between the viewer and the subject’ (Sakellari 2021, pp. 71–2). Climate refugees are thereby presented as invaders, to be managed and controlled, rather than people or citizens to be accommodated. Whether characterised as threat or as victim, the narratives that frame this discourse render them a ‘a form of racial Other ... different from some purportedly normal, unmarked body’ (Baldwin 2013, p. 1474).

The climate migrant is therefore a concertedly racialised figure, yet they are also a spatialised one. The geography of climate migration research reflects deeply entrenched scientific inequalities and biases which frame climate migration as an ‘intrinsically “southern problem” and as a security risk for the North’ (Piguet et al. 2018, pp. 357–8). As with many areas of the academy (Skupien and Rüffin 2020), both the sources of research funding and the institutions and lead researchers who win it are located overwhelmingly in the global North. Yet in contrast to the Northern contextual bias visible in other fields, climate migration research displays an opposite tendency, with the majority of case studies being located in the global South, especially Sub-Saharan Africa and South Asia (Piguet et al. 2018).

Figure 3.1: Local villagers seen on a dried riverbed in Satkhira, Bangladesh, in 2016

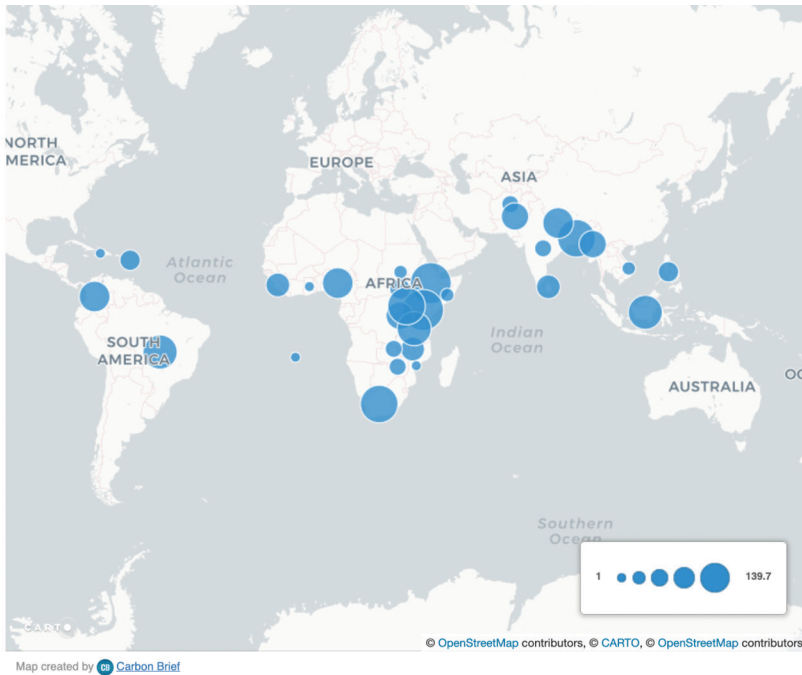


Source: Photo Zakir Hossain Chowdhury /Anadolu Agency/Getty Images.

Note: This image was used to illustrate a Guardian article claiming that ‘Devastating Climate Change Could Lead to 1m Migrants a Year Entering EU by 2100’ (Harvey 2017).

The spatial implications of this lens are shown in [Figure 3.2](#), which highlights the geographical emphasis within UK climate finance on the regions of Sub-Saharan Africa (£826.4m) and South Asia (£211.3m), which received the vast majority of the £1.38 trillion single-country distribution of the aid budget from 2011 to 2016. Despite considerable crossover with overall vulnerability to climate impacts, as set out in the 2020 Global Climate Risk Index ([Eckstein et al. 2021](#)), the key focus on East Africa and a handful of South Asian states – at the expense, for example, of Southeast Asia and the Pacific, both of which are amongst the most climate vulnerable regions of recent decades – hints at broader geopolitical objectives, both economic and securitised.

In the UK context, this is a policy expressed explicitly by the pivot towards investment in ‘fragile states’ since 2015 ([DFID 2016](#)). Yet these characteristics constitute part of a wider trend towards securitisation rooted in the transition to human security by the UN in 1994, subsequently entrenched by reports emerging from the UK, US, Germany and EU, and finally reaching its zenith with the dedication of the 2007 UN Security Council meeting to the issue of climate change ([Hamza and Corendea 2012](#)). The current securitised discourse on climate migration therefore constitutes a part of the wider trend whereby ‘the “threat” of refugees produced by population growth and

Figure 3.2: Map of UK foreign aid spending on climate finance

Source: [Pearce and Hickman \(2017\)](#), published by Carbon Brief under a CC BY-NC-ND 4.0 licence.

scarcity of resources [has been] promoted by governments and NGOs alike' ([UKCCMC 2012](#), p. 16).

As a climate vulnerable region somewhat outside the purview of this persistently influential securitisation agenda, Southeast Asia – and mainland Southeast Asia in particular – occupies a somewhat interstitial site in the global landscape of climate finance. As highlighted in an analysis of multi-lateral climate finance by the Carbon Brief ([Pearce and Hickman 2017](#)), certain Southeast Asian countries are the recipients of numerous relatively small-scale climate finance grants, in contrast to the large tranches of funding delivered to more security-strategic regions. Cambodia, for example, received 22 climate finance grants, the world's second highest number between 2013 and 2016, yet the total level of funding remains smaller than equivalent levels in Sub-Saharan Africa.

This relatively low level of climate finance being directed towards Southeast Asia reflects the ongoing dominance of securitisation in the practice of climate migration policy. It not only shapes the terms of the debate but also determines the policy that is formulated and the very questions that are asked and answered in order potentially to modify that policy. As a result, whilst

academic accounts have in general moved away from securitised and exceptionalised narratives of climate migration, the figure of the climate migrant as a future threat remains firmly entrenched in public discourse and policy, leaving them a nebulous but essential political tool. Academic research into climate migration reflects this geography of interests, rather than the obverse, as part of a wider discourse within which the 'threat' of refugees produced by population growth and resource scarcity continues to be consistently promoted by governments and NGOs alike.

Climate migration, otherwise put, is a weak analytical concept, with extremely strong political currency (Mayer 2016), expanding the breadth of political interest and media discourse beyond the climate justice framing which has thus far failed to establish a major political footing in the global North. Securitised framings remain dominant because they reflect the largest coalition of interests (Warner and Boas 2019) associated with climate-linked migration, but also because they reflect the structure of interests in relation to climate change more broadly. Any hegemonic discourse depends on the creation of a 'constitutive outside' (Staten 1984) and the articulation of an empty signifier (Stephan et al. 2013). By cross-cutting otherwise opposed coalitions of environmental governance, the climate migrant as a metaphorical and political construct stabilises a hegemonic form of securitised climate governance, whilst settling the exclusion of others. This role is reflected quite explicitly in their descriptive and visual depiction, wherein contextual dislocation and racial othering are a mainstay. In other words, 'aesthetic and discursive forms that pre-empt the formation of new modes of collective life' (Abbinnett 2019, p. 369), rather than representing the climate migrant, discursively create them.

3.3 Climate migration in theory: the birth of a discourse

Entangled though it is in contemporary political goals, the idea of the environment as a driver of dangerous mobility has a lengthy history which continues to exert an influence on the contemporary analysis of the phenomenon. Contemporary forecasts of civilisational collapse – notably the then British Prime Minister Boris Johnson's warning in the run up to COP26 of 'a new dark age' resulting from uncontrolled climate migration (Mason 2021) – explicitly invoke classical accounts of the fall of the Roman Empire, for example. Similar narratives have also been developed around non-European contexts. The long mysterious abandonment of the Khmer Empire's 'hydraulic city' of Angkor (Groslier 1979) for the trading port of Phnom Penh, for example, has now been linked to intense monsoon rains that followed a prolonged drought in the region (Lovgren 2017). To the North, Angkor's powerful neighbour China has seen a millennium of imperial instability (Fang and Liu 1992) ascribed to environmental change, whilst climate and environmental factors have been

assigned a significant role in fostering economic and socio-cultural changes along the Silk Road (Yang et al. 2019).

This direct alignment of civilisational decline and environmental conditions is a powerful – and powerfully depoliticising – thesis. Whilst held up as a monition on the severity of environmental change, each of these examples shares a clear metaphorical geometry, which extends beyond the primary message. In each case, ‘civilisation’ and ‘climate’ are discursively constructed as discrete variables, the former depending on stability in the latter. At the same time, ‘uncivilisation’ is constructed as a category in itself, the corollary being its absence: the state of being to which fallen societies return. Once peopled, this metaphorical logic requires no specific words of prejudice to evoke the uncivilised other and has historically been highly effective at doing so.

Indeed, until the second part of the 20th century, the social sciences had little trouble applying similar logic to explain the empires of the Western powers. Geography, empire and environmental determinism ‘went hand in hand during the late nineteenth and early twentieth centuries’ (Frenkel 1992, p. 143), driving and supporting the thesis that the rigours of geography had rendered Northern European colonisers – in the words of Ellen Semple – ‘energetic, provident, serious, thoughtful rather than emotional, cautious rather than impulsive’ (Semple 1911, p. 620). In the earliest incarnations of migration studies towards the end of the 19th century, the natural environment was noted almost ubiquitously as an important determinant of human mobility (Piguet et al. 2018). Yet by the middle of the 20th century, this primacy would rapidly diminish in favour of the economic migration paradigm that would see the environment largely abandoned in migration thinking for most of the 20th century (Mayer 2016).

Only in the 1980s would the natural environment return once again to a prominent role in the analysis of human movement. As climate change began its slow ascent to the top of the global policy agenda, landmark invocations of ‘climate refugees’ by El Hinnawi (1985), Jacobson (1988) and the IPCC (1990) from the mid-1980s onwards led to a rapid uptick in research into the causes and extent of climate migration. Modelling of climate impacts on populations rapidly proliferated, centred in particular on modelling out-migration driven by rainfall changes (Barrios et al. 2006; Grace et al. 2018; Kniveton et al. 2012; Smith 2013; van der Geest 2010) and sea-level rises (Anthoff et al. 2006; Black et al. 2011; Hauer et al. 2020; IPCC 2007; McGranahan et al. 2007).

This underlying outwards geometry has underpinned the field of climate migration throughout its rise as field, with quantitative migration modelling in particular proliferating now for over two decades (Hoffmann et al. 2020). The vast majority of climate migration studies focus on border crossings, in part due to data availability, but increasingly due to a body of evidential focus that provides the climate migrant metaphor – the embodied, racialised, delocalised, human face of climatic instability as it bears down on global Northern borders – with a momentum of its own. With almost 9 in 10 studies on climate migration focusing on international border crossings (Hoffmann et al. 2020),

the primacy of the international climate migrant is assured not in proportion to real-world migration flows, but by the weight of evidence that accrues from a disproportionate focus on their activities.

Nevertheless, even as it remains at the summit of policy prominence, critiques have grown louder in recent years. Critics accuse climate migration scholarship of being characterised both by ‘a cacophony of terms and labels’ (Nicholson 2014, p. 152) and a failure to account for the socio-economic, political and cultural factors that structure mobility in practice. Ultimately, this debate has begun to see scholarship based on large-scale numbers contested by an emerging consensus around a more sceptical analysis in which climatic influences on mobility are interwoven into wider economic and social systems (Wiegel et al. 2019), rather than a typologically distinct category. More recent approaches have sought to situate environmental drivers within this wider milieu of social action; academic approaches increasingly integrate cultural factors into their analyses (Adams and Kay 2019; Adger et al. 2013; McCarthy et al. 2014), resulting in a far more nuanced interpretation of environmental migration than either that which dominated the early part of the 20th century or the revived iteration of the late 1980s.

Within this context, two landmark policy reports have played a major role in shaping contemporary climate migration discourse. First, the UK Government Office for Science’s ‘Foresight’ report (Foresight 2011, p. 9) constituted a major step away from a typological distinction of migration, conceding as it did that ‘the range and complexity of the interactions between these drivers means that it will rarely be possible to distinguish individuals for whom environmental factors are the sole driver (“environmental migrants”)’. Several years later, in 2018, the World Bank’s ‘Groundswell’ report (World Bank 2018, p. xix) sought to soften the securitisation and methodological nationalism with which the issue is characterised, noting the ‘increasing recognition that far more people are migrating within their own countries than across borders’ as a result of environmental change. Both of these reports represent landmark recognitions of ‘climate migration’ not as a clearly bounded category, but as an area of thematic concern subject to the same political–economic structures through which climate change is articulated.

However, the landscape of contemporary climate migration is about far more than migration policy and scholarship. Rather, key to interpreting the importance and implications of climate migration in a wider sense is the vast disjuncture between climate migration as conceived by academics and technical experts, and climate migration as a topic in lay and political discourse, where the influence of early, large-scale quantitative studies continues to loom large in policy, politics and the public imagination. Even as formal analysis moves increasingly away from the ‘alarmist’ discourse of the last four decades, the cultural figure of the climate migrant, subsumed within an invading, untrammelled hoard, continues to wield as powerful a role in politics as it ever has. The science may in part have moved on, but the climate migrant as a metaphor for multi-scalar stigma is – for the time being at least – here to stay.

Amidst lively disputations over the numbers involved, the implications of the geographical framings that underpin it often go unobserved. Even the idea of a ‘barely liveable hot zone’, the type of phrase with which readers of environmental media and scholarship come regularly into contact, is a metaphor in more than one sense. By removing both historical and geographical relations, geographical metaphors like this facilitate a focusing in on a single variable, ‘allowing only the sensing of effects to matter’ (Machen and Nost 2021, p. 561). Yet when analytical norms are translated into climate policy, the result is correlation without either explanation or accountability.

What is lost in such cases – and what is needed to confront them – is to remain attuned to geographical and historical relations that point to the ‘why’ of sensed phenomena, in order not to lose sight of the political nature of their governance (Machen and Nost 2021, p. 561). No geographical zone is liveable or unliveable on its own terms. Indeed, people rarely experience their environment in a direct sense at all. If they did, then the majority of the world would be uninhabitable because our bodies are able to function only in such a narrow thermal band between 36.5 and 37.5°C when at rest. Depending on humidity, this equates to an air temperature of around 27°C (Mathisen 2014). Yet nowhere on Earth does the temperature remain static around this figure throughout the year. All things being equal, temperatures ‘unsafe’ to the human body are reached even in the Northern hemisphere on a regular basis. That most people survive them, often without much drama, is a testament to the role played by everyday adaptive behaviours in mitigating our environment not just during temperature extremes, but on a day-to-day basis.

Simply imagine the difference in how the same thermometer reading *feels* when you are undertaking heavy, physical work versus observing it from a café table. And then consider, on the other hand, the difference in how a cold winter’s night feels from the comfort of a centrally heated living room and that same night spent shivering on the street outside. The difference in each case highlights the number of intervening variables between people and their climate: clothing, shelter, the freedom to choose one’s activity. Yet there is also something more fundamental at play. Underlying all three is the fundamental variable of wealth and its organisation. The external temperature is only one component of its impact on human bodies. The rest is society: adaptive, unequal and dynamically shaped by the processes and practices of the global political economy.

In the context of thermal vulnerability science this is well known. Indeed, it is widely understood that those who are relatively socially disadvantaged are likely to find themselves disproportionately affected by temperature extremes (Hansen et al. 2013). Yet when it comes to climate migration, the implicit metaphorical dualisms – civilisation/climate, and civilisation/other – and trajectories – South to North, cross-border – that underpin thinking on the issue structure how it is interpreted and addressed. The concept of a ‘barely liveable hot zone’ has little credence in the analysis of human physiology. Yet in the context of the narratives surrounding climate migration, it retains a powerful ring of truth.

Crucially, though, discursive metaphors like this exclude a far bigger and more important picture. People are not atoms. Communities, like the individuals who comprise them, are the product of the particular histories and geographies within which they are situated. To pretend otherwise, to abstract whilst setting aside the mechanics of that abstraction, is fodder to hegemonic discourse (Broto et al. 2023). So, with this in mind, the following chapter will confront the geographical container logic that underpins the climate migrant metaphor, situating the experience of mobility under climate change within its wider political-economic and cultural context. With the imperative to retain place at the forefront of its design, this [next chapter](#) – and all the empirical expositions that follow – will situate the reader in the context of Cambodia: a low-income country deeply imbricated within the landscape global production, deeply vulnerable to climate change and highly mobile in its economic geography.

By working upwards in its analysis from this grounded empirical analysis, the following chapter will therefore challenge the exceptionalist lens that transfigures the climate migrant into an exceptionalised Other. And in doing so, it will identify the fissures in the concepts and methods that support this framing. Far from the binary and frequently deterministic manner in which climate migrants are discussed in policy and media discourse, therefore, the complex interlocution of climate, environment and mobility reflects ‘uneven and highly unequal socio-spatial forms of precarity’ (Strauss 2018, p. 626).

Climate migration is, in other words, a phenomenon reflexively shaped by the tools of its analysis. It is not one frame, but an overlapping, interlocking series of them, each of which identifies, manages and thus shapes the choices made by a broadly defined milieu of human responses to the environment. The apparently objective numbers that emerge in the calculus of climate migration are thus the product of a myriad subjective judgments. And these subjectivities do not disappear with aggregation. Rather, the objectivity ascribed to the wider climate migration agenda entrenches and depoliticises them. The cultural and the social become technical.

Far from being determined by the environment, climate migration is thus created by political frames and shaped by political choices; a phenomenon constructed and realised by the intersection of interest, capital and stigma. Yet what makes it such a powerful concept is its metaphorical quality. The climate migrant is, at base, a transferable metaphor: an anonymised allusion to threatening humanity under climate change. It is a metaphor that rests on three bases. First, via the dyads of civilisation and non-civilisation, and civilisation and climate, that structure discourse around the climate and society. Second, through a metaphorical geometry that emphasises unilinear, cross-border movement along a fixed, global South–North axis. And finally, through a stripped-down framing of humans and their environment, shorn of society, economy and politics. At the nexus of these three metaphorical relations, the climate migrant is constructed as a composite imaginary in opposition to civilisation, delocalised and de-contextualised, yet possessed of

an inherent directional momentum towards the North. These characteristics are largely inescapable, yet they are also generic. To which groups they are ascribed depends on the cultural context of the ascriber. A hegemonic 'outside' is thus created which can serve a global purpose, functional as a tool of governance towards the 'creation of development ideologies and desires of Western-style hyper-consumption in development subjectivities across the Global South' (Sultana 2022, p. 4).

Who is a climate migrant and who is not, is therefore ultimately a question of who is asking and who is looking. Only by rigorously assessing the frames and narratives which shape the phenomenon of mobility under climate change, entangled as they are in longstanding colonial imaginaries of environment, mobility and civilisational threat, is it possible to dig beneath this multi-layered metaphorical construct, to reveal the fleshy realities beneath. This means examining climate migration not through the lens of large-scale data, but through the eyes of those purported to practise it: adopting a human's eye view to extricate environmental realities from the tyranny of the metaphors that describe it.

Note

- ¹ Broadcasting and transplanting are two methods of sowing rice. Transplanting is a traditional method in which rice seedlings are planted in a 'nursery' plot before being moved to a larger field for maturation. It is very labour intensive, but requires very little capital as the survival rate of each seed is very high, so it can be undertaken with seeds from the previous year's crop and natural fertiliser. Broadcasting, on the other hand, is a modern method of sowing rice seeds, in which much larger numbers of seeds are scattered (rather than planted) in conjunction with chemical fertilisers. In Cambodia, broadcasting has almost completely replaced transplanting in the last two decades.

4. Categorical domination: segregating disasters from the global economy

There was a big flood last year. It was a natural disaster. So how can we complain to the factory? We have no right to complain to them because we don't have a system to release [flood water] to the river. Consequently, [they argue], we deserve only what we have left [after the chemical damage]. We did not know whether there would be a flood or not, or even that the factory stores polluted water. But [still] we cannot beat them.

(Lake fishers, Poum ROUNG Chat 2021)

About 90 minutes south of the Cambodian capital Phnom Penh, nestled in a quiet bend of the Bassac River, is the village of Poum ROUNG Chat. Until the late 1990s, it had been as rural as anywhere in Cambodia, dominated, like its neighbours, by small-scale fishing and rice farming. Yet in a break-neck decade, that would all change. As Cambodia opened to the world after decades of civil war, garment factories began to arrive in a trickle and then a flood, each bringing thousands of workers in its wake. The largest of these employed 5000 people, mostly young women, with numerous others boasting workforces into the thousands. Within a handful of years the demography of this once unremarkable community was unrecognisable. Fishermen and women were now landlords, their children were now shopkeepers, providing food, medicine or beauty products to the workers that now dominated their livelihoods. Life was different, but for some at least, it was better.

Nevertheless, there were others. As in any community, Poum ROUNG Chat boasted its haves and its have nots: those possessing land, or a little capital, and those with a lot less: the seasonal labourers, the female-headed households, or those who had suffered an illness in the family at the wrong time. Whilst others around them steadily converted their rice paddies to rented rooms or shops, or sold them to the factories for a profit, the have nots persisted as they were, fishing a little, collecting produce from the shrinking forests or helping to tend the disappearing farms. Some with only very small plots of land, or plots far from the main road, even kept hold of them, continuing their agricultural traditions even as the world changed around them. It is one of these have nots that provided the quote above, one of the millions of Cambodians whose livelihoods play out in the environmental shadow of an industry which has come to dominate the Cambodian economy but also, increasingly, the land itself.

All, then, is much as might be expected, but in Poum Rong Chat, we have arrived, simply by observing, at an uncomfortable conceptual fissure. On the one hand, this is a classic story of economic development: the mapping of the world onto a dynamic (and usually one-way) rich–poor dualism (De Lucia 2009). Yet this narrative is troubled by the lake fishers’ account of environmental risk compounded and intensified by the fruits of economic progress. Through which lens should we therefore examine our fishers’ poisoned rice crop? Sustainable development is an easy answer, but a fruitless one. Sustainability is a discourse that has evolved and become deeply embedded in institutions and governance (Barnes and Hoerber 2013, pp. 19–33), not because of its specific characteristics, but precisely because of their absence. Such has been its proliferation and diffusion that it has become ‘understood as an empty signifier’ (Broto et al. 2023, p. 976), reflecting a failure to account sufficiently for future populations and their resource needs (Brown 2016).

The emptiness of the sustainability signifier facilitates a broad range of governance pathways. By shifting the emphasis between ecology and economy, it is possible to ‘emphasise either resource efficiency or risk management depending on the context of action and the politics at hand’ (Broto et al. 2023, p. 974), presenting an almost infinite range of possibilities. Yet the use of the empty signifier also fulfils an additional role: abstracting the complexity of the processes described from the complex interrelationships in which they are embedded, in order to privilege particular causes (Machen and Nost 2021). The application of categories within a broad, yet empty, legitimating frame thus facilitates a form not only of analytical but even experiential dominance. The separation of developmental capital from untrammelled nature is internalised even by those who experience it.

This categorical distinction is discursively reproduced through economically driven inequalities of voice. Wealth arriving through industry is, after all, a double-edged sword in many parts of the world. It provides opportunities to make money, perhaps alternatives or complements for those whose livelihoods are struggling, but it also utterly dominates political voice, subsuming residents to the will and logic of the factory. One of the largest factories in the area and a major supplier to UK brands, for example, is responsible for liquid emissions with a history of damaging local farmers’ crops and significantly affecting local ecology over many years. Wastewater would routinely be pumped out from sluice pipes that lead either nowhere or to shallow reservoirs which regularly flood into neighbouring fields during the rainy season. Despite liquid emissions from this factory being treated on site, residents of the local area have for some years complained of the impact of wastewater on their crops when the large reservoirs located behind the factory overflow in the rainy season. As Poum Rong Chat’s local lake fishers continued:

As we know, the laundry water always has chemicals in it. It is not cleaned 100%. If there is a lot of rain, then it rises up and spills out and floods the nearby land. It is sour, that is the problem. If

we complain to the commune chief, Mr. Leng or village chief Mr. Run, nothing is solved. As a citizen, we cannot do anything ... They [the factories] give some money. Then, they [the commune] are just silent. (Interviews in Poum Rong Chat, 2021)

Compounding the damage done to waterways by factory pollution is the increasing regularity with which flooding of this type occurs under climate change. As flooding has become more common nationwide, the impacts of irregular or 'unexpectedly' heavy rainfall are increasingly common in the area. As our group of local fishers complain, this is a daily occurrence when factory orders are regular: 'if the factory is operating, it creates polluted water and if there is a rain as well, the polluted water [rises] high and flows into here [the lake and surrounding area]' (Interviews in Poum Rong Chat, 2021). Moreover, as local residents elaborated, this discharge has a profound effect, not only on local agriculture, but also the water supply more generally.

Last year, it destroyed the crop of the villagers and then villagers complained to the factory about that. They complained that water leaked out and damaged their mint crop because it contained oil and other substances. After that, they made a blockage to prevent water leaking out of the factory. However, when there was a flood, [the factory managers] were afraid that water would come inside the factory [itself], so they released the blockage and the water flowed out of the factory ...

... In the past, we could use water from the lake for cooking and household consumption. Since the factory came here, we cannot use the water from the lake anymore, especially the last two or three years ... We cannot drink it because it is oily. The oil is everywhere. (Interviews in Poum Rong Chat, 2021)

Even during the course of normal operations, the expulsion of factory wastewater into the nearby lake appears to have had a profound impact on local ecology in this area. As fishers working in the local area explained, when the 'cleaned' industrial liquid was initially pumped into the lake, it resulted in degradation of the local ecosystem, instigating substantial changes in the local fish population. As local people explained:

They have an underground pipe system from the factory to here [the lake]. The water flows through it to the canal and then to the lake. They made the underground pipe system about two years ago. So, if the factory works constantly, then water goes up and flows down here. If the [water storage] reservoirs of the factory are full, they will release the water out. At times of full production, if they work every day, they release water out [like this] every day. (Interviews in Poum Rong Chat, 2021)

Inevitably, this regular industrial discharge has negatively impacted local livelihoods. Casting doubt on assertions from authorities that ‘there is no bacteria in the polluted water’ (Interviews in Poup Rong Chat, 2021), locals consistently report deleterious environmental impacts resulting from the water-borne pollution from the factory. Local fishers explained that despite the Ministry’s assurances, ‘even the weeds inside the lake also died. Before it had a lot of weeds. The polluted water killed everything’ (Interviews in Poup Rong Chat, 2021). As a local woman continued:

In the past, when there was no water from outside coming to the lake, we could find a lot of snails and fish. But since that water come into the lake, it kills the fish and snails, and it makes our life harder and harder to [earn] rice to eat ...

... It occurred after the establishment of [the factory]. Before the factory was located here, we could [even] use the water for household consumption and other purpose. (Interviews in Poup Rong Chat, 2021)

Industrial liquid discharge from garment factories plays a significant role in local livelihoods, yet it is by no means the only, or even necessarily the worst, example of the Cambodian garment industry’s environmental impact. Indeed, as evidenced by the billowing black smoke emerging daily from many of the factories supplying global Northern shops, ground-based pollutants of this sort are only one dimension of a far wider footprint of the rich world’s overseas production.

Faced with high grid energy tariffs compared with other countries in the region (Climate Investment Fund 2020), garment factories have long sought to mitigate energy expenditure through the use of boilers and burners which generate power through the combustion of both forest wood and – increasingly commonly – garment offcuts (GIZ 2021; Parsons et al. 2021). In the case of garment burning, the impact of this form of industrial combustion on the local population is immediate. Those living in the vicinity of the factories that burn garments for fuel complain of persistent health problems and the need to cover their possessions when prevailing winds draw the fumes to their homes. As residents of one factory in a village cluster named Psaing Saoy explained:

Since the factory was built, it has been difficult to live here. Now they’ve just bought land close to the village and they bring garment waste for burning. It is smoky and [makes the air] full of smoke. They make the smoke pile very low. When the wind comes [in this direction] it brings [the smoke] to our village. At that time, we called the [factory] but they didn’t come to check on what we told them ...

... Here, we experience the impact from the factory of Oknha Eng Se (Sokha and Kjewski 2017).¹ He burns the garment waste. He has

made something [to mitigate it] but there is still an impact. The smoke does not go up in the air but even if it does it impacts the environment as well ... All of his factories are like that. He makes [a closed system] but it is still producing smoke. The smoke is black and makes it difficult for the villagers to live here. We have requested him [to do something] many times. We don't want to stop him. We just want him to make the chimney higher. They don't burn only for one or two hours but they burn it for the whole morning. (Interview with Kampong Speu Village Chief, 9 March 2021)

4.1 Categorising under the carpet

The dominance of local environmental discourse by capital interests is at first glance a straightforward feature of Gramscian hegemony (Gramsci 1971): an economic elite silencing its antagonists through the conflation of economic and political objectives with intellectual and moral means (De Lucia 2009). Yet a closer, or indeed a broader, look reveals a far more complex and contested discursive landscape, in which categories are not fixed, but contested amongst elite actors. After all, it is not only amongst local populations that the impact of garment burning is both visible and immediately tangible. As outlined in a UK parliament report on the fashion industry (Rhodes 2020), the incineration of garment waste multiplies the climate impact of original garment, by generating additional emissions and air pollutants harmful to human and environmental health. Indeed, this is precisely the result witnessed currently in Cambodia, where widespread garment burning not only plays a substantial hidden role in the industry's carbon footprint, but also intensifies the impacts of climate change by undermining health and wider livelihoods.

For people already struggling to adapt to the impacts of climate change-linked floods, industrial pollution of this type effectively catalyses the destruction of livelihoods, intensifying and extending the impacts of Cambodia's increasingly irregular rainfall through chemical pollution. In contrast to the strictly enforced legal frameworks governing industrial production in the countries to which these goods will eventually arrive, predominantly the US and UK, environmental regulation in the Cambodian commune which produces them is extremely limited. Even infrastructure, the arterial shibboleth of development, brings a heavy environmental cost as it expands to serve the needs of industry. As the head of a village in Psaing Sa'aoy explained, for example, the arrival of a high-speed road prevents them from accessing the water supply they had traditionally used for farming, even as rainfall changes increase their struggles with drought.

In the past, people could pump water from the canal for their farm. Now they cannot do it because the high-speed road construction has blocked the way ... In the past, we could use water from the canal

at the time of drought. Now if there is drought, the rice will die ... Their living [has] become worse and worse because they are poor. If they have children working, then they can have enough food. For old people and non-migrant family, it is very hard for their living. (Interview with Psaing Saoy Village Chief, 7 March 2021)

Economic development, in other words, is not a simple question of progress, of alleviated stresses and money flowing in. It means worsening environments in many cases, additional pressures on farming, new difficulties, both economic and ecological, which uproot the traditional sums of subsistence agriculture in favour of a new hybrid, in which factory work and agriculture co-exist with one another as a necessary mutual support (Natarajan et al. 2019). In Cambodia, this means detergent flowing into lake water, garments burning through the day to fuel fires and large-scale water exploitation by industry. Yet it also means deepening economic pressures, changes to the rural economy promulgated by an outflow of younger farmers, higher prices, mechanisation, debt, land sale, migration and rootlessness for many (Parsons 2016).

And this is by no means a specifically garment industry problem. Cambodia's almost 500 brick kilns – the material engines driving the unprecedented construction boom of the Kingdom's major cities – bring their own environmental impacts on many local farmers, warming groundwater, coating crops in a thick layer of soot and disrupting topography with huge clefts cut from the ground to dig clay. As with the garment industry, each new urban expansion, each new point of GDP requires a deepening of these pressures, a circular push factor driving people from their lands and into the same industries that suffocated their farmlands. Each of the almost 4000 large construction projects approved by the Ministry of Land Management each year (Construction and Property 2022) is a record of former rice paddies abandoned, dug and baked into their newly urban form.

It is also a record of former farmers displaced from land by a confluence of climatic pressures and economic development. Each new building was once a plot of farmland and each plot of farmland once supported a family. So, what happens to those whose livelihoods have been recrafted as urban monuments? Some stay close by, working in petty trade, fishing or tending a remaining piece of land for cash crops. Most, if young enough, depart for the garment or construction industries, where they can obtain a decent wage, albeit one snatched away soon after its arrival by the ever-rising costs of living as a migrant worker. The very worst off may return open handed to the kiln they sold their land to, bonding themselves into the brick industry that destroyed and then consumed their former livelihood (Brickell et al. 2018).

None of this should be surprising. Indeed, the idea that industry induces environmental degradation – and indeed that that degradation may play a role in undermining the livelihoods of local populations and prospective workers – was once a fairly standard facet of the environmental canon. It

had been evidently true, after all, since the Industrial Revolution in Europe, where the ‘dark satanic mills’ (Blake 1808) and ‘the hell-smouldering far sprawl of tall choking factories’ (Jones 2020) were ever present in scholarship, literature and the public imagination. Somewhere along the line, though, something changed. In the late 20th century the idea that industry could be ‘greened’ took hold, supported even by economic modelling, such as the famous Kuznets (1955) inverse U, which presented the decoupling of industry and environmental damage as a teleologically inevitable feature of economic growth.

It is a narrative that survived and thrived for several decades in the 20th century as Western countries instituted progressively tighter environmental protection legislation from the 1960s onwards. In the UK, following decades of worsening environmental conditions, culminating in London’s famous ‘pea souper’ smogs of the 19th and 20th centuries, domestic environmental policy was tightened to place stringent regulations on manufacturing. Local pollution, both water and air-borne, began to be governed by the 1990 Environmental Protection Act, which requires companies to report and document all impacts on the local environment, whilst providing frameworks also for complaints, enforcement and the imposition of penalties. It is a combination of environmental legislation and enforcement that has been, in historical terms, a resounding success, generating major tangible gains in the quality of domestic water resources. Indeed, as the UK Environment Agency (Bevan 2020, p. 1) summarises:

Since 1995 some of the worst pollutants in our rivers have been cut dramatically: ammonia levels are down 70% and phosphates down 60%. Toxic metals like copper, lead, cadmium and mercury have also been reduced, the last two by 50% since 2008. Serious water pollution incidents have been cut by nearly two thirds, from 765 in 2002 to 266 in 2019.

Since the 1990s there has been a big increase in the numbers of small animals that live in rivers like snails, worms and insects – a key indicator of the overall improving health of our waters. Many of the artificial barriers to fish and other wildlife have been removed: in the last ten years the Environment Agency and its partners have removed over 130 weirs and improved fish passage at more than 420 other sites, allowing salmon, other fish and eels to migrate and breed.

Meanwhile [in spite of recent high-profile breaches in environmental regulation,] the bathing waters around our coasts are in a much better state than they were twenty years ago. In 2019 98.3% met or exceeded the minimum standard and for the first time more than 70% achieved the Excellent standard.

Kuznets's curve, on this evidence, was right. Environmental indicators have improved in every wealthy country around the world, whilst continuing to degrade (in a manner also predicted by the inverse U) elsewhere. How these two facts are categorised, though, determines the conclusions that are made from here. If they are categorised as independent variables, then the evidence suggests that global Southern countries will learn, as did the West, to decouple their own industrial processes from the environmental issues it currently creates. If, however, we categorise differently, taking the global economy as a unit, then very little has changed from 1800. The mills are still dark and satanic, the factories are still choking; they are simply dark, satanic and choking in a different part of the global workplace.

The reality is that these variables are far from independent. Manufacturing is declining rapidly as a proportion of most advanced economies, not least the UK, where it comprised 27% of the UK economy in 1972 and only 10% in 2018 (Rhodes 2020). The vast majority of that lost manufacturing capacity has been moved to global Southern countries, where goods continue to be made at extremely low margins in countries without the capacity to govern environmental impacts in the manner of the West. Neither the capacity nor the economic incentive to institute sweeping environmental reforms is present and as long as value continues to flow out of producer countries, it is unlikely to emerge in the near future. Rather, as manufacturing continues to decline as a proportion of many advanced economies, the proportion of goods their populations consume that are produced in conditions like these is increasing. In most global Northern countries, companies importing goods are subject to only voluntary agreements in relation to their environmental impacts overseas, with responsibility for transparency over environmental impacts largely left almost exclusively to companies themselves: a system that hugely downplays the true environmental impact of rich world consumption (Ben-David et al. 2018; WGBC 2019).

In the Cambodian garment industry, which exports around half of its garments to the EU and a quarter to the US, for example (Kosal 2019), industrial pollution is governed in principle by the 1996 Law on Environmental Protection and Natural Resource Management. Yet the reality of enforcement remains far removed from the legal principles in place. As outlined in the global Environmental Performance Index (Wendling et al. 2020), Cambodia ranks 139th out of 180 indexed countries, with wastewater treatment specifically ranked 134th. The situation has become so bad that rural water quality in Cambodia has been described as a 'crisis,' posing 'significant challenges for the government' in terms of sanitation, health and environmental sustainability (Pink 2016, p. 35).

In this industry, as in others, the poor state of Cambodia's water resources monitoring and assessment systems (UNDP 2020), combined with consistently ambiguous regulatory enforcement by environmental institutions (Young 2019), has seen water pollution, even from exporting factories, subject to limited scrutiny, creating very little incentive to meaningfully

manage the environmental impacts of their operations. Without the checks and balances provided by enforceable legislative oversight in the vicinity of production sites, local people in the vicinity of export-oriented industry have little meaningful capacity to raise complaints to authorities and no capacity to raise these issues to the brands charged, in theory, with their oversight.

This is in one sense a technical problem, the result of a global economy whose rapidly advancing logistics have seen it outgrow the legislation that once governed it. Yet it also points to a deeper issue: that the analytical categories we use to understand this vast web of economic interconnection remain, at base, merely abstractions, ‘emphasising certain attributes while obscuring others’ (Gardner et al. 2019). The vast flows of materials and goods that underpin our globalised economy are understood in a partial, abstracted and, crucially, interested sense: a set of simplified and environmentally sanitised pathways overlaid onto a vastly complex network of deeply imbricated environmental processes.

The greening of the global factory is, in other words, an illusion. And this, in itself, is a problem. Yet it points to a broader categorical issue: the globally interconnected nature of environmental breakdown. In our current, globalised world system, environmental degradation in producer countries is often far removed from the root economic conditions that impel it, with these interconnections further obscured by conventions of environmental analysis that remain anchored to a local (Gardner et al. 2019) and, in particular, methodologically nationalist scale (Moore et al. 2018). These categorical conventions shape the way we view the environment, eliding the dynamic economic processes through which environmental change is articulated and instead enshrining a view whereby climate change is seen to impact *space*, rather than the flows of goods, people and money through which spatial experience manifests.

This spatial frame does not necessarily preclude the analysis of economic factors in shaping vulnerability. However, it does reduce them to fixed characteristics of a given area. Yet in a highly dynamic economy such as Cambodia’s – and indeed in many other global Southern countries – it generates a self-fulfilling analytical fallacy. Specifically, if economic conditions are assumed to be static, whilst climatic conditions are assumed to be dynamic, then the latter will be overemphasised as determinants of environmental shocks (Cruz and Rossi-Hansberg 2021; Duvat et al. 2021; Fraser et al. 2020). As a result, spatially mediated analytic frames that attribute disaster to climate alone may not only lack accuracy, but also divert attention from the place-based vulnerabilities and socio-political causes whose dynamism is often the primary cause of those shocks and the human responses that emerge. The ‘spatial grammar’ of climate governance is thus written into lived environments (Löfbrand et al. 2009, p. 7), both through the mediated experience of their populations and the forms of governance that shape and respond to this articulated landscape of risk.

4.2 Uncategorising the climate

Confronting the domination of hegemonic categories is no easy task, because they exist in supportive relation to others. For example, we may wish to unpick the category ‘natural disaster’: a term still widely used to refer to events such as droughts, floods and landslides. As is increasingly recognised (Kolbert 2021), this is a misleading term, attributing as it does such events to a ‘natural’ world distinct from the global economy. Not only are global processes of carbon emission driving such events with increasing regularity, but local economic processes articulate their manifestation in practice (Parsons et al. 2022). When floods destroy houses and droughts destroy crops, where, when and to what extent they impact depends on the flows of goods, people and money that structure the local environment.

Yet the problem lies not in the critiquing, but the replacing. Hegemonic categories cannot simply be replaced by categories drawn from the same intellectual superstructure, or as Farhana Sultana (2022, p. 6) puts it, from the ‘global network of nation-states, corporations, and elites [who] dominate discursive framings around climate and the material outcomes therein’. Rather, as outlined in Chapter 2, challenging categorical domination means foregrounding ‘alternative epistemologies and cosmologies [that] emerge from lived experiences’ (Sultana 2022, p. 6). It is not possible to understand vulnerabilities – environmental or otherwise – without reference to the wider economic and social context in which they are situated. Analysis must be re-emplaced, recognised as specific to the analyser and particular to a given context.

Indeed, in the particular context of Poum Rong Chat, the weakness in each of these linked frames becomes immediately apparent. A spatial frame means little when social and economic networks of obligation, assistance and remittance play such a fundamental role in shaping environmental shocks that the resulting precarities are effectively translocal (Green and Estes 2022). For the same reason, a sectoral framing is similarly inadequate. Movement between sectors is fluid, with some 77% of the Cambodian population relying on agriculture, forestry and fisheries for their livelihoods (USAID 2023). Dependency between sectors is less satisfying still, as environmental vulnerability and economic growth have transformed Cambodia’s traditional ‘net of obligations’ (Meas 1999) into a debt-funded machine to share and mitigate risk in climate-precarious environments (Guermond et al. 2022). And amidst all of this, such is the temporal dynamism of the global South that any static account provided by any given temporal container will provide not so much a snapshot, but a partial cross-section of this complex moving mechanism.

Departing from these containers is necessary, but it is challenging. On the one hand, it means freeing conceptions of climate change impacts and environmental degradation from some of the underlying assumptions that often, as a result of their ubiquity, go unobserved in climate change analysis. Yet on the other, it means communicating a novel perspective, capable of conveying the inherent porosity of the categories segregating environmental shocks,

economic development and migration. If wealthy economies are not innovating cleaner methods of production, but simply moving, or trading out environmental impacts beyond the purview of the accounting mechanisms they employ, then this denotes a rich, but insufficiently tapped field of inquiry. A wealth of studies, from toxic geographies (Davies 2022) to discard studies (Liboiron and Lepawsky 2022), has explored how livelihoods arise in, persist through and are reshaped by waste in gaseous, liquid and solid forms, yet in relation to the broad questions of how the environment shapes human movement, such studies remain largely confined to their categorical silo. How such vast flows interact with wider environmental processes – the global processes of environmental degradation, economic transition and climate change, to promulgate migration trends – is a question that has rarely, if ever, been asked.

Viewed this way, asking the question at all represents something of a departure from the containers described above. Yet this is only half the battle. Answering the question is by far the greater challenge, rendered harder still by the dearth of data available to do so. We know, as outlined above, that Cambodia has a substantial recent history of droughts and floods, but data on any given part of it is sparse. Cambodia possesses only 200 weather stations in total (Usamah and Roelle 2018) and whilst government officials keep some local data on rainfall, flooding and drought, these are available at the provincial level, but usually not lower. Similarly challenging is the migration dimension of our analysis. The only publicly available sub-national-scale migration data is the 2017 Commune Database, in which migration figures are recalled and communicated to surveyors via the head of each village. It was a useful public resource, but it is growing older and less relevant by the day. In the absence of well-funded regulatory and monitoring bodies, better data simply do not exist, leading the specific impact of partial environmental conditions on partial human movements to effectively disappear from analysis.

Chastened by our struggles with a climate lens, we might turn instead to elucidating the environmental impacts of the industrial processes we observed earlier. Yet from the perspective of supply chain governance – our primary window on the murky geography of global production – the huge changes underway in Poum Rong Chat are just as invisible as they are to orthodox scholars of climate migration. The lengthy value chain that stretches from Poum Rong Chat to the clothing racks of the US and UK is not an integrated part of the brand on the label, but a set of corporate partners contracted by the brand to produce goods to a particular set of specifications. Most of these specifications relate to global brand promises including, for example, zero water pollution or zero waste to landfill, but they are in most cases not assessed by brands themselves. Instead, they are either agreed to contractually by brands and left at that, assessed by a local contractor – strongly believed by many garment workers to be susceptible to corruption (Parsons et al. 2022) – or they are independently assessed by a third sector monitor such as the Better Factories programme, which as of 2022 included no environmental indicators in its assessment schedule.

Indeed, these secondary impacts of trade often aren't fully understood in supply-chain analysis because the same categorical uniformity that produces logistical efficiency generates substantial opacity also (Parker 2013), concealing the characteristics and attributes not deemed relevant to production and consumption. In essence, the scale of the containers used to measure economy-environment interactions leads to an underrepresentation of the systems and processes that connect these scales: an issue that cross-cuts the scientific, political and corporate spheres (O'Lear and Dalby 2016).

When it comes to the analysis of climate change, the persistent focus on space rather than on flows of goods, people and money has resulted in a predominantly static interpretation of the economic processes through which climate change is articulated. We can talk to people affected by changing conditions, in doing so gaining a fleshed out and complex appreciation of the ways in which environment, economy and mobility intersect, but as soon as we wish to expand upon that knowledge, to test its wider relevance and examine the way it shapes flows at a global scale, it disappears. The nuanced experiences through which people live their lives and make decisions thus falls between the cracks of large-scale analysis, visible only to ethnographers or perhaps on a case study basis as a means to enliven or exemplify a report. In a wider sense, this all-too-common nexus of economic change, industrial degradation and environmental change does not exist at all.

This is also by no means unusual. Far from a specific aberration of scholarship, it is entirely normal for much of our relationship to our environment to remain obscure and unobserved in formal scholarship, elucidated only by the grid of data and analysis through which we view and understand the world. Yet what must be recognised in such cases is that the grid exists for a reason. Our categorical frames do not simply emerge, willed from the ether by logic. Rather, they spring from the interests and imperatives that structure our lives more generally. It is not, to put it bluntly, in many people's interest to notice the impact of globalised garment production on the environments it inhabits – at least not those with the power to change what they might see – so this information often does not exist. Neither is it, as has been pointed out by various scholars, in the interests of many to point out the environmental costs, trade-offs and compromises of sustainable development (Hope 2021), so these questions tend not to be asked either. With cross-border migration and climate both matters of state importance, an environmental determinist, and thus power-free, framing of climate migration is the natural result. In a very real sense, we see the world we want to see. Yet more importantly still, that initial choice of vision persists through the continuing imperatives of categorical logic, dominating thinking in a way that is extremely difficult to unpick.

Resisting this means embracing uncertainty, recognising that the relations between humans and their environment is necessarily a porous one imbricated with complex 'patch geographies' (Tsing 2015, p. 225) and 'material biographies' (Crang et al. 2022, p. 3) that characterise contemporary global commodity trading and production. The globalised supply chains within which we live are both environmental arbiters and categorical frames insisting

on simplified linear logics. The alternative, therefore, is one which emphasises the porous, gaseous and ‘hazy’ nature of environmental impacts (Bhojvaid 2021), drawing in both spatially adjacent and telecoupled sites of connection beyond those originally envisioned.

By accounting, in this way, for the complex flows within which territories are entangled (Kenis and Lievens 2017), we might begin to draw attention not only to ‘the wider relational roles territories play in emissions beyond their borders’ (Blakey 2021, p. 8), but also the histories and temporalities of these processes. The territories within which environmental impacts are counted emerge not as disconnected containers, but as dynamically interconnected sites within a global system of production and environmental degradation. Vulnerability within them is thus the by-product not only of emissions generated by this process on a global scale, but also the environmental and economic precarities engendered in the process of doing so. Far from ‘natural’, the (re)distribution of these precarities – their steady amelioration in the rich world in contrast to their intensification and deepening elsewhere – reflects these precarities as played out on a global scale.

And they also create them, as past articulations ‘condition and limit the possibility to change’ (Wright et al. 2022, p. 557). By performing and projecting a particular interpretation of the past, environmental futures are delimited and driven through discourse. Despite growing recognition of their intertwining in economic landscapes, therefore, vulnerability under climate change remains conceptually discrete from the mobile, global economy by the container logic that frames and distinguishes both spheres. The ascribed objectivity of this container logic not only elides its own underlying politics, as outlined in the [previous chapter](#), but naturalises its own framing, cutting wider, reflexive questions of causation out of the frame of debate.

Consequently, although ‘the ultimate drivers of environmental and social change in producer countries are often far removed from the places where many impacts materialize’ (Gardner et al. 2019, p. 164), this international dynamism of economy and trade is rarely accounted for in the analysis of the climate. As globalised economic development reshapes villages like Poum Rong Chat around the world, the caprices of the climate loom very differently to the haves and the have nots, the winners and the losers, the risers and the fallers. Climate vulnerability manifests where these trajectories meet in space, time and society. It is not a point on a map, but a multi-dimensional nexus: a process over which the great levers of politics, economy and society hold sway.

Note

- ¹ ‘Oknha’ is an honorific title roughly translating to tycoon. Traditionally, the title denoted high status and exceptional morality, but in recent years has been available primarily through donations to the government. As of 2017, the price for such a title was officially set at 500,000 USD.

PART 2

Partiality

5. Narratives and rhetoric in contemporary climate policy

In the social media age, debates over the relationship between information, the public and the truth have taken on new vigour. Fake news, bot farms and echo chambers, amongst many other contemporary practices, have undermined – or at the very least changed – the role of the traditional organs of dissemination. In the UK, public trust in politicians is at an all-time low ([IPPR 2021](#)), whilst a growing proportion of the population depends on social media for news ([Ofcom 2022](#)). As this practice has coincided around the world with a rise in authoritarian populism – most famously in the case of Donald Trump and Narendra Modi who made ample use of social media in their election campaigns, but also in the lesser-known case of Cambodia's now (notionally) former Prime Minister Hun Sen,¹ whose 9 million Facebook followers stand up impressively against his country's 17 million population – interest has grown in how such uncertainty may be harnessed for political ends. Who benefits from the world's growing informational ambiguity is a key question for our age.

A recent feature of such debates has been a revival of interest in a decades-old comparison over the futurology of two venerated English novelists: Aldous Huxley and George Orwell, both of whom presented detailed and disturbing dystopias in their respective seminal bestsellers, *Brave New World* and *1984*. Although tackling similar subject matter – the rise of new authoritarian states in which the liberty of the population is grossly subdued through state-articulated systems of social and informational control – the two novels are presented as offering opposite visions of the tools employed to get there. As John [Lancaster \(2019\)](#) writes in the *Financial Times*, for example:

In [Huxley's] vision, humanity was facing a future world tranquilised by pleasure and drugs and the voluntary distractions of 'civilised infantilisation'. For Orwell, humanity was facing a permanent state of war and totalitarian mind-control, summed up by the image of 'a boot stamping on a human face, for ever'.

It is a complex dichotomy. Yet in its simplest form, the distinction comes down to a single deviation: whereas Orwell believed that the societies of the future would achieve control by strictly limiting the supply of information, Huxley posited that an oversupply of information would be equally paralysing and

more readily achievable. Whereas Orwell's 1984 saw the Party demand that its members 'reject the evidence of your eyes and ears' (Orwell 1948, p. 91), Huxley envisioned a future dominated by the senses, paralysed by the pursuit of pleasure and 'deliberate, narcotising promiscuity' (Lancaster 2019).

Amidst the chaotic consumption and spiralling inequality of 21st-century neoliberalism, it is tempting to award the battle of prescience to Huxley. Yet as this chapter aims to show, a closer look reveals a more complex reality. Recent years have undoubtedly seen the generation and dissemination of knowledge increasingly opened to a wide range of actors. Yet amidst this whirlwind of contested narratives, the ability of certain stories to cut through the post-modern noise is, if anything, greater than ever. The need for an anchor with a compelling ring of truth or a visceral appeal to personal experience places a huge weight of importance on familiarity at the expense of critical engagement with alternative viewpoints. The result is not so much an impenetrable chaos of opinion, but a calcification of pathways through it: a warren of mutually exclusive and disconnected truths.

From a governance perspective, this provides a welcome form of stability, helping to mask the contradictions inherent in the mobilisation of hegemonic discourse in practice. The key tensions that undermine that stability – the challenge of harmoniously scaling up governance; of governing between scales; and of containing the challenge of local leadership (Broto et al. 2023) – are all rendered far less troublesome when the whole cannot be observed. Absolved of the need to bear mutual scrutiny, narratives are free to become not merely passive receptacles of political goals, but active, adaptive tools that reconstitute the worlds they purport to represent (Hajer 2002).

The antidote to this kaleidoscope of narrative has, for environmentalists, historically been an appeal to the objectivity of scientific authority. Nevertheless, there is a problem. Objectivity, in awkwardly off-brand fashion, means different things to different people. In the mind of most, 'objectivity is an absolute adjective, meaning that something is either objective or it is not; there are no degrees of objectivity, such as "more" or "less" objective' (Verrall and Mason 2018, p. 21). Yet within the scientific cannon from which climate change scholarship emerged, that kind of total objectivity is not only unachieved, but unachievable. As Neil Verrall and David Mason (2018) outline in their discussion of military objectivity in a post-truth era, for example:

In scientific language, 'objectivity' is the ability to conduct experiments and use research methods to collect data (evidence) that is not influenced by human error, bias, feeling or interpretations (either as experimenter or participant). Put simply, to be objective is to be free from human interference. Because all humans are prone to bias and error they cannot be objective, they are subjective by nature, and can only ever be subjective. Subjective error and bias can be reduced (through training, for example), but they can never be eliminated. (Verrall and Mason 2018, p. 21)

As with any cutting-edge science, certain areas of climate scholarship therefore involve higher levels of uncertainty than others. Indeed, the IPCC's reports reflect this rigorously, by indicating the level of scientific agreement on a particular point. Ranging from very low confidence to very high confidence, these simple verbal indicators distil a vital 'envelope' of metadata to accompany each assertion, framing it within the wider landscape of scientific knowledge. For example:

Most adaptation needs will be lower for global warming of 1.5°C compared to 2°C (*high confidence*). There are a wide range of adaptation options that can reduce the risks of climate change (*high confidence*). There are limits to adaptation and adaptive capacity for some human and natural systems at global warming of 1.5°C, with associated losses (*medium confidence*). The number and availability of adaptation options vary by sector (*medium confidence*). (IPCC 2018, p. 10)

This is an effective system, when communicated in full. Nevertheless, once removed from the rarefied clarity of a technical report and thrust into the world, the nuanced objectivity with which such findings are delivered is subsumed beneath the need for linear narratives, capable of energising or persuading an audience. It is an imperative requiring a degree of simplification and verbal creativity that runs counter to the core premise of the scientific method in a quite literal sense. Above the door of the Royal Society in London runs the maxim 'nullius in verba': take no one's word for it. Yet once climate science crosses the threshold into the world, it is asking precisely the opposite of the public: asking a lay audience to accept an argument without recourse to further evidence. There is an inherent tension in this transition and it is one that must be managed with great care so that a degree of underlying rigor survives it. As Richard Pancost (2017, p. 466) summarises:

There is much that we know; much that is known within certain probability distributions; much that is anticipated, but difficult to forecast due to system complexity; and much that remains unknown. This creates a hierarchy of uncertainty and risk in which poorly constrained climate change impacts can be conflated with – and cause confusion about – the more certain ones.

Despite the best efforts of scientists and communicators, therefore, the difficulty of communicating the metadata 'envelope' of certainty surrounding scientific findings generates a rhetorical weak link that has been endlessly exploited by climate change sceptics and opponents of climate change policy. Moreover, this is a situation that is exacerbated by the distribution of uncertainty: the more specific and local the impact of climate change – and thus the more relevant to the lives of most people – the greater the uncertainty.

Perhaps counter-intuitively, therefore, the smaller scale the analysis, the more the uncertainty increases, especially with respect to ecological and societal impacts (Pancost 2017).

This is no mere accident of governance (Wynne 2010). Rather, as scholars have increasingly come to recognise, the ‘translation’ of environmental science from the laboratory to the polity ‘enacts a moment of closure through which the hegemonic claim of neoliberal climate policy – as singular, natural and objective – becomes reproduced, constraining possibilities for alternative and critical discourses’ (Machen 2018, p. 495). Simply put, the science–policy interface is itself a key site of hegemonic practice. Scientific knowledge, whose original envelope of metadata is unknown to much of the public, offers a broad range of interpretative frames, the first link in a ‘chain of equivalence’ (Laclau and Mouffe 1985, p. 144), which can be extended to any political goal. Moreover, the act of translation offers not only flexibility but authority: an objective base from which to narrate policy in a manner that elides the choices and subjectivities that underpin it. Through this process, the particular becomes universal. In other words, a technocratic obfuscation of what are often highly political decisions (Hope 2021; Lindegaard 2018).

The issue of climate migration, as discussed in depth in Chapter 2, is an especially good example of this phenomenon. Climate migration is a major global issue, generating large volumes of scholarship and policy. Yet its large-scale, long-term framing – not to mention the oft-neglected factor of human agency – makes predictions around it notoriously difficult to analyse, let alone predict (Groen and Suleimenova 2019). In addition, it is an issue that – due to its deep imbrication in the highly political sphere of migration more generally – is one that many, if not most, of those involved in designing policy have a strong political viewpoint on. Dominated as it is by strong political views and scientific uncertainties, the linked landscape of climate migration policy is therefore a key arena of rhetorical contestation, in which scientific findings are woven into powerful and politically charged narratives that drive thinking on the topic, much to the frustration of scholars.

This interaction between scientific and policy narratives will be the focus of this chapter, which will examine how scientific objectivity and legitimacy are articulated through rhetoric in the pursuit of political goals. It will examine first how narratives turn selected events into episodes by ‘emplotment’, in doing so portraying ‘the central characters involved in climate change in different ways, be it as heroes, victims or villains’ (Bushell et al. 2017, p. 41). Second, it will show how rhetorical techniques articulate the disjuncture between scientific objectivity and the public perception of objectivity. Asking what people think, mean and believe when they use words such as ‘truth’ and ‘fact’ in the context of climate change (Verrall and Mason 2018, p. 20), it will demonstrate both the liminal nature of climate ‘truths’ in public perception and the articulation of this space by interested actors. The result, it will show, are discourses that ‘contain embedded assumptions and reasoning that relate to their history and contextualisation rather than with absolute truths that

inform them' (Griggs and Howarth 2019, p. 973): a universalising discourse built on partial foundations.

5.1 The politics of climate change narratives

Climate hegemony does not mean ignoring the issue of climate change, although it can sometimes feel that way. It is established by engaging with it head on, but in ways that enhance public justification and support for the prevailing political order (Gramsci 1971). The hegemony of fossil fuels, for example, is sustained – even in the face of precipitously falling renewable energy prices – by public political campaigns which discursively outflank arguments for renewable energy, widespread political lobbying, and support for conservative think tanks and social movements. In combination, these activities establish 'a political frontier, encapsulating major political parties in a state-capital nexus' (Wright and Nyberg 2024, p. 248) which presents as 'collective will' and 'common sense' (Gramsci 1971).

This hegemonising practice is neither one-off, nor one-way, but an active and continual process. The history of public interest in the environment is one of ebbs and flows, rising to high levels at certain points, before retreating to secondary importance. Indeed, so pronounced was this pattern even long prior to the arrival of climate change into public discourse that environmental scholars had already declared this 'issue attention cycle' an inherent feature of a field characterised by complexity, intractability and difficulty of visualisation (Downs 1972, p. 27). A half century later, arguments have re-emerged along notably similar lines. As Joe Smith summarises, for example, the conundrum facing scholars and practitioners seeking public engagement on climate change is that it is:

understood to be urgent and important, and at the same time is widely seen as boring, difficult and confusing. It poses a global risk, and yet is highly divisive. It represents a defining challenge for our age, and yet it is one that many people choose to ignore and some, even, to deny. (Smith 2014, p. 15)

Something strange happens, in other words, once climate change exits the laboratory and enters the public arena. An issue that tends to be viewed in scientific circles as unified and coherent, albeit highly complex, manifests in public discourse as a broad and contested landscape of opinion, rooted in strongly held, place-specific beliefs and social values. Worse still for the would-be-analyst, this landscape is durable, resilient and multi-layered, meaning that new narratives are received in subjective relation to older ones, often entrenching opposition, rather than changing minds or building trust (Howarth et al. 2020). The promotion of electric vehicles, for example, is viewed simultaneously as a gross invasion of liberty by some, a necessary and useful policy

by some, and a dangerous distraction from more radical action by others still. Where you land on this spectrum depends on your positioning, both in space and society, as well as your personal views. In general, it has rather less to do with the latest data on lifecycle emissions. Indeed, if you are the kind of person who pays attention to such data then your wider opinions are likely driven by a larger and more complex set of questions (Perga et al. 2023).

Climate change thinking, in other words, is neither a purely top-down phenomenon, nor is it driven by data in a direct sense. Place-specific and culturally relatable narratives are powerful tools in shaping wider discourse. Contextually framed narratives connect people and endow otherwise abstract issues and events with meaning (Bushell et al. 2017), providing a lens through which audiences can make sense of complex issues (Lejano et al. 2013; Nash et al. 2020). Yet in doing so, they also entrench particular ways of thinking, building up receptivity to new discourses in the same mould and a bulwark of resistance to conceptual reframing. The specifics of evidence and even argumentative structure thus take a back seat to the overarching narrative, which is dependent on neither for its power. For example, the narrative ‘climate change is not happening’ is adopted in numerous forms, including casting doubt on climate scientific certainty, as practised by President George W Bush, who argued that:

we do not know how much effect natural fluctuations in climate may have had on warming. We do not know how much our climate could, or will, change in the future. We do not know how fast change will occur, or even how some of our actions could impact it. (Bush 2001)

Similarly Donald Trump has long advocated the view that the evidence of climate change was disproving the modes posited by scientists: ‘They only changed the term to CLIMATE CHANGE when the words GLOBAL WARMING didn’t work anymore. Come on people, get smart!’ (Trump 2014).

There is also the more recent and widely publicised view that anthropogenic climate change is only one element within a wider suite of forces changing the climate, as expressed even by academics in some cases:

The climate is changing – the thing is, it isn’t just due to humans. Natural forces beyond human control are also gradually affecting our climate. These geophysical forces are vital to understanding global warming. Man is indeed responsible for a large portion – possibly even a majority – of global warming. But also in play are complex gravitational interactions, including changes in the Earth’s orbit, axial tilt and torque. (Neaves 2017)

Although each of these narratives employs a very different set of rhetorical devices and appeals to different bases of evidence, the overarching message

is similar: significant doubt exists over linkages postulated between climate scientists over anthropogenic activity and climate change. Although the specifics may change – often adapting to the existence of evidence elsewhere – the narrative remains the same, lending each new iteration the advantage of plausibility in the mind of a susceptible audience. From this point of view, as Stephen Daniels and Georgina Endfield argue,

what people make of climate change, and what they do about it, are complex cultural matters, with a matrix of narratives, specific meanings emerging in and from particular times and places. (Daniels and Endfield 2009, p. 215)

This is a difficult dimension of communication to grapple with, but is by no means unique to the issue of climate change (Moezzi et al. 2017). From war to economic strife, complex events are narrated after the fact, rendered intelligible and linear in retrospect and used thereby to understand future events. Once deployed, the narratives that bind previous experiences and arguments shape our understanding of what comes next.

Narratives are therefore a double-edged sword. On the one hand, they contribute to increased local knowledge, understanding and engagement with climate change, facilitating a high level of salience to everyday life and activities. Yet on the other hand, they have a profound impact on how information is received, increasing engagement when a message aligns with similar values, beliefs and worldviews – and decreasing it when it doesn't (Hine et al. 2014). Accounting for this narrative diversity is key to effective communication because climate change is not a salient, tangible issue in and of itself (Lowe et al. 2006), but rather impacts individuals with different interests in heterogenous ways. Ultimately, risks are defined by how we 'story' them, who has authority to do so and the range of policy options considered (Paschen and Ison 2014).

This power is increasingly being recognised in the environmental sphere. Widespread dissatisfaction with the dominance of physical, technical and economic representations of climate change has contributed to a 'narrative turn' (Moezzi et al. 2017) whereby the logics of climate change thinking are explored in terms of their underlying narrative determinants. From 'every little helps' to the 'the end of the world', narratives undergird public debate on the issue (Bushell et al. 2017). Yet understanding narratives means understanding the evolution of stories across multiple intersecting scales (Paschen and Ison 2014). Many narratives share a common structural heritage, which leads their origin to be ascribed in some cases to major cultural texts such as The Bible (Hulme 2015). Yet all narratives have multiple parents. As set out by Francois Lyotard (1984), narratives emerge from divergent sources; these scales nest within one another quite comfortably in most cases, leaving little tension in belonging to more than one. Indeed, 'cut-through' narratives, capable of changing opinions or appealing to hard-to-reach audiences, often

draw their power from familiarity in multiple cultural realms, from the moral to the personal.

Narratives like these cross-cut both the traditional left–right spectrum of the press, and the associated discourse it engenders. Whether presented in a ‘negative’ or a ‘positive’ light, they invoke ‘abstractions of time, space and belonging’ (Farbotko and Lazrus 2012, p. 382). Whatever the *viewpoint* afforded, the *framing* of climate change bolsters a shared umbrella of analysis and terminology. The granular specifics of climate change impacts, but to an even greater extent the underlying geopolitical circumstances within which those impacts manifest, are thus elided out of view. And this elision is only the beginning of a wider problem. More worrisome still is that, by creating a mismatch between generalised and local framings of the climate, an arena of analytical uncertainty is opened that not only undermines representation, but also creates space for rhetorical reinterpretation. Broad, umbrella concepts such as efficiency, resilience and risk are employed flexibly and embedded into different contexts as forms of articulation that accommodate contradictory aspirations (Broto et al. 2023, p. 986). Such ‘sophistic’ accounts of climate change, their genus and meaning will be the subject of the next section.

5.2 Sophistry and rhetoric in communicating climate change

In the more than four decades since it emerged into public consciousness with the first World Meteorological Conference on Climate in 1979, the story of climate discourse has been one of mounting evidence overcoming a succession of interested narratives. It is a story that has proceeded in multiple phases. In the first phase, lasting until the early 21st century, opposition to climate change mitigation policy took the form primarily of arguing against the claim that global temperatures were rising (Hornsey and Lewandowsky 2022), bolstering doubts within areas of scientific contestation and of reigniting debates over areas of apparently settled consensus. So well-honed and familiar did this practice become – and, as exemplified below, how effective did it appear in some cases – that well-known proponents of climate change denialism came to be labelled sophists (Goodwin 2019), after the ancient Greek philosophers who charged high fees to teach Athenians how any case could be made and won with rhetoric.

Much has changed since those early days. Climate scepticism has shifted its emphasis towards new forms of obfuscation, emphasising complexity and uncertainty over outright denial (Hornsey and Lewandowsky 2022; Whitmarsh 2011). Yet through all this, the ideas and techniques of Sophistic argumentation have gone from strength to strength, bolstered by a new-found respect for the practices of interested argumentation. Today, after more than two millennia as the ‘maligned enemy-brother, philosophy’s implacable twin’, to quote Alain Badiou (1999, p. 117), the 21st-century sophist is

even undergoing something of a rehabilitation. Janan Ganesh (2015) wrote of London, for example, that the rise of the service industry and decline of manufacturing in the Western world means that ‘we are all Sophists now’. ‘Scorned then, imperious now’, he attests, going on to propose that ‘what unites the elite professions in any international city is their command of sophistry’. Like a boxer, ‘they use facts, yes, but also analogies, invented categories, three-point plans and other forms of rhetoric. They cut off the ring’ (Ganesh 2015).

Not everybody takes so detached a view on our having recreated the conditions for Sophistry (Wolff 2014). On the other side of the Atlantic, the *San Francisco Chronicle* (Zagacki and Cherwitz 2023) warns that ‘Sophistry threatened classical Greek democracy [and] it’s doing the same here in America’. Whatever the angle, though, the renewed importance of rhetoric unchained from core principles is increasingly agreed upon. In Badiou’s words once again, ‘philosophy today, caught in its historicist malaise, is very weak in the face of modern sophists’ (Badiou 1999, p. 197). Yet more so than philosophy, the politically interested subjective–objective hybrid of climate discourse provides an especially fertile field for the sophist to cultivate (Goodwin 2019). Being faced with the 97% consensus on anthropogenic climate change (Anderegg et al. 2010), or indeed the 100% that has been more recently claimed (Powell 2015), is in no way daunting to the sophist. Indeed, it is in precisely such untenable positions that the tradition emerged to thrive by a particular rhetorical skill: turning attention to a favoured issue by invoking a ‘fog of war’ around key bases of argumentation (Goodwin 2019). Climate change as a topic – positioned as it is at the intersection of technical and political spheres – is especially well placed to generate this fog. Indeed, as Jean Goodwin concludes in her analysis of environmental sophistry, in any attempt to communicate the vast issues of climate science in the constrained settings of public discourse, there are only ever two outcomes: poor arguments or no arguments at all (Goodwin 2019).

This is true, in a general sense, of many complex issues. Indeed, in the political sphere, ‘fuzzy language and subjectivity’ may be desirable for their inclusiveness and diffusion of responsibility (Koutsoyiannis 2021, p. 23). Yet where such commonplace practices face up to the more tightly defined rhetorical conventions associated with scientific analysis, they become overwhelmingly successful in view of their *relatively* sophistic qualities.

Consequently, what emerges as climate change communication in the real world, though backed by climate scientists and institutions, is not science in a literal sense, but a mediated scientific reality: a form of communication that reflects political, social and cultural interests (Scheufele 2014) and builds upon the discursive conventions of politics, in order to appeal to a given base of political support.

This process is exemplified in a UK context by a 2020 EU Home Affairs Subcommittee meeting on Climate Migration, which brought together policy experts, academics and legislators in order to inform a parliamentary viewpoint on the issue. The questions that were asked of the expert panel during

this session were, unsurprisingly, strongly rooted in wider public and policy narratives. Specifically, they reflected three narrative frames: the language of problematisation (for example, ‘How great a problem does climate change and migration pose?’), categorisation (for example, ‘How do you think this type of migrant should be classified?’) and securitisation (for example, ‘Should countries including the UK be preparing for large-scale influxes of people migrating as a result of climate change?’). Moreover, in the course of the hearing, some useful summary insights arose from the questioners as to the power relations through which policy on climate migration is formed. As one questioner, Lord McNally, explained:

... If you look across sub-Saharan Africa, there are a number of countries there that all have high birth rates, large-scale poverty, are basically Islamic states and are also suffering from climate change, because it's not just one element. I noticed recently that there's talk of putting together some sort of Western defence programme, because these countries could and are already becoming a seedbed for a new centre for Islamic fundamentalism. And so when you say what's coming, what happens next? What happens next is we'll pour lots and lots of money into sending troops into that part of the world and fighting endless wars as we have in the Middle East. But how do we change the debate? It's so compartmentalised. On the one hand it's climate change. On the other, it's the compassion industry and so forth. We're not going to solve these unless we can draw these arguments together. (McNally 2020)

Few would wish to call Lord McNally a sophist for expressing the above sentiments. On the contrary, his statement is no outsider view, but a concise reflection of mainstream securitised perspectives on climate migration, as propounded by the UK government's foreign office for at least the last 20 years. What it clearly shows, though, is the intersection of scientific data and national political interests, coupled with broad generalisations and narrative tropes derived from other areas of political debate. There are various elements to be examined, which will be taken here in turn.

First, the selection of Sub-Saharan Africa as a regional exemplification reflects both media discourse on climate migration, highlighted above, and the geography of climate migration scholarship outlined in [Chapter 2](#). In a broader sense, it reflects deep-seated fears of ‘the racial Other’ which prevails throughout climate change discourse ([Baldwin 2013](#), p. 1474). But as the remainder of the passage makes clear, it also reflects the strategic interests of the UK and the desire to avoid climate change creating ‘a seedbed for a new centre for Islamic fundamentalism’. This is a crucial point of narrative, because academic and policy thinking have moved in opposite directions on the issue of securitisation in recent years, as many academics have questioned the idea of climate-linked mass migration – or at the very least its

depoliticisation (Warner and Boas 2019). Yet even as scientific consensus has moved concerted away from this perspective, the accompanying public narrative frame has retained remarkable resilience, due in large part to its ability to speak to existing interests beyond those traditionally associated with climate change.

Supporting this perspective is the rhetorical transition from the objective to the hypothetical. The reference to ‘high birth rates, large-scale poverty, [countries that] are basically Islamic states and are also suffering from climate change’ invokes a number of objectively measurable indicators (birth rates, poverty and certain aspects of climate change), whilst incorporating a more dubious assertion about Islamic states [in reality, just over 30% of the population of Sub-Saharan Africa practises Islam, with 15 out of 51 states majority Islamic (Zurlo 2017)]. Yet these relatively objective statements give way rapidly to the openly speculative assertions that ‘I noticed recently that there’s talk of putting together some sort of Western defence programme’ and then ‘What happens next is we’ll pour lots and lots of money into sending troops into that part of the world and fighting endless wars as we have in the Middle East’: a clear departure from the appeals to objectivity evidenced in the opening lines.

In rhetorical terminology, this type of technique, often subconscious due to its ubiquity in public discourse, reflects the longstanding tradition of transition between *logos* (the appeal to logic), *ethos* (the appeal to the authority of the speaker) and *pathos* (the appeal to emotion) (Higgins and Walker 2012). An initial discursive reference to scientific accounting and objectivity is interspersed with and subsequently supplanted by more pathetic invocations of ‘Islamic states’, a ‘Western defence program’ and ‘endless wars’. Finally, Lord McNally finishes by undermining an external *logos*: arguing that

it’s so compartmentalised. On the one hand it’s climate change. On the other, it’s the compassion industry and so forth. We’re not going to solve these unless we can draw these arguments together.

In a far more subtle but also more commonplace manner than the sophistic rhetoric described above, therefore, a ‘fog of war’ is finally erected around key questions of policy, invoking the need for further work and discussion, whilst undermining the presence of contemporary solutions. And this statement is by no means exceptional. Similar rhetorical patterns may be seen in numerous everyday examples of mainstream climate discourse, even extending to the Nobel Prize lecture delivered by world-famous environmentalist Al Gore, speaking in 2007:

In the last few months, it has been harder and harder to misinterpret the signs that our world is spinning out of kilter. Major cities in North and South America, Asia and Australia are nearly out of water due to massive droughts and melting glaciers. Desperate farmers are losing their livelihoods. Peoples in the frozen Arctic

and on low-lying Pacific islands are planning evacuations of places they have long called home. Unprecedented wildfires have forced a half million people from their homes in one country and caused a national emergency that almost brought down the government in another. Climate refugees have migrated into areas already inhabited by people with different cultures, religions, and traditions, increasing the potential for conflict. Stronger storms in the Pacific and Atlantic have threatened whole cities. Millions have been displaced by massive flooding in South Asia, Mexico, and 18 countries in Africa. As temperature extremes have increased, tens of thousands have lost their lives. We are recklessly burning and clearing our forests and driving more and more species into extinction. The very web of life on which we depend is being ripped and frayed. (Gore 2007)

The tone employed by Al Gore here, understandably given the occasion, draws to a larger extent than Lord McNally on pathos as a means of engaging and convincing the audience, yet the same form of interspersal is nevertheless evident in his language. The use of *logos*, in reference to large figures and specific processes rooted in scientific observation: ‘nearly out of water due to massive droughts and melting glaciers’; ‘wildfires have forced a half million people from their homes’; ‘millions have been displaced by massive flooding’; ‘tens of thousands have lost their lives’, is bookended by more evocative, *pathetic*, language. The paragraph begins by stating that ‘our world is spinning out of kilter’ and ends with ‘the very web of life on which we depend is being ripped and frayed’. Amidst these two framing statements, the central references to climate migration as ‘a national emergency that almost brought down the government’ and ‘increasing the potential for conflict’ are conjoined with more partial, *logical* arguments, their pathetic qualities framed as, and drawing authority from, science.

Once again, this is no specific criticism of Mr Gore, but rather a demonstration of how rhetorical conventions serve in everyday use to break down the epistemological barriers between the ‘objective’ sphere of science and the ‘subjective’ realm of opinion, politics and discourse. Indeed, this is a core issue not only in climate change communication, but also in the very ‘spatialities of scientific knowledge’ itself (Mahony and Hulme 2018, p. 395). As Martin Mahoney and Mike Hulme (2018, p. 410) explain, knowledge about climate change, as with any other form of knowledge ‘can never arise independently of culture, from human ways of doing things ... [because it] ... always carries with it beliefs and values about the world it is seeking to describe’. The idea of purely neutral scientific evidence is therefore ‘a chimera’ wherein the *inevitable* subjectivity of interpretation is concealed through association with an objective core component. Despite their clear articulation of *logos* and *pathos*, speeches and statements of the sort espoused by Al Gore and Lord McNally tend not to be viewed as rhetorical, but as effective communications of scientific fact. Rhetoric, in other words, is in the ear of the beholder.

This, in itself, is something we may be comfortable with. The fact that certain arguments may be more appealing to one group than another is no novelty of the post-truth era (Hyman and Jalbert 2017). Yet, as outlined at the top of the chapter, there is a hidden implication we may be rather less content to accept: that if we cannot agree on where rhetoric begins and ends then truth itself is left on shaky ground. In other words, whilst most people understand themselves to have a very strong grasp of the terms ‘truth’ and ‘fact’, what they actually understand by those terms varies considerably (Verrall and Mason 2018). This flattening of the terms of objectivity is an effective narrative tool, as it once again diminishes the tensions inherent in governance across multiple scales, ‘obscuring but not eliminating contradictions between untrammelled economic growth and environmental concerns’ (Wissman et al. 2024, p. 713). All that is needed is to ensure that ‘a truth’ is compelling to achieve its endorsement, and thus ensure that the existing order is reproduced, not without challenge, but without that challenge cohering around a clearly defined target.

Viewed in this way, truth telling is less a common invocation of fixed points of knowledge and more a ‘constitutive process of producing and reproducing shared meanings’ (Ballantyne 2016, p. 329). In any large and heterogeneous society, the way that people construe meaning around the changing climate is therefore *inevitably* variegated (Hanson-Easey et al. 2015). To a scientist, the assertion that millions of migrants will be impelled from their homes by 2050 is a statement based on clearly defined evidence, within particular boundaries of certainty. To many readers of that figure in a newspaper, it is a fact. To a climate change sceptic, it is a lie. This nexus of the subjective and the scientific provides fertile ground for sophistic rhetoric. It is a space in which rhetorical devices may be deployed to influence the degree of certainty associated with particular assertions, casting doubt on some, whilst bolstering the cases of others using pathetic, ethic and logical allusions.

In some cases, as above in the cases of George W Bush and Donald Trump, the use of recognisable narratives is used to undermine certainty in scientific conclusions by constructing appealing and repeatable fallacies. In others, a more technical and defensive form of sophistry is employed, leading climate discourse onto uncertain ground and generating a ‘fog of war’ around particular points. Yet crucially, these techniques are not solely the preserve of those who wish to obstruct action on climate change. Rather, as in the case of Al Gore and Lord McNally, the use of rhetoric is commonly employed in more subtle ways, with the intention of communicating the importance and relevance of scientific conclusions and highlighting – to a greater or lesser degree of partiality – the importance of certain pathways over others.

It is this aspect of rhetoric, employed just as often by those *advocating* action on climate change as those opposing it, that is of greatest relevance to the practice of climate policy. And it is about far more than the high-flown rhetoric of global prizes and national governance. As the forthcoming two chapters will show, the disjuncture between objective science and the lived realities

of policy is at its greatest where the scale between scientific data and lived realities are at their greatest (Pancost 2017), providing expanded scope for political motivations, whilst allowing the universalising rigour of scientific analysis to detract attention from the particularities of local policy. By leaving the largest possible number of pathways open, this uncertainty provides an interested agent with the ideal material for politically motivated policy: a plethora of evidence from which to support whichever course of action is preferable.

By appealing to the universal, the particular conditions that define the human experience of the environment are diminished in weight and importance. And this works best, naturally, where particular arguments are smallest. Consequently, climate sophistry is both most powerful and most prevalent at the smallest scales, not the largest. Yet there is a final crucial point to be observed. Returning to the debate referenced at the start of this chapter, neither Huxley nor Orwell's perspective can fully explain the conditions that shape climate policy. It is a field in which neither banal oversupply nor a tightly controlled and linguistically rigid constraint on information fully explains the discourse. Rather, it is precisely the combination of politically wielded scientific authority within a wider milieu of untrammelled commentary and interpretation that provides such a powerful framework through which to pursue interests at multiple scales, often under the auspices of adaptation.

This point will be outlined in two parts across the next two chapters. First, Chapter 6 explores the 'wicked problem' of climate change on Cambodia's environmentally stricken Tonle Sap Lake, where the battle for narrative defines the struggle for livelihoods amongst the dwindling community of this 'dying lake' (Seiff 2022). As it will show, these narratives 'contain embedded assumptions and reasoning that relate to their history and contextualisation rather than with absolute truths that inform them' (Broto et al. 2023, p. 973). The result is narrative conventions that cut across and excise most adaptation pathways, leaving only a single, politically expedient pathway through a maelstrom of environmental politics. What was once a merely particular discourse thus becomes universal, not through consensus, but through the rhetorical diminishment and elision of alternative ideas.

Building on the watery politics of the Tonle Sap Lake, Chapter 7 then turns to inland irrigation. Training its analysis on the rhetorical conventions that underpin irrigation and its management, this chapter will highlight how scale shapes the politics of adaptation. As administration transitions upwards in scale, it will show, the everyday experience is replaced by *pathetic*, *ethic* and finally *logical* conventions, which constrain the scope of decision making according to the politics at play. Within this discursive context, the inevitable subjectivities surrounding climate policy in practice provide policymakers at multiple scales with the options necessary to pursue politically expedient goals, whilst neutralising opposition through recourse to *logical* conventions which act, in the words of journalism historian David Mindich, as a 'cloak for lying' (Hiles and Hinnant 2014). By setting the terms of the debate, the scalar conventions surrounding irrigation policy project a universalising grammar to

the governance of irrigation, bringing down a 'fog of war' on the particular politics of its implementation and the lives of those it reshapes.

Note

- ¹ In July 2023, following the national elections, Hun Sen, who had served in various capacities of leadership for some 38 years, stepped down (or up, as he would have it – being 'promoted to father of the Prime Minister') in favour of his eldest son, Hun Manet. The full implications of this shift will not be known for some time. However, it represents the first significant transition at the top of Cambodian politics since the 1997 coup that saw Hun Sen consolidate power at the expense of his more senior counterpart Prince Norodom Rannaridh.

6. The wicked problem of climate change on the Tonle Sap Lake

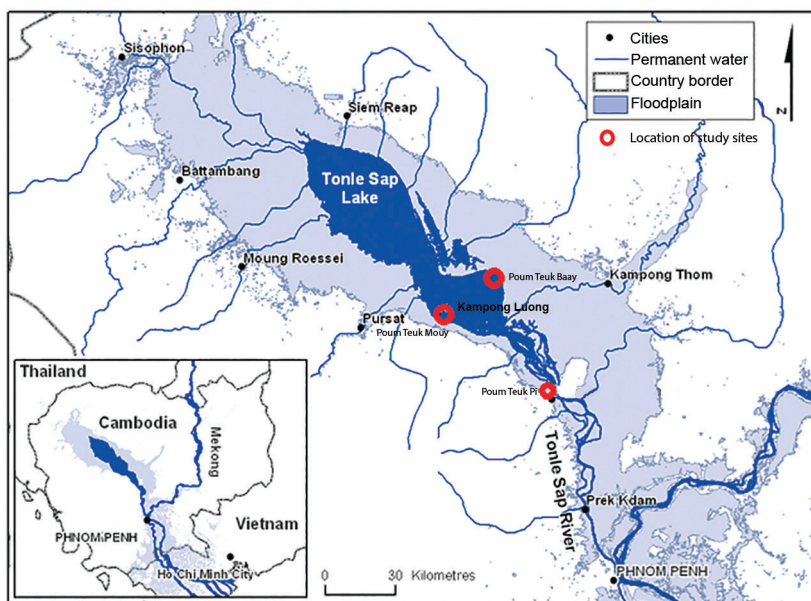
[The lake] has lost very much; uncountable. A thousand per cent. I have been living around the Tonle Sap and now it has been burnt and [there is] nothing left. I don't know what the reason is. The upper people blame the lower ones and the lower blames the upper ones. (Interview with Village Chief, [Poum Teuk Pi](#), 2019)

A life lived on the Tonle Sap Lake is like few others in Cambodia. In contrast to the rice-based agriculture in which the majority of the population spend their lives engaged, for the few thousand people who remain on the Tonle Sap, fish are the point around which all else revolves. This is, after all, not simply a waterside community, but a genuinely water-bound one. The Tonle Sap Lake dwellers have, for hundreds of years, lived on 'floating' houses, anchored with long wooden poles to the bottom of the lake. These single-storey dwellings are, like most other Cambodian houses, built of wood or thatch. They have windows, a porch and a ladder down to the water. Depending on the wealth of the occupant they might have multiple rooms and a large, hardwood sitting area or consist solely of a single thatched room, one wall of which opens outwards as a forward-facing portico.

Whatever the size of the house though, the floating villages of the Tonle Sap are distinguished by their decoration, adorned in most cases with a combination of real and artificial flowers to beautify their frontages. The houses are arranged in such a way as to form streets and main roads through each watery settlement, traversed throughout the day by residents paddling canoes. There are floating grocery shops, floating hardware shops, floating water police and a floating school, to and from which schoolchildren paddle themselves each morning and afternoon. It is an idiosyncratic but well-established and wholly functional way of life. But it is dying. Everybody connected to the lake knows how hugely fish stocks have been diminished in recent years. The only dispute is in the numbers. The most conservative estimates place fish stocks as 80% down on the levels of 20 years ago; more pessimistic accounts complain of 90%, 95% ... 1000%.

The chief of Poum Teuk Mouy, one of the larger village clusters shown in [Figure 6.1](#), located close to the provincial centre of Kampong Chhnang, is one of the lake's optimists. As he explained, sitting in one of the larger floating

Figure 6.1: Location of study sites on the Tonle Sap Lake



Source: Figure adapted from source map from Wikimedia, by Mkummu (CC BY SA)
 Licence, <https://commons.wikimedia.org/wiki/File:TonleSapMap.png>.

houses in the area, facing outwards onto the full expanse of the lake, the fish stock

has been reduced by 80%. Now the people who fish are fishing illegally. If we advise them about fish regulation, they said it does not work and they cannot catch fish the same amount as the other. They even catch small shrimp.

Expanding on the details of current fishing operations, he continued:

Electric shock [fishing with a battery], *bor* [trawler nets] and *chan-ras* [static trawler nets] are normal. Based on the prime minister's words, he said let the fish move freely with no traffic. But along the river, *chanras* are set up at many different places. That is why there is nothing left. All that remains are snails that they can sell for 5500 riel per kg. Even the crabs have gone as well. (Interview with Village Chief, Poum Teuk Mouy, 13 March 2019)

Even for those broadly familiar with the Tonle Sap, there is a lot to unpack in this statement. Fish levels are massively down, so fishers are increasingly using

illegal methods to obtain viable catches. Two types of nets are mentioned, the long *bor* nets, attached to poles and set in a tray in order to catch everything that passes through them; and the *chanras* nets, in which tree branches are arranged to form an artificial nesting site for fish and then surrounded by nets to catch both young and older fish. And finally, the allusion to electric fishing, which involves the use of a car battery linked to electrodes strung over fishing poles. The battery is turned on and the electrodes dangled into the water, producing a big enough shock to raise a few dead or stunned fish to the surface.

All of these techniques are illegal due to their long-term impact on fish stocks. All three techniques capture fish indiscriminately, including young fish too small to eat. And as a result, many lake dwellers are now subsisting on other forms of fisheries such as snails and crabs, which have some nutritional value, but capture only a very low price on the market. Yet if this captures the current situation on the lake, there is still much left to understand about the reasons for this ecological breakdown. What was the catalyst and how, in short, did it come to this?

Answering this question is far from easy. Ask one group of lake dwellers and you will get a clear account. Yet ask another group, a mere few kilometres away, and you may find a completely different interpretation. Local authorities will, in all likelihood, provide another answer still. Each of these voices brings the authority of experience. Yet, the discourses they propound reflect 'embedded assumptions and reasoning that relate to their history and contextualisation rather than with absolute truths that inform them' (Broto et al. 2023, p. 973). They see things, simply put, from their perspective.

This is an important point, but certainly not a groundbreaking one. These positionalities emerge as autonomous subjectivities embedded in people's habitus and exchanges (Gaonkar 2002). Yet things become a little more complex when asking how these contested viewpoints translate to sustainability policy. Hegemonies require the discursive articulation of different subject positions (Broto et al. 2023, p. 975), meaning that they contain multiple contradictions, yet the viewpoints that reveal these contradictions are marginalised in relation to a dominant central consensus (Laclau and Mouffe 1985). Confronting this marginality of voice means engaging with the environmental positionalities that people live through and the specific mechanisms through which this marginalisation is achieved.

From the perspective of the Tonle Sap, there is a clue in the village chief's allusion, above, to the 'prime minister's words', a phrase subtly recalling a momentous moment in 1999, when the nascent government made the decision to dispense with the fishing lot system, originally introduced in 1988 as a means to raise money for the struggling government. The lot system saw certain parts of the lake auctioned off to commercial fishing operations, with other parts reserved for the use of local communities. Yet the 1999 edict, termed 'anarchy in fisheries' (Hutson 2006), changed all this. Communicated at the time as breaking the stranglehold of large commercial lots, which were then capturing 80% of the total annual catch, the new system allowed fishers,

big and small, to use the lake as they wished, with one of the explicit aims being to end the intensive overfishing associated with the two-year licences purchased at aggressively high prices at auction.

Perhaps inevitably, this was not the result. Rather than resetting the incentives of lake users at a more sustainable level, the intensive fishing practices honed during the 1980s expanded and consolidated. Trawler nets, dragged between two boats through a lake often only a metre or so deep in dry season, became a common sight and fish stocks diminished rapidly in consequence. For the last 20 years, fisheries on the lake have been a race to the bottom, a game of one-upmanship in which each new unsustainable practice brings new and less sustainable practices from competitors in the lake’s newfound ‘anarchy’.

And so, for the last 20 years, this has been the story of Cambodia’s most important natural resource. The abrupt transition from legendary cornucopia to ‘vanishing world’ (Seiff 2022) has been a tragedy not just foretold or observed, but actively and continually participated in. Yet it can feel, at times, as though every person you speak to about the issues facing the lake is telling a different story, pointing the blame elsewhere. In large part, this is due to a shared sense of guilt. As fishing livelihoods have been increasingly squeezed by the combined impacts of human and environmental change, fishers in the Tonle Sap region have responded by attempting to increase their yields through changes to fishing practice. As fish stocks have declined further still, these practices have become both more prevalent and destructive. Yet those living on the lake can see no other choice but to persist in their downward spiral. Since there is no single culprit, everybody feels a weight of responsibility for the Tonle Sap’s decline.

It is not the lake alone paying the price for its death spiral. Household debts, as shown in Table 6.1, are ballooning as a means to cover diminishing livelihoods, increasing pressures on incomes by the day. And economic risk is only one such danger. As fishing techniques become less and less sustainable, they also become more and more illegal. Since fishers cannot sustain their livelihood legally, the only way to stay alive for many lake dwellers is to participate in activities that are not only illegal, but which are actively pursued and punished by lawmakers. Environmental enforcement in the form of police and the authorities of the lake therefore becomes an additional agent in the struggle

Table 6.1: Changes in debt over time

Village	Debt 2021 (USD)	Debt 2016 (USD)	Debt 2011 (USD)
Poum Teuk Mouy	1459	722	53
Poum Teuk Pi	835	732	114
Poum Teuk Baay	664	862	90

Source: Data generated by author, January 2021. N=175

for livelihoods on the lake, intervening to reshape fishing practices at certain times, whilst permitting them at others. As the head of a second lakeside village described:

Last year, people could find a bit of fish to support their families. This year, though, [law enforcement] is so strict that people do not know what to do, because the government has been strict on the fishing for the last 15 days. Officials are staying around [now]. [The new approach] combines stricter fishing, law enforcement on fishing and more [enforcement over] use of illegal equipment ... [But] ... For fishing, if we don't use the illegal and modern equipment, we cannot survive because using family [traditional] equipment, we cannot catch fish. In the past, we used the 20 metre fishing nets and we could get fish, but now if we don't use an engine to fish, we don't get any fish. It started from [the year] 2000, [when the net] increased to 50 metres, then it was up to 100 and 200 meters. Now it has reached 500 metres long in order to get fish. Meanwhile the price of equipment increases as well. I don't know [what else people can do]. Now they depend on the fish and they have debts with the bank [as well]. (Interview with Village Chief, Poum Trey, 4 March 2019)

Viewed from this angle, the story of the Tonle Sap can be told in net lengths alone, a technical detail which is often lost amidst the variegated milieu of influences assailing the lake and its human and non-human inhabitants. But whilst it is undoubtedly a big part of the story it is by no means the whole one. In addition to the pressure on fisheries created by overfishing – and responses to that overfishing – numerous other pressures are cited by those connected to the lake. How each of these pressures is weighted reflects the specific positionality of each party: their needs, vulnerabilities and experiences, but also who they view to be their opponents or competitors for the lake's dwindling resources.

Not all residents, for example, are opposed to the efforts of authorities to crack down on illegal fishing at all. Indeed, some residents have called for stricter enforcement of regulations against techniques such as electric fishing. As one stated:

[The authorities] prevent it. They catch people when they see it. But when the official goes back, the people buy and use [the same equipment] illegally again. Sometimes, they have their network to inform them when the officials are coming. Then the people go to hide the illegal equipment. Usually, the people who fish illegally are poor and [in that case] the officials sometimes close one eye and open one eye. (Interview with a female resident, Poum Trey, 12 March 2019)

Even within the same village, narratives of fisheries and their enforcement like these contrast with, contest and oppose one another. And fishing techniques are far from the only such case. Perhaps the best example of the narrative battle being waged on the Tonle Sap is the burning of the floating forests that pepper the outer parts of the lake. So named because they are submerged during wet season, often with only their branches visible from above the water, the floating forests are a vital dimension of the lake's ecosystem because they provide the breeding ground for fish. Yet in recent years this vital resource has begun to diminish rapidly amidst rising temperatures and competing claims of responsibility. As the village chief of Poup Kdam outlined, for example, 'there has been one time, the hottest, [when] there was a forest fire in 2015 or 2016. It was hot enough to burn the forest' (Interview with Village Chief, Poup Kdam, 13 March 2019). Nevertheless, although the hot dry conditions made fires in the floating forest more likely, some observers saw human activity as key to driving the incidence of fire. As the village chief continued:

If there was no fire, the forest would not be gone so quick. If it was only clearing the forest to make rows [for planting], it would not have reduced much. But if they clear the forest and they throw a cigarette away, then it will set fire to forest. (Interview with Village Chief, Poup Kdam, 13 March 2019)

Local villagers often expressed a clear idea of the responsibility for these fires, as exemplified by the following:

... For the forest on state land, it is not allowed to be cleared, but the forest on private land is able to be cleared. In the past, the Vietnamese people cleared the forest in order to set fish trays to catch fish. Since then, the water has never flooded it and as a result there is a forest fire. (Interview with a local fisher, Poup Teuk Mouy, 12 March 2019)

Rather than settling on a consensus, each new testimony reveals further contested narratives about the loss of the forests. The result is a landscape of disagreement and blame, resulting in a lack of uncertainty around the fate of the forests themselves, as the village chief of Poup Set Meuk, part of the Poup Teuk Mouy floating community, explained:

I don't know the reason [for the fires]. The upper people blame the lower ones and the lower [people] blames the upper ... I don't know. I have heard some people say that the upper people walk with their cows, smoke a cigarette, cook rice and leave the fire, then it causes fire in the forest. The upper people accuse the lower ones of clearing the forest in order to make a path ... [they say that] the river people only clear the forest to make a path, so they cut down and

burn the forest along sides of the path. Other people complain that the river people are the ones who clear it and the upper ones are the one who burn it. (Interview with Village Chief, Poum Set Meuk, 4 March 2019)

Amidst this fiendishly complex environment, narrative and contestation thrive. The authorities, the government, the villagers, the companies: each has their own perspective. Even topography proves a discursive dividing line, leading ‘the upper people [to] blame the lower people and the lower people [to] blame the upper’. Yet this is more than merely a question of discourse. By ‘emplotting’ (Bushell et al. 2017) a linear narrative – ‘our problems stem from *them*’ – through the complexity of the Tonle Sap’s environmental destruction, environmental narratives not only *reflect* the power dynamics within which the lake is situated, but actively *reshape* the landscape they describe by incorporating them into much larger stories of existence and subsistence (Fløttum and Gjerstad 2017). The resulting, universalised authority not only subsumes competing narratives, but provides the necessary mandate to respond to the problems it identifies. Such universalised accounts become thus ‘not passive receptacles but active tools’ (Broto et al. 2023, p. 975), dynamically adapting to the worlds they encounter and recrafting particular contexts in the image of the stories they tell (Hajer 2002). Crucially, this goes beyond sustainability, but sustains and stabilises a much wider, multi-scalar hegemony, as the remainder of this chapter will show.

6.1 Climate change in a complex environment

Few ecosystems make such a compelling case for holistic and equitable conservation as the Tonle Sap. Encircled by six provinces, it is the largest lake ecosystem in Southeast Asia and the seventh largest lake in the world in the wet season. It contains at least 200 diverse species of fish, 42 species of reptiles, 225 species of birds and 46 species of mammals, as well as vegetation and flooded forest areas (ADB 2004). The aquatic resources of the Tonle Sap provide around 60% of fisheries for Cambodia’s inhabitants and play a key role in providing income and food security for about 1.7 million lives in the Tonle Sap region. Water from the Tonle Sap Lake also provides a good habitat for the local inhabitants, including floating and waterside communities.

Despite its importance, though, the lake is under pressure from multiple angles. In addition to the anthropogenic pressures that continue to threaten the ecological health of the lake, including development pressures, intensive human settlements, habitat destruction, illegal, unreported and unregulated fishing, drought, forest fires and flooded forest encroachment, climate change is expected to substantially exacerbate these pressures. Academic studies show that Tonle Sap water levels have diverged substantially from previous decades, with the flow from the Mekong to the Tonle Sap Lake having

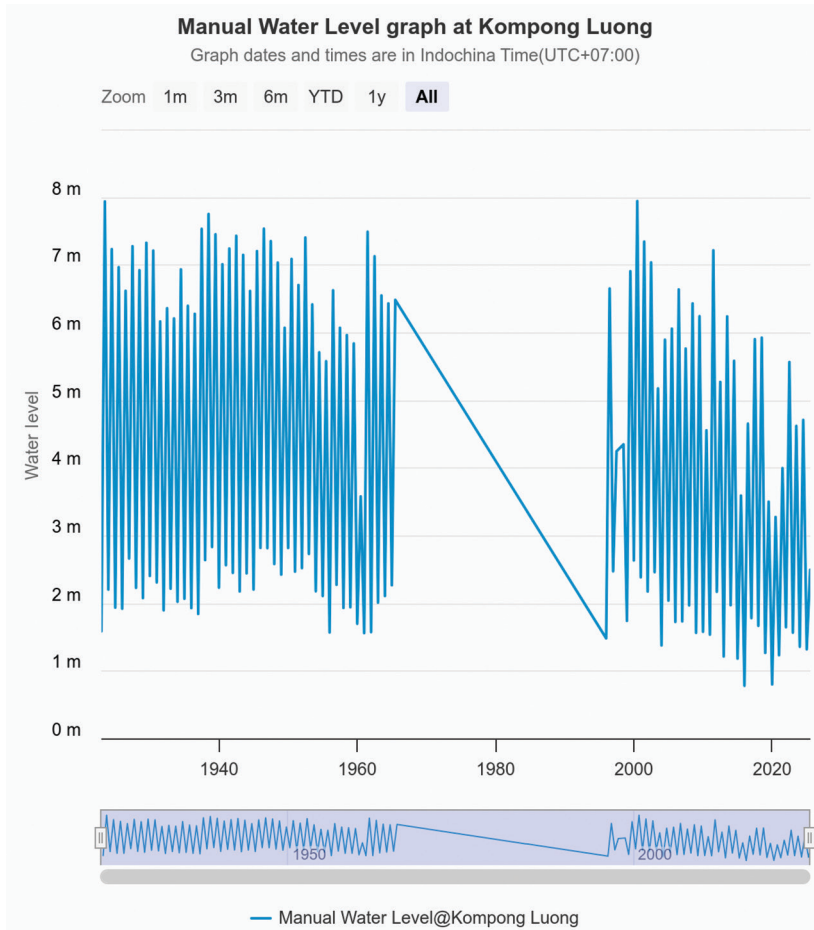
decreased by 56.5% in the four decades between 1962–1972 and 2010–2018 (Chua et al. 2022). As a result, the wet-season water levels of the Tonle Sap Lake dropped by over a metre since 1996, corresponding to a 20.6% shrinkage of the lake area.

Viewed this way, the case appears open and shut: rising temperatures, falling water levels and changing winds are all clear indicators of climate change, with obvious implications for ecology and livelihoods. Nevertheless, despite the clear and obvious conclusion this points to, supported by scientific modelling and confirmed on the ground by local testimonies, what appears at first to be the long-term fingerprint of climate change is rooted in fact in smaller-scale and shorter-run human processes. Rather than water levels being driven by climatic changes alone, the biggest impact on the Tonle Sap's falling water levels may in fact have nothing to do with the climate. Instead, the huge role played by upstream dams along the Mekong River's almost 5000 kilometres of waterway has come increasingly into focus in recent years, as a major driver of water loss and drought (Arias et al. 2014; Chua et al. 2022; Eyler and Weatherby 2020). Indeed, as shown in Figure 6.2, satellite data now provide clear evidence of the extent of the role of dams in worsening regional drought.

Against this historical background, acute events are now underscoring the role played by upstream Chinese dams in determining water levels in the Mekong and Tonle Sap. In 2019, for example, prolonged droughts plagued the downstream Mekong subregion to the extent that hydropower-dependent Cambodia suffered six months of rolling blackouts (Hutt 2019), whilst water levels in the Thai Mekong fell to below the minimum level of irrigation pumps (Eyler and Weatherby 2020). It was an acute crisis that undermined livelihoods in urban and rural areas for the best part of a year, with the repercussions lasting longer still. And whilst climate change was labelled as the culprit at the time, upstream dams are now understood to have played a major role in driving water shortages, as shown in Figure 6.3. As outlined in the Stimson Center's analysis of this decline:

For three decades, China has been building dams on the upper Basin of the Mekong River, worrying countries downstream that China could one day turn off the tap. New data shows that for six months in 2019, while China saw normal to above average precipitation in most of its part of the Mekong, its dams held back more water than ever – even as downstream countries suffered through an unprecedented wet season drought. These new findings confirm what many had long suspected: China is impounding much more water than it ever has before and is causing erratic and devastating changes in water levels downstream. (Eyler and Weatherby 2020, p. 1)

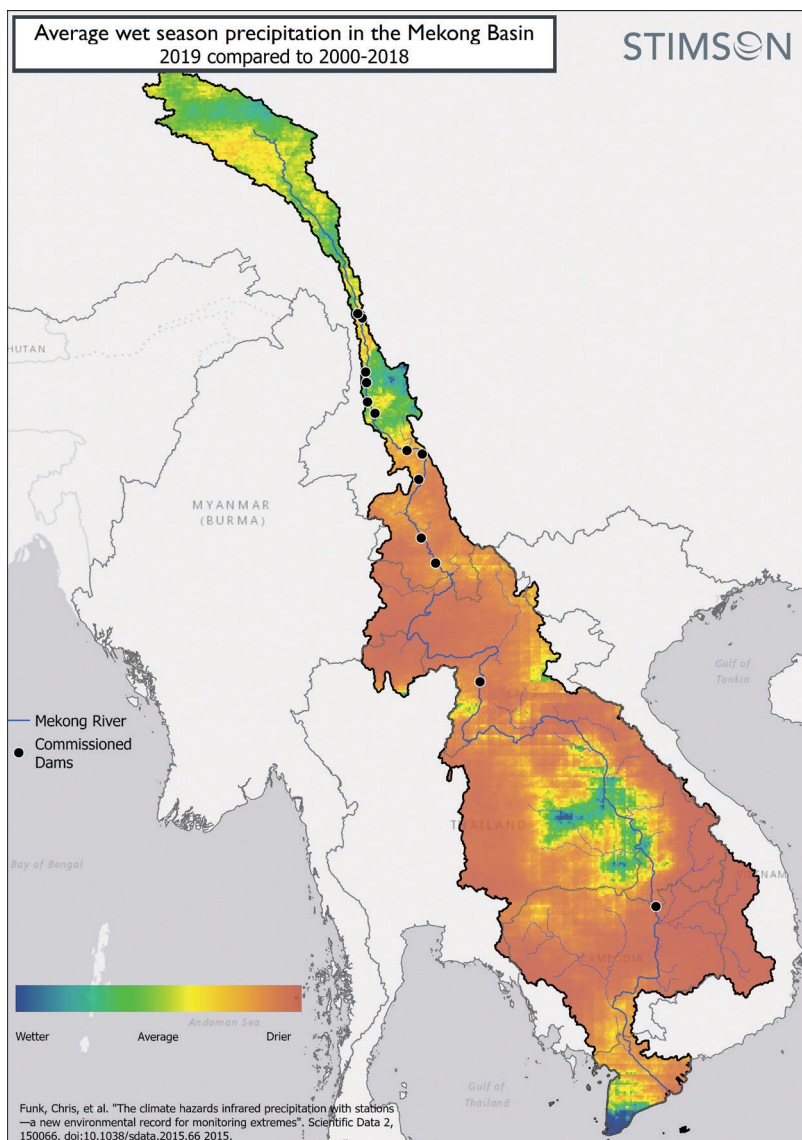
The implications of this unprecedented drought go far beyond those difficult few months. After all, this is no ordinary lake, characterised as it is by

Figure 6.2: Tonle Sap water levels measured at Kompong Luong

Source: Data by the [MRC \(2025\)](#) 'Mekong Data Portal', accessed 12 July 2025.

an almost unique monotonal flood-pulsed system (Siev et al. 2018) whereby increased river volume due to glacial melts in the upper Mekong cause the flow of the Tonle Sap river to reverse, refilling the lake and bringing nutrients crucial to fisheries and the wider ecosystem. As media narratives, such as the following from the *New York Times*, increasingly recognise, 'each time the Mekong reaches a new low, the pulse that keeps the Tonle Sap Lake alive slows' (Beech 2019).

Despite this, tackling the low water flow affecting Cambodia's primary source of fisheries is not the front and centre issue one might expect of

Figure 6.3: Dams and drought in the Mekong Basin

Source: Eyler and Weatherby (2020). Reproduced with permission from the Stimson Center.

Cambodian environmental policy. On the contrary, it is an issue rarely addressed in Cambodian government policy at all, at least in public, where policy interventions have emphasised the role of local actors, individuals and communities, rather than the wider structural factors shaping the ecology

of the Tonle Sap. Whilst this at first seems surprising, it should not. On the contrary, as outlined in the [previous chapter](#), how we ‘story’ the environment determines how we understand and practise adaptation ([Paschen and Ison 2014](#)). Narratives define problems, highlighting causes and solutions, as well as the moral responsibilities that underpin them. And in doing so, they also elide other causes, solutions and responsibilities. Environmental narratives cut through the complexities of environmental politics, resulting in a single, linear plot that disregards conflicting causes and outcomes, identifying heroes, villains and victims, whilst leaving a range of other actors in the dark ([Fløttum and Gjerstad 2017](#)).

Stories, simply put, reflect power. How those stories are constructed in the Tonle Sap reflects the power relations that govern not only the lake, but the country, the region, and those who live within it. Just as they reshape the local landscapes they describe, though, the sustainability discourses that find traction at the local level are also situated within a wider landscape of institutions and governance ([Barnes and Hoerber 2013](#)). This ‘multi-scalar regime of obstruction, extending from the everyday to the global’ ([Carroll 2020](#), p. 9) stabilises and entrenches discursive hegemony. Yet in doing so, it also reveals the mechanisms that underpin it. By drawing attention to the way in which discourses at multiple scales are linked together to form broader coalitions, it is possible also ‘to explore how such connections might be broken down’ ([Griggs and Howarth 2019](#), p. 476).

6.2 Narrative adaptation

As the first quarter of each year gives way to the second, Cambodia, like its Southeast Asian neighbours, begins the inexorable temperature rise that culminates in the scorching, dusty days of March and April. For rural people, it is a time of slow but intense activity as crops are sown in preparation for the rains that, with luck, will arrive in May. For urban people, as for lake dwellers, it is a time when avoiding the heat becomes a primary objective. Fans and air conditioning are constantly needed and jealously sought, throughout the scorching days and the close, stifling, nights.

It was during just such a sweltering spring in 2019 that Cambodia’s lights, fans and air conditioning went off, not to fully return for six months. Throughout the country, a system of power rationing meant managed, rolling blackouts of six hours or longer, as electricity access was alternated between areas. It was viewed by the government as a major national embarrassment. A national energy strategy that had been focused increasingly on hydropower found itself unable to cope with the low water levels in the dam reservoirs, the result, in large part, of a succession of El Niño-linked droughts which had afflicted the country over the past decade. As former Prime Minister Hun Sen emphasised at the time, this was the result of processes linked to climate

change that were affecting the whole region. An especially long and intense dry season, he stated, was the reason for the problems now affecting the grid:

Climate change is not only affecting Cambodia but the whole region. We need water to produce electricity. I urge people not to waste water as we will experience a long dry season which will last until June. (Vida 2019)

Given the frequency with which drought had ravaged harvests in the previous half decade, it was hard not to agree with this assessment. Yet underneath it, there was an unspoken suspicion of something else. The hydropower dams that Cambodia had been energetically and sometimes controversially constructing since the early 2000s were not isolated entities. They depended on the same water resources that upstream dams, predominantly those located in China, were ever more tightly restricting. At the time, independent hard data – as would later be provided by the Stimson Center (Eyler and Weatherby 2020) – had not yet arrived in the public sphere. Yet the government was almost certainly aware of the processes driving the water shortages.

That these tensions were never made public reflects the ways in which political interests shape discourse on the management of water. The political-economic dominance of China in the region is such that direct criticism is both difficult and rare, necessitating the use of alternative narratives both to explain water management and to generate policy aimed at tackling it. Nevertheless, this is not merely a question of a craven national government refusing to speak a self-evident truth. Quite the opposite: the very scale and complexity of the problem, compounded by the constraints on data that surround it, have made this a challenging story to tell, even if the political will were there. Instead, tight controls on data have seen flooding and droughts in the region interpreted through socially constructed narratives with divergent political consequences for different groups (Daniel 2021).

And this is only part of the picture. Since adaptation policy is situated within and interpreted via a far wider politics of governance, the environmental narratives that predominate around the lake invariably reflect the ‘authoritarian populism’ (Beban et al. 2020) of Cambodia’s wider polity. By employing ‘empty signifiers’ such as ‘people’ and the ‘nation’, a rhetorical logic is thus formulated that serves the interests not only of the actors involved in a particular environmental landscape, but the narrator’s wider political aims. The Tonle Sap becomes a story, in other words, that is ‘less about great ideas and more about spinning a good yarn containing heroes, villains and plotlines promising change’ (Nordensvard and Ketola 2022, p. 863).

This process of plotment becomes clearest in view of the full range of alternative pathways. As outlined above, there are at least six key areas of environmental breakdown underway on the Tonle Sap: first, a general rise in temperatures driven by global heating; second, water shortages linked to dam upstream dam construction; third, large-scale water pollution linked to

industrial pollutants; fourth, massive industrial overfishing; fifth, feedback processes by local communities such as electric fishing and farming previously banned fish species; and finally, small-scale household waste pollution by local communities. These pressures are by no means equal in their impacts, yet they are also by no means equal in the difficulty of solving them.

There is, for example, no policy that can deal directly with a hotter environment around the Tonle Sap at the national level. And tackling the impacts of upstream dams is little easier, given the political-economic dominance of China in the region. This leaves four possible targets for environmental policy: two large – curbing industrial pollution and overfishing; and two small – local community fishing practices and small-scale household waste pollution. Each of these is within the remit of the government to tackle, albeit within the constraints of limited capacity. However, these options are not equal. The political capital expended in tackling the former is far greater, as is the potential economic cost, making the small-scale interventions a far more attractive approach, from a governance perspective. On the other hand, it is also clear that action in these areas will have little overall impact on the lake, given the scale of these issues in relation to the wider problems at play.

Yet this is not the problem it might seem. In the absence of objective targets, the rhetorical devices of emplotment – heroes, victims and villains – are sufficient to endow a narrative with credibility by situating it within a wider cultural and political landscape. And in the case of the Tonle Sap, the villains are readily available in the form of Cambodia's ethnic Vietnamese population, who make up only around 0.5% of the population according to the national census (NIS 2019), but between 5% and 10% of the country's total population according to independent scholars (Rumsby 2015).

On the lake itself, where the ethnic Vietnamese population is far higher than either figure, this issue of nationalism places environmental policy on the Tonle Sap firmly within a longstanding political landscape of antipathy towards Vietnamese populations which has greatly intensified since the 2013 national elections (Luo and Un 2022). During that 2013 campaign, the (now banned, imprisoned or exiled) opposition party repeatedly invoked longstanding narratives relating to the links between Prime Minister Hun Sen and the Vietnamese controlled People's Republic of Kampuchea in the 1980s, arguing that supposedly lenient treatment of 'illegal' Vietnamese immigrants (many of whom had lived in Cambodia for hundreds of years) reflected the Prime Minister's status as 'a Vietnamese puppet' (Luo and Un 2022).

The 'deep political wound' that this line of narrative inflicted on Hun Sen and his Cambodian People's Party resulted in a series of crackdowns beginning in 2015 and continuing to this day. Predominantly Vietnamese floating communities, 'whose members raised fish in cages, allegedly contaminated the areas' ecosystems, violated people's sense of orderliness, and consequently reduced the value of nearby properties and investments' (Luo and Un 2022), became a key target for policymakers. Centring their removal in

environmental, development and planning policy effectively killed two birds with one stone, facilitating active, but politically acceptable, policy choices on the one hand, whilst working towards the longstanding goal of appearing tough on the Vietnamese, on the other.

By 2019, the year of Cambodia's nationwide power cuts, some two-thirds of the ethnic Vietnamese population had been removed from one of the lake's largest villages ([Radio Free Asia 2019](#)). Yet their diminishing numbers did not diminish their role at the forefront of environmental discourse. Far from it. The deputy governor Sun Sovannarith stated at the time that 'the Tonle Sap is a public lake and we shouldn't allow squatter shelters to be constructed on it'. In response, crackdowns of various descriptions continued and intensified in the following years, with 2022 seeing an especially large intervention by authorities, following Hun Sen's declaration that:

What I am ordering now is a crackdown on the destruction of fisheries in the Tonle Sap Lake. In recent weeks, I have been following it very carefully ... the Commander-in-Chief of the Army and the Commander-in-Chief of the Police must find a way to get rid of the rogue traders who have destroyed the fisheries.

The resulting action prompted numerous arrests and 'an accelerated wave of outward migration from the lake' ([Kelliher and Samnang 2022](#)). Yet it was unevenly applied, with large numbers of small-scale fishers referred to court, whilst only a small number of larger-scale operations received sanction. As Long Sochet – the president of the Coalition of Cambodia Fishers in Pursat province that works with fish communities around Tonle Sap Lake – put it at the time, 'the authorities crack down only on small cases, while big crimes are still going on due to corruption among law enforcement officials' (Long Sochet, reported in [Nai \[2022\]](#)). Authorities announced 38 arrests, with 44 offenders referred to court ([Kelliher and Samnang 2022](#)), whilst only two large-scale illegal fishing operations were targeted.

And this was just the start. Soon after the crackdown on illegal fishing, attention turned to the issue of the floating forests around the Tonle Sap borders, huge areas of which had been cleared for other uses since the turn of the millennium. Announcing the crackdown a few months earlier in November 2021, Hun Sen once again employed a bellicose tone, announcing that:

Anarchic deforestation is unacceptable and unforgivable for those officials who have exercised their territorial authority to facilitate it at the provincial or district levels or any other officials who are involved in encroachment upon flooded forests to occupy the land ... The same goes for the general public. We cannot accept any encroachment upon the flooded forests in the Tonle Sap area. (Hun Sen, reported in [Kimmarrita and Bunthoeurn \[2021\]](#))

Through targeting ‘corrupt officials’ in this case, the manner of the intervention mirrored its predecessor, aimed at a particular group and specific criminal acts, whilst eschewing the wider systematic issues that undermine the Tonle Sap ecosystem. Nowhere in the Prime Minister’s or his officials’ declarations is there any mention of the toll taken on the lake by upstream damming, nor of the unfettered industrial pollution that has done so much to inhibit fish stocks. Within a wide spectrum of environmental culprits, politics – the art of the possible – identifies those upon whom action is politically expedient. Yet it is only by storying these characters that the narrative becomes coherent both within and across the statements that outline environmental policy. As outlined by Kjersti Fløttum and Øyvind Gjerstad (2017, p. 3), the most effective climate change narratives follow the classic structure of a narrative: ‘initial situation, complication, reactions, resolution, and final situation (be it positive or negative for one or several actors), which may be accompanied by an overarching moral’. Each of these dimensions may be observed in the discourse on the Tonle Sap, as follows:

A ‘public lake’ unsullied from its natural condition [*initial situation*] finds ‘squatter settlements constructed on it’, resulting in ‘encroachment upon flooded forests’ and ‘rogue traders who have destroyed the fisheries’ [*complication*]. This has been exploited and compounded by ‘officials who have exercised their territorial authority to facilitate it’ [*reactions*]. However, the Prime Minister ‘in recent weeks’ has ‘been following it very carefully’, so in partnership with ‘the Commander-in-Chief of the Army and the Commander-in-Chief of the Police’ [*resolution*] will ‘find a way to get rid of’ the culprits.

Undergirded by a moral narrative of justly defending the people’s resource against theft by would-be exploiters, the storying of the Tonle Sap’s destruction reflects a great deal about contemporary environmentalism in practice. Beyond the technical frameworks which ostensibly delimit environmental action, environmental policy is situated within wider political imperatives and aimed at achieving multiple political goals, many of which have little to do with the environment.

There is no mystery, nor any conspiracy to this. All it means in a nutshell is that, within a broad range of possible approaches, set out in technical but wide-ranging strategy documents, the policies that ultimately emerge in practice are those governed by the politics of the possible and the expedient. Narratives play a crucial role in facilitating this politics of the possible, highlighting and shaping the agendas that are set and prioritised, and which undesirable policy pathways are, conversely, elided. These environmental narratives generate public and institutional buy-in for approaches which are partial, interested, and often ineffective. They are rarely, if ever, fully accurate.

Yet they are viewed by those who foreground them as the least-worst way to proceed. They are thus a vital tool, but also a destructive one, disguising as many key issues as they foreground and impeding the generation of meaningful environmental policy across different scales and contexts. Narrative hegemony, viewed thus, is negotiated via expedience.

6.3 Cutting through the wickedness: media accounts of complexity

Environmental stories don't emerge in a vacuum. The narrative assumptions, values and logical framings on which they rest emerge from larger-scale, culturally embedded discourses. In some cases, these are local, endogenous expressions of social or political norms – as indeed is the case of the Tonle Sap, where a fraught history of conflict with larger and more powerful Vietnamese neighbours gives weight and traction to an adaptation discourse nested within a wider political project.

Yet even this local project is nested within a far wider narrative context, which provides the discursive tools to subvert alternative accounts. In order to knit together the disparate demands and identities that constitute a hegemonic position, they must be positioned within a larger-scale discursive frame (Carroll et al. 2020). In the case of the Tonle Sap, climate change itself functions as the necessary empty signifier, sidelining intractable, local sustainability issues by appealing to a governance problem over which neither local nor national authorities have direct control.

The use of climate change in this way is a relatively recent feature of discourse, yet it is an increasingly important one, exemplified in this case by the longstanding UK car show host and well-known climate change sceptic Jeremy Clarkson who, filmed standing on the banks of the Tonle Sap Lake in 2019, expressed an epiphany to his viewers. The TV host who had previously dismissed environmental campaigners as 'eco-mentalists' and recently labelled Greta Thunberg 'a spoilt brat' who should 'go back to school' professed himself 'genuinely alarmed' by the state of the lake whose water levels had sunk so low that the film crew's boat had to be towed through the muddy trickle for two days (Walawalkar 2019). As he put it himself, 'the irony is not lost on me ... A man who hosted a car programme for 30 years, limited to 7mph by global warming' (Rufford 2019).

Jeremy Clarkson's conversion to 'belief' in the problem of climate change garnered headlines on the basis of the strength of his previous opposition. Yet he is far from alone in appreciating the power of the contemporary Tonle Sap as an icon of the destructive power of climate change. The lake has featured prominently in the world's most widely read and prestigious publications. From *Al Jazeera* to the *New York Times* amidst a host of others, it has been declared to be an environmental and humanitarian 'crisis' (Beech 2019), 'choked' by drought and low water levels which have seen fish catches plummet

to record lows: a harbinger of ecological collapse which has already decimated livelihoods in a local economy dominated by fisheries (Beech 2019).

Nevertheless, powerful though it is as a visual metaphor for climate change, all is not what it seems amidst the low flow and disappearing fisheries of the Tonle Sap. This is not the starkly simple example of the changing climate's impact it at first appears, but a case study of the complexities and politics involved in the narration of its impact. Indeed, though climate change is an issue which affects every aspect of the Cambodian environment – and has undoubtedly played a substantial role in altering the volume and timing of rainfall throughout the Kingdom in recent decades (Doch et al. 2015) – the crisis facing the lake is about far more than simply rainfall.

Ever since it reopened to the world following its first democratic elections in 1993, Cambodia's neoliberal economic model has seen industry grow rapidly, whilst the development of regulation has been a light touch at best, often to the great detriment of Cambodia's environment. For the Tonle Sap, the result has been pollution and toxification on a vast scale. A 2020 report by the Institute for Global Environmental Strategies argued that the lake was now subject to

soil erosion, runoff of agrochemicals from fields and deforestation, and fires in flooded forest areas ... disposal of untreated wastewater and solid waste into the tributaries, and improper sanitation in the floating villages. (Shivakoti et al. 2020, p. 3)

The Tonle Sap has in effect become the unseen sewer lurking beneath Cambodia's much feted growth and development of recent decades.

Yet there is no single narrative that can unpick the lake's current state. Battered by a broad milieu of interlinked factors, the Tonle Sap lays bare the geopolitically imbricated character of climate change in the global South. After all, like all environments, this one is riven by the multi-scalar political and economic context in which it is situated: the political impossibility of challenging China's dominance of the upper Mekong; the global inequalities which see the countries with the smallest carbon footprint suffer the worst; the historical trajectories which have seen Cambodia's democratic pretensions subsumed, in the words of *Global Witness*, by 'a kleptocratic elite that generates much of its wealth via the seizure of public assets, particularly natural resources' (*Global Witness* 2007, p. 3). None of these factors have diminished in importance as Cambodia, and the world, heats up. Rather than replacing them, climate change instead joins them, acting as a catalyst and stressor, accentuating vulnerabilities and contributing to new peaks and troughs in monitoring.

In narrative terms, though, climate change is increasingly the primary lens through which such complex ecological issues are interpreted: an expedient position in governance terms. By centring the lake's ecological travails on atmospheric climate change, the framing of policy as an adaptation strategy performs an anti-political role, distancing the climate's impacts from the

structures and interests that drive them, whilst also depoliticising the strategies used to ameliorate those impacts.

We should not, though, perform our own emplotment too hastily. After all, merely recasting the Cambodian government in the villain role would achieve no great leap forward in analysis. Instead, the image of a contrite Jeremy Clarkson on the banks of the Tonle Sap denotes something more fundamental about the storying of embattled environments: that narration is a powerful tool of political elision. And there is no easy solution to this. Even the narrative of 'climate change' as it is applied to the Tonle Sap is itself a linear emplotment of a wicked problem: a force stripped of context and agency.

From a vast and complex milieu of actors, responsibilities and impacts, a minimalist subset is selected for emphasis. Yet just because climate change may present the biggest threat in the long-term does not mean it is the only one now. Narratives at all scales engender foci on particular issues. Yet by the same token they withdraw focus from elsewhere. Wicked problems necessitate complex and often politically challenging solutions but, by virtue of their complexity, are especially vulnerable to simplified and partial narratives. And this is as expected. Indeed, for [Laclau and Mouffe \(1985\)](#), as for others ([Stephan et al. 2013](#), p. 61), 'all discourses are the radically contingent outcome of a hegemonic struggle'. Once a discourse is settled, therefore, it by necessity excludes certain positions, situating them as an 'antagonistic outside as the necessary "Other" of social life'. Whether emplotting the lake's demise as down to climate change, corrupt officials or water-bound communities, the real winners are the narrators of the story.

7. Irrigation, rhetoric and scale

When it rains, one area is flooded while the other is dry ... Now it is like there are two tigers on one mountain. (Interview with Deputy Village Chief, [Cheik, 2019](#))

A few kilometres from the Vietnamese border, water wars are raging. Like [much of Cambodia](#), Svay Rieng province, one of Cambodia's most drought-prone provinces, depends heavily on rice. Yet rice requires a great deal of water to grow. As its availability diminishes, the agricultural practice of many centuries is now being assailed from all sides by a combination of climate change, economic development and foreign investment in adaptation. Where uneasy but time-tested practices of water sharing once reigned, new demands and new pressures have thrown a well-established liquid politics into flux. The compromises of decades past have transitioned into mutual exclusivities, leaving communities, like two tigers on one mountain, to contest a diminishing pool of resources that can no longer belong to both.

The root of today's travails began two decades earlier, as the exploratory trickle of young migrant workers filtering out of villages to the newly booming garment industry steadily became a torrent, draining the supply of cheap, reciprocal labour that had always been the basis of the rural economy. With so much of the village labour force now leaving for much higher wages, it soon became increasingly unfeasible to rely on this diminishing supply of workers. So as remitted money flowed back into rural villages from the garment factories, a new approach, based on mechanisation and capital intensive, chemical farming techniques that required relatively little labour, began to look increasingly attractive. Fertilisers, pesticides, tractors and harvesters all slid into view, soon becoming a ubiquitous feature of rural agriculture. Nevertheless, amidst all of this capital-fuelled agricultural dynamism, there was one thing that stubbornly refused to be modernised, the most important resource of all: water.

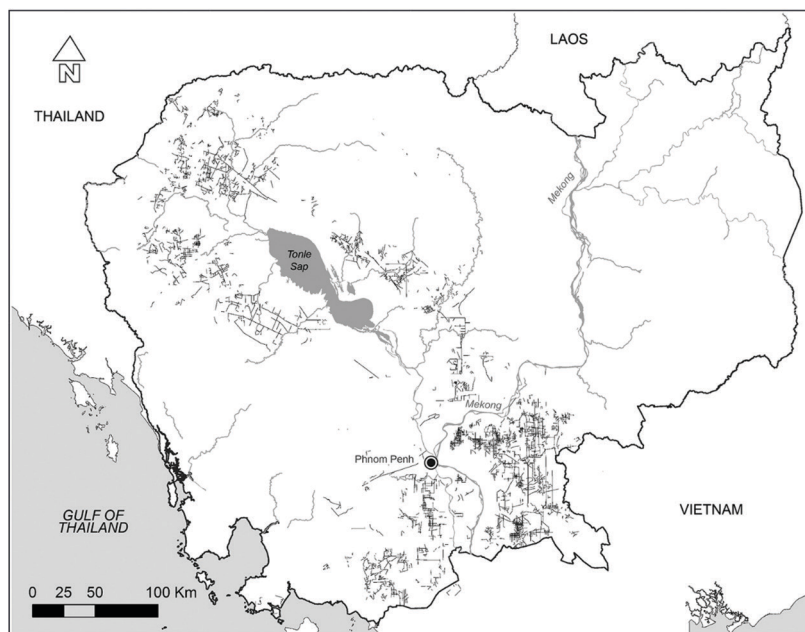
This should not, perhaps, be surprising. The world's most abundant resource it may be, but amidst the world's ever-changing landscapes and economies, water retains the capacity to fuel the bitterest and most enduring of conflicts. We saw something of this in the [previous chapter](#), where upstream damming is reshaping the Tonle Sap's livelihoods. A rich literature on the hegemonic relations that shape riverine environments like these – under the banner of hydro-hegemony – has in recent years centred on describing unequal relations like this (see [Hayat et al. \[2022\]](#) for an overview). Yet as this chapter will show, this is only part of a far wider picture. Hegemonic water politics

does not play out only at the scale of the nation state. It manifests across and between scales, effecting an ‘alignment of material interests and discursive frames among the core actors of a hegemonic assemblage’ (Wissman et al. 2024, p. 711) and broad legitimacy for the distribution of water according to their interests. The dominance of national and larger scales in water management is itself a political act, rendering the everyday particularities of hydro-politics invisible with distance.

These politics are ever present and ever changing. Yet they cannot be reduced simply to a question of scarcity. In Cambodia, the monsoonal climate means that, although numerous areas may suffer droughts, everywhere has water in abundance for at least part of the year. Water has never, in other words, been a commodity lacking in its total volume. It is the management of water, its predictability, that is the issue: the fact that, in the words of one senior official at the Ministry of Environment, Cambodia ‘always has too little water or too much’ (Interview with Ministry of Environment Official, 5 April 2019)

Given this, it is perhaps surprising, at least to those who do not live amidst it, that Cambodia’s vital rural agriculture continues to depend to such a significant extent on the network of canals built so famously and bloodily by the Khmer Rouge regime that ruled the country from 1975 to 1979 (see Figure 7.1). In part, this is surprising to the foreigner because, as James Tyner amongst others has

Figure 7.1: Irrigation infrastructure built during the Khmer Rouge period



Source: Figure 4 in Tyner et al. (2018), reprinted with permission from University of Toronto Press (<https://utppublishing.com>).

long pointed out, the Khmer Rouge's historical reputation as unthinking butchers has tended to obscure a far more technical and carefully planned approach to agricultural infrastructure that endures to this day. As James Tyner and colleagues summarise (Tyner et al. 2018, p. 109):

It is a well-entrenched myth that the Khmer Rouge recklessly imposed a chess-board pattern of agricultural fields across the entirety of the country; and that rice production was to be tripled regardless of local conditions. In part, this myth derives from Pol Pot, for it was the Party Secretary who demanded that the country triple annual rice production to a national average of three tons per hectare ... It is a mistake, however, for scholars to subsequently take as fact the idea that the CPK thoughtlessly applied uniformity to agriculture and irrigation throughout the country.

Counter to the popular imagination, even half a century on, the Khmer Rouge's agricultural legacy has proved surprisingly enduring. The network of canals built in their devastating four-year reign between 1975 and 1979 remains, albeit in heavily degraded form, the mainstay of water management in large parts of the Cambodian countryside. Many of the canals no longer function as intended, certainly. What were once petrol-powered irrigation networks are now in many cases merely rough water channels. Yet their ongoing influence is undeniable. A farmer whose land abuts a piece of Khmer Rouge irrigation infrastructure is in an immeasurably better position than one who doesn't. He or she has a system of water storage adding crucial days to their ability to tend their crops in a dry spell – and which renews without cost with each new rainstorm. Over time, small differences like these add up to huge advantages, often setting otherwise similar lives on quite different trajectories over the course of several years.

Yet whilst some water resources are clearly attributable to a particular person or farm, many others are not as clearly defined, creating an uneven landscape of contestation and control around this crucial resource. 'A canal', as the commune chief of one flood and drought-hit commune put it, 'is the breath of the villagers to live', providing the means to nurture crops towards a harvest amidst the vagaries of an increasingly unpredictable climate (Interview with Psaing Commune Chief, 15 February 2019). Nevertheless, when it comes to water access, distance is everything, as the chief of Cheik village outlined:

The people who have a rice field near the canal are better because they do farming twice ... [but] that is only for the people who have the rice field near the canal. For the people who have the rice field [further away], they cannot use the water. The water is limited and used by many villages: our village and other villages. (Interview with Psaing Commune Chief, 15 February 2019)

And this is not just a binary question of access or non-access. The razor-thin economic margins of smallholder farming mean that, even for those able to access a canal, small distances make a big difference as to whether irrigation is practically *viable*. Water, after all, must be sucked from canals using petrol-powered pumps, meaning that the cost of irrigation becomes prohibitive after a certain point (Parsons and Chann 2019). In addition to a fixed cost of around 50 USD to the water supplier, irrigating a hectare of land close to a canal costs another 50 USD in fuel for the gasoline pump. For fields further away from a canal this rises rapidly. The total cost of transporting water a few hundred metres from a canal can reach up to 200 USD per hectare, out of a total market value of only 500 USD. With fertiliser, pesticides and machinery still to pay for, any further farming is simply unfeasible in dry years. These costs mean that relatively small differences in distance from a water source can make a big difference to the profitability of an agricultural plot. Without additional support, households able to access irrigation, but not able to do so affordably, are amongst the most likely to fall into unmanageable debt.

Water politics at this everyday scale of livelihoods and their spatial minutiae are an all too often neglected dimension of scholarship on hydro-hegemony, which has tended instead to focus on contested river basins shared by neighbouring states (Warner et al. 2017). Not only does this reinforce an ontology of the state as the dominant actor in hydro-politics, but it also obscures some of the key mechanisms by which larger-scale authority over water is constructed and entrenched.

Parsing this relationship means examining the discourse that connects the state to the livelihoods that comprise it. Recent years have brought vast investment in irrigation, both by China, which has provided a large proportion of the funds, and also large-scale multi-lateral lenders such as the Asia Development Bank. Both lenders provide large-scale grants for large-scale irrigation projects, often in the range of hundreds of millions of USD, which have reshaped the hydrosocial power dynamics of the area, resolving old tensions in some cases, but in many cases also generating new ones, as outlined by the head of a village recently benefitting from a new Chinese canal. As he explained:

[The new canal] benefits the people nearby the canal. In the rainy season, when we close the water gate to block the water, the other people downstream said there is a drought and no water to use. But if we open the gate, we don't have water to use for our own [land] ... When there was no canal, the water flooded everywhere. [But after] there was a Chinese canal [built here], I am afraid it will flood if they open [the gate] and let the water down. That area is the place that benefits from the canal. In my village, when there is a big flood, it floods on this side but the other side is ok ... (Interview with Deputy Village Chief, Twier Teuk, 17 March 2021)

As this case shows, the addition of new infrastructure, like the large Chinese canal mentioned by the village chief, is not necessarily a solution to these conflicts, but may in fact stoke new or intensified disputes in the areas they are intended to assist. Projects like these are vast pieces of engineering. Stretching dozens of kilometres through the flat expanse of Cambodia's alluvial rice paddies, these concrete scars incongruously bisect a world in which modern materials are still a minority presence compared to the wooden or thatch households that have been the mainstay of village life for centuries. The power they bring with them – and the power they afford to the person or group charged with operationalising that power – should not be underestimated. If a canal is the 'living breath' of the villagers, then those who build and control them are those who control the means not only to water, but life and livelihoods: a deeply political role masked by a veneer of technocratic governance. Take, for example, the World Bank's headline statement in 'Water in Agriculture', which reads as follows:

The World Bank supports countries with sustainable intensification of agriculture through critical investments in irrigation infrastructure and key institutional reforms, which also help achieve Sustainable Development Goals (SDGs) on efficient use of water as well as on eliminating hunger. ([World Bank 2022b](#))

Taken at face value, this is a perfectly reasonable statement, outlining the need for infrastructural development in the service of efficient water use and reduced hunger. Yet the terminology from which the statement is constructed conceals the ruptures it implies. Although it may appear at face value objective, its rhetorical conventions introduce subjectivity via broad categories that fulfil the same objective as the 'fuzzy language' of sophistry ([Koutsoyiannis 2021](#)): in effect, an anti-political subjugation of the interests at play in the proposal ([Hope 2021](#)). For example, the reference to 'efficient use of water' in the SDGs is unclear. Neither SDG 6 (*clean water and sanitation*) nor 14 (*life below water*) relates to irrigation, whilst Goal 9 (*industry, innovation and infrastructure*) relates neither to irrigation nor agriculture specifically.

Fuzzier still, however, is the language of intensification on which the plan rests. Intensification of agriculture can mean simply the enhancement of smallholder farming standards through the provision of agricultural wells and sub-canal, yet in practice it far more commonly results in developments incompatible with smallholder agriculture, often exacerbating marginalisation and poverty through various forms of land tenure insecurity ([Dawson 2021](#)). Indeed, as the World Bank themselves concede in their 2022 report on water management, 'institutions charged with developing irrigation often limit themselves to capital-intensive larger scale schemes' ([World Bank 2022b](#)). The wide jaws of the frame employed here effectively facilitate one policy whilst alluding to another.

This is no mere technocratic oversight of the Cambodian government. Whether articulated in Cambodia or elsewhere, ‘the abstract global articulations of sustainability planning leave significant room for manoeuvre at the local level’ (Broto et al. 2023, p. 986). So into the space afforded by these ambiguities step the contestations arising from national politics. Indeed, the present political leadership is acutely aware of the political importance of water. During election campaigns, or occasionally during periods of intense drought, wealthy members of the governing Cambodian People’s Party – many of whom are allocated a particular part of the country in which to build patronage networks as part of a semi-formal system of distributary patronage – arrive in their assigned villages bearing petrol with which to reignite the sparse network of water pumping stations in their area. As suited party dignitaries look on benevolently, the great dormant pumps of the state water stations that for much of the year serve as industrial ornamentation – the promise, rather than the presence of modernity – are clankingly reanimated. The canals begin steadily to swell, water rises and farmers return to their fields a little further from the margins of their livelihoods.

It is a curated, largely symbolic gesture, lasting a handful of days at most. In most cases, it does little to alleviate the economic pressures of a drought year. Yet its persistence highlights the ongoing political cachet of control over water. Those without the ability to access it are excluded from one of the primary forms of connection between national government and rural livelihoods. That such households, or at least a majority of their members, must leave to make ends meet is tacitly accepted by local governors as inevitable. The further away from these parched fields one travels, the further up in the scale of water governance, the more quickly this recognition disappears.

What is ultimately observed of all this – a large-scale increase in irrigation coverage or smaller-scale dispossession and conflict – depends, however, on the scale of analysis. Where national-scale analyses are conducted they draw on theories and assumptions generated, as it were, ‘above’ – meaning in most cases in the West – rather than ‘below’, meaning the country they relate to. Yet each context also brings its own ‘above’: an entrenched, interested and externally influenced viewpoint on the politics of water, shaping not only how the issue is thought about, but the specific policies put in place (or, indeed, not put in place) to manage it. In effect, scale brings its own epistemology, transitioning a legitimate scientific knowledge claim at one scale into rhetoric when repeated at another. A question as seemingly straightforward as the management of scarce water resources emerges as an endlessly discussed and disputed question, becoming a black box through which to run the assumptions on which hegemonic discourse depends.

7.1 Contestation and scale

As it transcends scales, environmental governance shifts not only in form, but meaning. Its universalising tendencies, ‘constituted through abstraction’ (Machen and Nost 2021, p. 562) are a poor fit for the dynamic social and political realities they meet, ‘where thinking and feeling subjects often reassert the complexity and embeddedness of their interrelationships’ (Machen and Nost 2021, p. 562). This should not, though, be viewed as a failing or weakness of that governance, but a key dimension of its stability. As is widely accepted in discourse analysis, contestation is one of the generative forces that shape and strengthen discourses (Broto et al. 2023), as the perceived need for harmonisation co-exists with their appropriation in particular contexts. The result is both a diffusion of responsibilities and a diffraction of the specific meanings of that responsibility, as terminology is contested and agreed in discrete scalar arenas.

In a world of contested narratives and political disagreement, scale is one of the most underexplored aspects of argumentation, in large part because it is often conflated with a question of degree. To scale up is to make something bigger and more important, whilst to scale down might indicate a retreat, or even a defeat, of ambition. It is far rarer to recognise that a method that works at one scale might produce different results at another. Instead, scale tends instead to be viewed as flexible and effortless, as a seamless transition. Yet it is not. As Robert O’Neill and Anthony King (1998, p. 6) put it, for example, ‘if you move far enough across scale, the dominant processes change. It is not just that things get bigger or smaller, but the phenomena themselves change. Unstable systems now seem stable. Bottom-up control turns into top-down control.’ Catastrophes for individuals, families and communities are rendered invisible, footnotes, to a wider benefit. Arguments are bolstered, or undermined, by the scale of their telling.

As outlined in Chapter 5, the ability to elide details in this way, drawing the discursive frame onto favoured territory, is a useful rhetorical tactic. Used in a purposive way, scale functions effectively as a ‘fog of war’, around details the discussant may wish to avoid. Local impacts, harms or opinions are not only disguised, but disbarred from discussion, rendered irrelevant in the face of scalar domination. The use of large-scale terminology is thus one means by which the ‘reservoir’ of ‘sophistic rhetoric’ (Schiappa 1991, p. 16) may be employed in the service of wider goals. Moreover, it is doubly useful because of its capacity to disengage argumentation from the realm of human experience and situate it firmly on the terrain of a more technical, abstract and crucially a *chosen* terminology. The real-world experiences through which lens most people experience the climate, irrigation, mobility and everything else are nullified by the powerful space in which the public sphere rubs up against a technical sphere with different rules and standards of proof (Goodwin 2019).

Each of the scales at which water is governed brings its own perspectives, influenced both by the interests inherent to that scale, wider cultural perspectives and top-down policy positions. The result is that actors at different scales bring very different viewpoints and value judgements to the nexus of migration, environmental pressures and adaptation. Rather than a nesting system of governance operating at multiple linked scales, the result is an overlapping ladder of discourse, a scalar hierarchy of evidence and approaches leading to distinct conceptual and policy positions. At each of these scales, the relationship between the environment and livelihoods appears different, in part due to how evidence manifests at each scale, but equally due to the institutional interests at play, which incentivise the foregrounding of certain narratives over others.

In Cambodia, the lowest of these scales is the village chief, who is drawn from the local community and remains a part of it throughout their tenure. Village chiefs have no formal office, generally taking meetings in their own homes. The post offers no salary and chiefs are rarely drawn from the richest people in the village, being elected instead on the basis of their standing in the community, perceived honesty and character. Reflecting this background, statements from Cambodia's governance at this level tend to portray water as simply a part of the politics of contemporary livelihoods: a site of cooperation and contestation between individuals. As one village chief outlined, for example:

When there is a flood, one village want to release the water otherwise it will be flooded, and when we open the gate and release the water the other village said they don't have water, they ask us to close the gate in order to keep water to reach their village. It is very difficult for me ... It is a conflict between one village to another. One village asks to close [the gate] while another village asks to open it. (Interview with Village Chief, Mnoas, 12 February 2019)

Water, viewed at this scale, is thus inherently political, as much a part of life as money, rice or the earth through which it flows. Its technicalities, the need to 'buy plastic tubes, fertilizer and gasoline' (Interview with Village Chief, Mnoas, 12 February 2019), are practical and economic ones, the purview of individual farmers and families. Topography and infrastructure, on the other hand, being beyond the capacity of the community to alter, are accepted *ex ante*, negotiation occurring within this given landscape. This is the perspective from which water is understood, used and managed by the majority of Cambodians: as a mediated environmental reality (Scheufele 2014) that reflects political, social and cultural interests not as a matter of interpretation, but because the objective and subjective dimensions of the situation are themselves inextricable.

As administration increases in scale, however, these subjective and objective dimensions begin to separate. Even at the next rung on Cambodia's administrative ladder, the commune level, the language of governance begins to replace the everyday politics of interests. With each commune representing

eight to ten villages on average, commune chiefs too remain part of their villages and are elected from the ranks of village chiefs. However, in contrast to the home-bound discussions of the village administration, commune business is conducted in a roadside office, designed according to a traditional Cambodian design of red walls, tiled floors and a pitched, tiled, roof.

Though separate, the commune office is a part of village life, with villagers regularly travelling to the commune office in order to conduct routine administrative tasks, such as birth certificates or the collection of documents related to welfare provision. It is also the fundamental unit of decentralised government, receiving 2–3% of the national budget for local works. This budget is allocated, in principle, at open meetings by commune residents, who collectively decide on their priorities for major expenditure. It is for most people the only point of direct connection to the national administration and, as outlined in the following reflections of a commune chief on the practice of canal building, forms an important discursive connection between the everyday politics of water and the national politics of its administration. As one commune chief explained:

The small canals are built from the commune development budget. The national grant is to develop the commune. Now, in order to help my villagers to live, I think we should renovate an old canal about 5 km from the reservoir to the mainstream [canal]. The reservoir is big; it is 242 ha. But we don't have budget to renovate it. If we had the budget, my villagers would no longer have difficulty getting water.

Those old small canals are built during the Pol Pot regime. We conserve them. We have renovated them every year for villages' consumption. In some years, if there is no drought and we have enough water we use the commune development budget to build a road. Some budget is used for building a canal and some is used for road construction.

[But the villagers] prefer a canal because a canal is the breath of the villagers to live. Like I mentioned at the community meeting, we have two matters, [two] challenging issues: one is canals and the other is roads. Which one do they want? They said if we could get both, that is better, but if not, they want a canal first to have water to farm and then it is better. (Interview with Psaing Commune Chief, 15 February 2019)

At this level of governance, the rhetorical structures familiar at far larger scales begin to emerge. The transition between *logos* (the appeal to logic), *ethos* (the appeal to the authority of the speaker) and *pathos* (the appeal to emotion) are all in evidence. The logical demonstration of knowledge is evidenced in the specific knowledge of scales (5 km, 242 km) and governance structures

(the commune development budget; the national grant). Ethos is evidenced paternalistically, in the repetition of *my* villagers and the evidencing of mutual protective action (*we* conserve them; *we* have renovated them). Pathos, finally, is achieved through the conflation of water and life (help my villagers to live; a canal is the breath of the villagers to live).

Although we can deconstruct it in this way, though, this is not on the face of it an especially rhetorical statement. Certainly, it would seem a little unfair to label as sophistry what is in fact a rather straightforward and clearly articulated account of the politics of water at the commune level: limited government budgets, community decision making and improvements on the basis of urgency. Yet comparing the perspective outlined here to that of the Psaing village chief, above, reveals a huge difference in emphasis. Contestation disappears, replaced by negotiation, partnership and care. Water politics simply look rather different from the perspective of a commune chief, whose role is to maintain order and facilitate just such negotiation. In most cases, the rhetoric that surrounds its narration is no intentional artifice. There is no conscious intent to reframe its narration to personal advantage. It emerges on the one hand from the politics of interests and on the other from the positionality of scale.

After all, it is often underappreciated that scale is its own standpoint. It brings its own preferences and priorities, its own omissions and inaccuracies. And it brings something more, too. Each scale entails a rebalancing of rhetorical conventions from the subjective to the objective, two frames that coalesce only at the scale of lived experience. At larger scales, objectivity outgrows subjective understandings, which lose their power in spite of their proliferation. These larger-scale frames separate the subjective and the objective dimensions of environmental experience. Whilst they may appeal to the *pathos* of the subjective, their underlying *logos* transitions from the personal to a higher-order abstraction. Scaling up therefore creates its own 'fog of war' around the lived experience of water, taking possession of objectivity and, with it, the political.

We can underscore this point with a trip to the large and well-appointed new Ministry of Environment in the Bassac area of Phnom Penh, where officials occupy a privileged position in society yet, close as they are to central government, are beholden to the government line. An imposing white temple-like building occupying a prime site on the Cambodian capital's riverside, its suited and air-conditioned inhabitants could scarcely be further from the parched fields over which they preside. Yet Cambodia's recent history of mass de- and reurbanisation means that many of its more senior officials do in fact have some direct experience of rural life, as reflected in the lay confidence with which rural livelihoods are described. Water, at this level, is viewed as an entrenched, historic practice, a habitual necessity borne of meagre livelihoods. In the words of one official, 'they cannot stay with an empty stomach, right? They cannot wait for themselves to die without taking any action!' (Interview with Ministry of Environment Climate Change Specialist, 5 April 2019). Yet

with this in mind, observe how irrigation is narrated at the ministry level, in this case by a second senior official:

I think [irrigation investment] depends on the government's relationships right? If they can get easy access to China. Maybe they have to go to China, so who knows. As for the Asia Development Bank, they still provide loans for different sectors also ... And then all development partners come, more and more: 70 [million USD], 90 [million USD], a lot per year, sometimes more than 100 million USD to develop irrigation systems. And now, after revision, the national budget for rehabilitation and construction is \$35 million and for operation and maintenance, almost \$20 million from the national budget. And for development partners, we have some banks, like the ADB, some parts of the World Bank ... and China, the Chinese, Korean Investment Bank, AFD and some banks from Japan and some in Australia and some in Europe to support some parts of that, India also has some. But mostly, it's now China. The ADB also, but the Chinese give more budget than other institutions. (Interview with MoWRaM senior official, 28 February 2019)

This is a long way from the breath of the villagers to live. It is further still from 'two tigers on one mountain' we met at the beginning of this chapter: villagers at loggerheads over the right to manage shared resources. And in many respects it has to be so. Neither water, nor any aspect of the environment can be governed as the aggregation of individual experiences. Yet these three accounts of water and its scarcity demonstrate just how distant the logic of large-scale decision making is from that of those who depend on those decisions. A vast body of knowledge linking the geography of water and environmental vulnerability exists at the local scale, but this detail disappears at larger scales of governance, where the contested impact of irrigation schemes on livelihoods ceases to be a part of the policy conversation. As the big players come into view, the entire living landscape descends into fog, leaving decisions to be made as if flying a plane by instruments: reliant entirely on data, without recourse to direct observation.

In part, this is due to the split in responsibility between different government agencies responsible for different aspects of irrigation, which splits the landscape of information, knowledge and planning. The Ministry of Water Resources and Meteorology [MoWRaM], for example 'mostly builds large scale water infrastructure [whilst] tertiary canals are usually [dealt with] by the Ministry of Agriculture, Forestry and Fisheries or commune councils' (Interview with Environment Ministry Climate Change Specialist, 5 April 2019). Yet it equally reflects a situation in which officials have limited influence in planning the details of irrigation projects funded almost entirely by foreign governments and donors. Funding, naturally, brings a significant degree of control over project planning, dislocating the specifics of irrigation planning

from national government control. As a Cambodian academic working on water distribution at the Royal University of Phnom Penh put it:

For example, you come to Cambodia and say ‘now I will help you with agriculture’, you don’t ask what the government wants to invest in. So, you come to the country and say ‘if you want to invest in this agricultural [programme] then we will give you a grant or we will give you a loan’. Then you have no option. Sometimes this is the case. (Interview with Cambodian climate scientist, 27 March 2019)

Indeed, as outlined by a senior MoWRaM official, the conditions associated with irrigation investment are in the case of some donors so stringent that the national government is encouraged towards a small number of donors as the only feasible options. As he elaborated:

Now, because the conditions from the World Bank and the ADB are too much, it’s difficult to develop reservoirs, so we look to the Chinese budget for a reservoir. Because studies show the benefits of a reservoir are multi-purpose but not direct benefits. Sometimes you cannot meet the conditions for the economic research study, the special committee to the World Bank, so we prefer the Chinese budget. For the Chinese, one package is big, quite big. So the ADB is maybe less than \$100 million, where the total cost is over \$200 or \$300 million. Sometimes it’s difficult to speak by phase because sometimes they start only the first phase and then they don’t continue to support [the project]. And if the system is not complete, then it is not effective. (Interview with MoWRaM senior official, 28 February 2019)

In stark contrast to the politically articulated ways in which irrigation is experienced at the smallest scale, therefore, irrigation at the national scale follows the rhythm of donor interests. This does not mean, of course, that no plan is in place, but rather that the planning is enacted by multiple, often competing actors, rather than a single entity. Rather than central planning, this approach represents in effect a marketplace of irrigation, in which donors offer to fund those schemes that best suit their interests. Since large-scale irrigation projects have the potential to offer returns through agricultural productivity for bilateral trade, it is this scale of investment that is inevitably favoured to the extent that, as outlined above, major donors may ‘only complete the first [large-scale] phase’ and withdraw funding for the sub-canals that distribute the benefits of irrigation more broadly to smallholder farmers.

Viewed on this level, Cambodia’s recent irrigation programmes have had little to do with the National Adaptation Plan ([RGC 2019a](#)) which in theory governs environmental investment. Nor do they necessarily have much to do with adaptation at all. Instead, the outsourcing of irrigation allows adaptation

planning to be co-opted into a wider drive towards agricultural intensification, in which the productivity and efficiency of large-scale farms is prioritised over farmer livelihoods. As the country representative for an NGO engaged in these issues concluded, this is in part an international issue 'being driven by China, which wants to buy rice for their own country' (Interview with NGO Director, 11 April 2019), but it is equally a question of elite domestic interests. As she continued:

... logging has been a huge source of revenue generation for the elite for the past 20 years and now the time is up for that. So basically they have to turn their sights to another industry, another sector and I think that's going to be agriculture. (Interview with NGO Director, 11 April 2019)

Rather than a process of smallholder-focused, in situ adaptation, of the sort laid out in the World Bank and ADB's strategy documents, therefore, irrigation planning is instead directed towards a quite different aim: agricultural intensification through consolidation and expansion; agriculture as big business, not sustainable subsistence. And this is perhaps not surprising. Indeed, viewed through the lens of interests, it is arguably inevitable. There is little economic return on improving the harvests of smallholder farmers. It is both more cost-effective and ultimately of greater benefit to headline production figures to allow a handful of larger farmers to expand, mechanising and modernising as they do so. As for the remainder, those unable to cope with the growing insecurities of climate change and the rising prices of increasingly marketised agriculture, what remains is the modern sector: the opportunity to migrate away from farming into other parts of the economy. Rather than an unobserved by-product of adaption planning, therefore, diminishing rural populations are an expected outcome.

Of particular note, though, is the unspoken nature of this goal. Although all irrigation planning supports a policy of agricultural intensification, it is never explicitly mentioned. This is true whether discussed at the donor scale, the national scale or even smaller scales, where the discourse used to discuss the topic disbars the influence of wider or more specific arguments. In effect, the lived experience of water use is removed entirely from the planning process, undermining the capacity of those same populations to challenge the manner of decisions or their makers on terms with which they are familiar.

Viewed in this way, environmental governance not only operates at multiple scales simultaneously, but depends on the ambiguities created by those scales for stability. Interpreting and confronting it therefore requires not only examining its operation at various scales, but also recognising these scales as knowledge constructs in themselves. The confluence of knowledge-making and knowledge-muddying thus operates across the scales it addresses (Griggs and Howarth 2019), making scalar decisions not only analytical choices, but rhetorical tools with the capacity to diffuse responsibility away from the

hegemonic centre. The fuzzy language and subjectivity that is vital to successful rhetoric is thus achieved not only through the use of technical terminology, but the rooting of that terminology at a scale to which it is impossible to politically respond: anti-politics in liquid practice.

7.2 Scalar sophistry

The scalar politics of water are increasingly recognised as a crucial but understudied aspect of hydro-politics (Hayat et al. 2022). Scale as a rhetorical tool still more so. Yet this should not be as oblique as it might sound. After all, some things are self-evident at a certain scale, but invisible at others. This subjectivity is recognised by many involved in monitoring the governance of water. Much like the Tonle Sap, this wickedness begets ambiguity, maintaining a known sphere of uncertainty around environmental planning: in effect, a sophistic ‘reservoir’ that can be put to a range of possible uses (Schiappa 1991, p. 16).

On the one hand, this provides an advantage: the ability to mask contradictions in discursive framings which do not fit the scale under discussion. Yet on the other, it generates a tension, as consistency of leadership must be sustained across scales which shift the meaning of that leadership (Broto et al. 2023). An irrigation project is thus not a single hydro-hegemony, but multiple hegemonies, as leaders at multiple scales articulate hegemonic narratives according to different rhetorical conventions. For example, whilst the aim of the national scale may be to stimulate growth through agricultural intensification, hegemonies at smaller scales may have conflicting goals. Ministry-scale actors may favour irrigation strategies that support their own operations and budgets but not necessarily the most efficient or effective means of water management. Commune-scale governors may be more concerned with managing water conflicts between villages, often in a way that retains farmers in small-scale agriculture, rather than the politically difficult and unpopular process of land consolidation that agricultural intensification necessitates. Village-scale governors similarly may seek to ameliorate rather than support the changes underway. These multiple, nested hegemonies contest one another, yet their differing rhetorical and scalar conventions mask this contestation.

The result is a contested landscape of water management in which rhetorical and scalar conventions sustain the illusory stability of hydrological hegemony. Indeed, as more actors superimpose their assumptions and policy positions onto this realm of uncertainty, the scope for interested articulation becomes greater still, bolstered by the presence of complementary narratives. In essence, a ‘fog of war’ has been created around the issue of climate change, facilitating a wide range of interpretations to be exercised upon it. Rather than the Huxley/Orwell dichotomy we met in Chapter 5, therefore, this situation allows the two positions to be reconciled though an information gap into which multiple competing positions can be projected. Where insufficient, or

overly complex, information prevents a clear consensus on a salient policy issue, the range of interpretations applied to that issue provides a free rein to governance. The key in such cases is not to control the supply of information entirely, but rather to inhibit it sufficiently as to impede the development of consensus. Under this 'fog' of contestation, it is possible to justify a range of different policies under the cover of *ethic* administrative positionality and *logical* technocracy.

Although it may be complex in origin, this multi-scalar geography of fuzziness and uneven knowledge plays a vital role in influencing environmental policy. Scalar decisions are about more than just the absence of knowledge. They are an outcome of cultural and political struggle (Schiebinger 2004). More than this, they are an exercise of power. Scale amplifies certain voices and marginalises others, in doing so shaping the direction of adaptation planning by setting the terms of the debate. In determining the balance of *pathos*, *ethos* and *logos*, the frame of environmental discourse is set out before it starts, according to the terms and interests of the wielder. The universalising assertions of hydro-hegemony are thus sustained by the power of scale. Water wars, seen from a distance, resolve to rural peace; the everyday particularities and contestations of parched fields, water pumps and Khmer Rouge canals are not subsumed within a bigger picture, but rendered insignificant by a frame built by quite different, and very distant, negotiations.

PART 3

Choice

8. Thumbnail knowledges: the geography of the un- and half-known

It is a moment that most people have experienced and some dread above all else: the revelation of an unexpected knowledge gap. It can happen in the lightest of conversations – ‘oh, I didn’t know you were a fan, so which *is* your favourite Sonic Youth album/Tolstoy novel/Fellini film’; or the heaviest – ‘which policies in the manifesto encouraged you to vote Conservative?’ – but it is invariably uncomfortable. The familiar but disorienting sense that you know less about a particular thing than you thought you did is discomfiting, yet so common that most people have developed an array of coping mechanisms to deal with it: ‘oh their early work mainly’, ‘let me get back to you on that’, ‘it’s a complex issue’.

That excuses like these give us so little pause for thought speaks not only to their effectiveness as mechanisms to hide our ignorance from ourselves and others, but also the way that we think. Our understanding of the world, so solid and objective in our own perception, is in reality a fragile grid of partial knowledge overlaid over an infinitely complex and ever-changing reality: a structure, as Foucault (1994, originally 1966, p. xxi) puts it, ‘created by a glance, an examination, a language’. We live our normal lives within this grid of knowledge, which is quite sufficient for us to go about our daily lives, our jobs, our relationships, but often no more than that. As for the rest, we retain a comfortable confidence that greater depth lies adjacent to our habitual mental pathways, an illusion only disturbed once we stray beyond our habitual frame of experience and interaction. The blank spaces of this grid are the areas we neither use nor observe in depth, yet each appears to us ‘as though already there, waiting for its moment of expression’ (Foucault 1994, originally 1966, p. xxi). Only when we attempt to recall them in depth do they fade unexpectedly out of focus.

To demonstrate this, it is a simple matter to test our knowledge in order to reveal its surprisingly close limitations. It seems only fair that I should start, so I shall elect for myself the city of Birmingham: a metropolis I have lived alongside in the UK for well over 30 years and have never felt inadequate in understanding. I know that it is England’s second largest city, with a population (I believe) of around a million people. I know that it is famous for the Bullring shopping centre, that it has a redbrick university founded in the 19th century. I know that it has two major football teams – Birmingham City and

Aston Villa – and following a recent visit for a workshop I know that its main station is called New Street and that its taxi drivers are very friendly.

So, despite our long co-existence, what I am able to retrieve from my memory banks on one of the UK's major cities amounts to scarcely a paragraph of information. And this is no unique feature of Birmingham. About the Archers radio show, one of the UK's longest-running and best-loved cultural institutions, I can say only that it is set on a farm, has an omnibus on Sunday and my mother used to listen to it. About the House of Lords – one of the cornerstones of my own government – I can recall only that it is the upper house of the British parliament, that some of its members are appointed and some hereditary, and that the benches in the chamber are red.

Put like this, it seems that I possess a staggering array of ignorance. Yet I am not crushed by my own non-knowledge. I am able to go about my life quite effectively and I don't break into a sweat whenever somebody around me mentions Birmingham, The Archers or the House of Lords. Indeed, my knowledge on each of these topics had always appeared to me, before attempting to set it down on paper, quite sufficient. And in one sense it was. I knew what I needed to know about them, which after all is how knowledge works. We know what we need to know. Whilst about everything else, we have only a passing understanding.

To demonstrate (hopefully) that this is more than just a me problem, you can try the same thing yourself. Take out a piece of paper and a pen and set out everything you are able on each of the following three topics: credit cards, Argentina, the moon. Each of these is a perfectly familiar topic, frequently arising in the course of reading, living or conversation, yet I would be willing to bet that in at least two of the three cases, what you are able to set down on paper amounts to no more than half a page.

In some cases, you may find yourself in a quite different scenario. Perhaps you work for a bank, come from Argentina or make a hobby of astronomy. In these cases you may find yourself writing reams upon reams of recollections. If you are tasked with writing everything you know about your hometown, or country, for example, the depth of your knowledge might seem infinite. You may feel like you could recall and note down every aspect of local history, every piece of graffiti on every wall, every conversation you have ever overheard in the pub. Yet this kind of 'deep knowledge' – as opposed to the shallow or surface knowledge we possess about most objects and processes (Bennet and Bennet 2008) – is the exception that proves the rule. We have it about certain things, but in order to function we need more than deep knowledge. We also need the tens of thousands of fragments, the minutely understood particles of information that allow us to make sense of and structure the world around us. We need, as they will be termed in this chapter and henceforth, thumbnail knowledges: familiar concepts which we instantly recognise, yet lack detail on, beyond the superficial.

Though peripheral to those who employ them, these nodal points play a vital role in the maintenance of hegemony. For Laclau and Mouffe (1985),

points like these are crucial tools in constructing discourse, because they act as mutually intelligible signifiers from which 'chains of equivalence' are constructed. These signifiers 'assert equivalence between identities (that are not identical), simultaneously producing a logic of difference' (Machen 2018, p. 499). It is therefore precisely those concepts that are least understood, least observed and *least* valued, which are *most* valuable as tools of articulation because they provide the broadest scope to generating equivalence.

Deploying the concept of a thumbnail here aims to capture this combination of high familiarity with shallow understanding. Yet, though used regularly in recent years, it is a term which has tended to be used in a purely technical sense elsewhere. Defined generally as simply a smaller version of a larger image or text (Merriam-Webster 2023), the idea of a thumbnail is one that has become increasingly central to life in the age of the internet. The need to scan large amounts of information rapidly before selecting one or more items for closer study – the kind of now-unconscious action with which you might scroll the daily news over breakfast – is as ubiquitous as it is vital. These small images are crucial to the efficient, mass consumption of information that is an everyday part of life for so many in the 21st century. Yet although it builds upon a long history of information organisation, the specific role of the visual thumbnail, a scalable image that is initially just big enough to be recognisable, is, like so many aspects of the world of computing, a relatively recent one.

Discussing the concept as an emerging technology in 2005, for example, Heidi Lam and Patrick Baudsich (2005, p. 681) explained that 'summary thumbnails help users identify viewed material and distinguish between visually similar areas' because they 'allow users to disambiguate the desired news story from similar looking areas'. The small image, often in combination with a small amount of text, provides the reader with a moment of recognition that allows them to distinguish what is useful and what is not and thus whether they wish to explore it further. Put another way, thumbnail imagery and text are the features that ensure that the majority of information is *not* consumed, indicating not only what is of interest, but what doesn't merit further interrogation. Ultimately, this places a high burden on thumbnail choice and construction as a determinant of which information is consumed, especially in the present era of proliferating mobile video, in which thousands of frames are available to exemplify the wider piece. As Yale Song et al. (2016, p. 659) put it in their analysis of thumbnail effectiveness, 'To click or not to click', 'as the most representative snapshot, they capture the essence of videos and provide the first impression to the viewers', ultimately fuelling the crucial determinant over whether to look or not to look; to know or not to know.

Although the technology associated with the information age has greatly accelerated the pace and volume of these everyday decisions, this process of sorting, selecting and discarding information is far from novel. Any decision over whether to explore an issue in depth is, by definition, based on only a microcosm of that issue: the bare minimum needed to know that an issue, topic, theme or place is of interest. This kind of sifting behaviour is integral

to the way that we think, both online and offline, structuring the world that we know in detail, whilst the remainder of the world around us remains only half-known: a series of thumbnails not deemed worthy of closer examination, but underpinned by the superficial sense that a closer look would be possible if it were ever wanted. We survey our mental 'map' of the world as though it were small, but infinitely scalable. We expect that we can zoom in to see the issues, places or things we are considering in greater detail, yet in reality this is a comforting fiction. When we attempt to do so, we find in most cases that our vision becomes pixelated, a closer focus revealing only a greater granularity: the discrete and delimited figments of our understanding of our chosen topic.

Key to the importance of these thumbnail knowledges, however, is that we are only occasionally discomfited by the limits of our understanding. We know in depth what we need to know in depth, whilst the supporting constellation of partial knowledge circulates in a merely supportive role. To understand that global heating is occurring, for example, it is necessary first to know that the Earth has an atmosphere and that carbon dioxide is a gas. Yet the level of detail necessary for these concepts to fulfil their supportive role is extremely limited. It is, for example, entirely unnecessary to know the physical processes through which carbon dioxide traps heat in the atmosphere, the chemical properties that cause it to do so more effectively than oxygen or nitrogen. It is not necessary to know that the atmosphere is 60 miles thick, that it contains five major and several secondary layers, that the closest to the ground is the Troposphere and the furthest away is the Exosphere. 'Warming atmosphere' is quite sufficient for our purposes.

And all of this is well and good. We can neither represent nor know everything. All knowledge, after all, is an abstraction, in which detail is sacrificed for usability. The only truly accurate map would be as large as the universe itself and infinitely detailed. And even if we could somehow make such a thing it would be no use whatsoever. We would have gained nothing through the mere act of replication. Maps, like knowledges, abstract the world by presenting only the dimensions that are deemed important by the map maker. To render them usable, the map maker divorces those useful elements from the context in which they take place and abstracts them from their historical contingency (De Lucia 2009). The famous cartographic phrase 'here be dragons' denotes not only a lack of knowledge, but a lack of need for it. The unmarked lands are not simply unknown, but unneeded; and the same goes for the unmarked lands of our knowledge frameworks.

Yet there is a good reason to attend to our dragons. Thumbnails can be used as waypoints in an otherwise fluid field of discourse. By taming the field of discursivity, nodal commonalities 'arrest the flow of differences, to construct a centre' (Laclau and Mouffe 1985, p. 112). Since they are beyond the central focus of attention they sit outside discursive contestation, providing a stable and consensual node from which to construct a hegemonic position. And in this regard, their very vagueness is their strength. In lacking detail, they are

vulnerable to exploitation. And the fewer people who possess that detail, the harder it is to push back against inaccuracies. If a certain politician, journalist or scientist asserts with confidence that Hyde Park is in East London, for example, then it is likely that at least a few million people will protest the inaccuracy of the claim. Lived experience, after all, says otherwise. Yet if that same politician, journalist or scientist asserts that Tooley Street is in North London, then the outcry would be far more limited. Most people will not know any street named Tooley, so they are likely to defer to the authority of the speaker and assume that they are correct. Whether or not those who know otherwise have sufficient voice to counter the assertion depends on how widely the assertion is presented. A global audience, unable to contradict the claim, might well internalise it even in the face of the complaints of a few disgruntled South Londoners. On such unobserved bases sit far more complex and influential hegemonies.

8.1 Uneven geographies of tacit knowledge

So, knowledge sits in places. This much is long familiar to geographers at least, but what does this have to do with climate change? As it turns out, everything. Greenwashing claims by fossil fuel companies rely on precisely these areas of limited knowledge: the superficial sense of understanding a topic that is sufficient to make claims seem plausible, but insufficient to dispute them. Even in the earliest days of greenwashing, the success of Chevron's F-310 gasoline's demonstrably false claim to turn 'dirty emissions into good clean milage' in the late 1960s was predicated on the difficulty of any consumer to demonstrate (or test) it ([Morris 1970](#)). Over half a century later, Ryanair's claim to being 'Europe's greenest airline' relies similarly on the difficulty for the ordinary passenger to challenge its assumptions and inaccuracies ([Sweeney 2020](#)). A professionalised environmental lobby and set of legal frameworks prevents the baldest untruths, but ambiguities, half-truths and insinuations are as profitable as ever.

Yet greenwashing claims are, in reality, only the most visible manifestation of a far wider landscape of uneven climate knowledge. The epistemic geographies of climate change apply not only to the ways in which climate change is communicated in commercial and political fora, but also through the uneven geographies of scientific authority itself: the situated and dynamic boundaries of the scientific and the political ([Mahony and Hulme 2018](#)). It is precisely at these boundaries that tacit knowledges – the thumbnails about which we are only partly aware of our ignorance – play their most important, and readily exploitable, role.

Despite the novel technological nuance such questions have acquired in recent years, these uneven ways in which knowledge is constructed, shared and experienced are one of the oldest topics in the social sciences. So rather than delving endlessly into the annals of natural philosophy, contemporary

accounts of knowledge's uneven geography (Gertler 2003; Malecki 2010) have tended to focus on the precursors to later post-structuralist work, such as Gilbert Ryle (1949) and Michael Polanyi (1958, 1966), philosophers of knowledge who anticipated later developments in social constructivist thought by enunciating a crucial distinction between knowledge that could be explicitly codified and other forms of knowledge which defied such representation: tacit knowledge (Gertler 2003).

These accounts – and those who have subsequently employed them – emphasise the definitional challenges surrounding knowledge, highlighting the familiar but disconcerting sense that you know exactly what a given term means right up to the point that you are forced to define it. It is only at this point that you discover that the knowledge you held was tacit, rather than explicit, and that its usefulness to you and to others is thus less than you had believed (Ibert 2007). Viewed from this perspective, the ways in which knowledge is communicated shapes its value. Knowledge which is codified is readily communicable. It does not reside in any particular person or place and is thus transferable; whilst tacit knowledge is not. It is unspoken, mutually understood or absorbed in a broader sense from a given context. Yet this does not, in fact, make it less valuable, as Oliver Ibert (2007, p. 106) explains:

... codified knowledge can be accessed with decreasing effort by nearly anyone and it can be applied almost everywhere. It offers only insignificant competitive advantages ... Tacit knowledge, by contrast, is more exclusive and insofar a potential source of competitive advantage.

Even in a basic economic sense, it is not hard to understand why this is the case, especially in a discipline like geography. Simply imagine you wish to understand as much as possible about a particular part of a certain town: it may be because you intend to build a bridge there, or dig for oil, or understand the social issues leading to criminal activity. In each of these cases, the map you might begin with, the book you might find on the history of the city, the bill of laws that outline the rights of the residents, are only the beginning of what you need to know. In many cases they might not be what you need to know at all. The information that is most useful to a newcomer is often not formally recorded. It exists only in the minds of the community, in the accounts of expert laypeople, and it can only be learned slowly – often at considerable cost.

This durable locality and partiality makes tacit knowledge an obstacle to any homogenising project. Worse still, unlike the apparently fixed 'objectivity' of a map or a history book, the lived geography of tacit knowledge is contested and changeable. As anybody who has conducted qualitative fieldwork will know, what you find out depends to a large extent on who you talk to and when. The local knowledges and practices through which tacit knowledge is sustained may be restrictive or conservative. They may also be lined

with misconceptions and prejudices of one sort or another. But so, ultimately, are all forms of knowledge (Smith 2011). What this means is that tacit knowledge, like codified knowledge, is laden with power: something that we have seen extensively in the previous two chapters, where discourse and contestation – never written down in most cases – is integral to shaping the local environment.

Yet though they may circulate locally, tacit discourses like these are always more than local. The power relations that shape any discourse are the product of a circulation of power at multiple scales, wherein uncontested ideas – those givens, preconceptions and prejudices that are widely or generally accepted – are the most powerful tools, precisely because they are excluded from political discussion. From this perspective, returning to Michel Foucault (1972, p. 133):

‘Truth’ is to be understood as a system of ordered procedures for the production, regulation, distribution, circulation and operation of statements. ‘Truth’ is linked in a circular relation with systems of power which produce and sustain it, and to effects of power which it induces and which extend it. A ‘regime’ of truth.’ (Foucault 1972, p. 133)

Tacit knowledge plays a crucial role in sustaining this regime. Yet, circulating as it does in place, it cannot be directly influenced by larger-scale hegemonies. Instead, this influence is indirect, via Laclau and Mouffe’s (1985) ‘empty signifiers’: umbrella concepts that are sufficiently broad that they can be rearticulated and interpreted in multiple place-based forms. Tacit knowledge thus emerges endogenously, but absorbs the exclusions of those empty signifiers – from sustainability, to net zero, to anti-globalisation, to any number of equivalents – which circulate at the scale of hegemonic discourse, representing divergent and often contested demands and yet uniting them in a coherent movement (Laclau 1996).

This, however, only works effectively when the signifier is truly empty. Indeed, as Foucault continues, ‘what makes power hold good, what makes it accepted, is simply the fact that it doesn’t only weigh on us as a force that says no, but that it traverses and produces things’ (Foucault 1972, p. 119). It is, in other words, not the central motifs of environmental discourse through which power is most effectively articulated, but its uncodifiable, unspoken and half-understood dimensions. Which brings us back to the thumbnails discussed above. Those ideas and assumptions that a person – or a community of people – believes themselves to understand, but in reality have only minimal knowledge of are far more than side issues. They are the key axes along which interests are articulated; the strategies and tactics that ‘enable an existing order to be reproduced without direct challenge’ (Griggs and Howarth 2019, p. 466). Thumbnail knowledges, in other words, are power.

Crucially, this does not mean that we necessarily lack knowledge about the environment – the vast and ever-increasing volume of climatic data easily

belies this – but that we fail to acknowledge the inevitable *social construction* of knowledge gaps, whereby areas of thinking deemed to be dangerous, contentious, value-laden or political dead-ends are systematically left beyond the boundaries of our scholarship. As Mike Hulme memorably puts it in relation to the famous Lennox Globe inscribed with ‘here be dragons’ at the limits of its extent, in our present cartography of climate science ‘where be dragons? ... today’s dragons often go unrecognized and unnamed due to the unwelcome challenges they represent to our desire for order, certainty, and control’ (Hulme 2018, p. 330).

Instead, the normative desire to show that climate science and policy are moving, in somewhat teleological fashion, towards an effective future is so strong that it discourages engagement with the thornier issues of power and politics, about which knowledge can never truly be refined, only deepened. Instead, a concern in the leading organs of climate science with ‘narrowing uncertainties’ has led to a failure to acknowledge more significant knowledge gaps in our understanding of how to formulate effective policy on climate change (Hulme 2018, p. 330). As a result, ‘climate politics urgently needs to be repoliticised’ to take better account of values, norms and experiences. ‘There is, simply put, no amount of technical frameworks that can supersede the need for asking *who benefits* from a particular solution and *why*’ (Rice et al. 2015, p. 254).

After a notably slow start, scholars have in the last decade or so got well and truly out of the traps in this regard, pursuing a range of important avenues in order to understand how climate change knowledge functions not only in theory, but in practice. From the politics of adaptation (Paprocki 2021) to the anti-politics of the Sustainable Development Goals (Hope 2021), the politics of climate science have entered mainstream environmental scholarship. Drawing on a rich history of scholarship in the geographical discipline and beyond, this work views climate knowledge ‘as a phenomenon with the status of an object’ (Ibert 2007, p. 105): one that is performed and contested, rather than discovered, emplaced and refined.

It is important to remember that this is not a new idea. Indeed, as far back as 1995, Nigel Thrift (1995) wrote enthusiastically of recent work which turned the reflexive gaze backwards on science, stating that ‘if it were necessary to choose the most vibrant and exciting areas of research in the social sciences and humanities today, then surely the study of science as a social construction would figure large’ (Thrift 1995, p. 1). A few years later, perhaps the most seminal of all such papers in the arena of climate science, David Demerriett’s (2001) ‘The construction of global warming and the politics of science’ would emerge, in which the neutral, ‘God’s eye’ viewpoint of the climatologist would be challenged by recognising the ‘upstream’ influence of politics on science.

Now cited more than a thousand times – and even the subject of an honorary retrospective article in *Progress in Human Geography* (Castree et al. 2022) – it would be hard to argue that this line of thinking ever went away, but it has undoubtedly been handed a new lease of life by recent interest in decolonising geography and the social sciences more broadly. The argument that

power relations in the colonial present permeate all forms of contemporary knowledge (Radcliffe 2017) historicises the power relations observed in the nineties and early noughties, whilst adding an additional layer of complexity to the way in which these relations are observed. By critically interpreting the layers of power underpinning environmental knowledge hierarchies, it goes a long part of the way to flattening them; placing lay and local knowledges on an equal analytical footing with much larger-scale environmental knowledge, in order to interrogate their relative capacities and politics.

Rather than continuing to explore the intersections of global, regional and national climate indices as abstract entities, therefore, this critical perspective on climate science views such categories as inherently political (Edwards 2013), rooted in 'Eurocentric methodologies that serve to marginalise indigenous knowledge' (Keikelame and Swartz 2019). Countering this means, on the one hand, moving towards a 'place-based science' (Boisselle 2016, p. 9), in which greater credence is given to local variations and locality in the experience of the climate. On the other, it means recognising that the same power relations which have marginalised certain populations – whether according to gender, economics, politics or geography – serve also both to mask those vulnerabilities and render adaptation to escape them difficult in the present (Whyte 2017). In Farhana Sultana's words (2022, p. 3):

... climate coloniality occurs where Euro centric hegemony, neo-colonialism, racial capitalism, uneven consumption, and military domination are co-constitutive of climate impacts experienced by variously racialized populations who are disproportionately made vulnerable and disposable.

Viewed in this light, gaps in knowledge – the half-known, the semi-understood and the not-deemed-important – are as politically redolent as knowledge itself. It is in these half-known regions, the unobserved everyday dragons at the frontiers of subjective understanding, that the greatest potential for political articulation of knowledge lies, because recognition and plausibility lend half-truths additional weight. You will find it far harder, to continue the earlier example, to convince someone of environmental untruths about their own street, but you can convince them of a great many more inaccuracies about the other side of the city or the other side of the world. Whoever controls this landscape of non-knowledge controls the environmental narrative because they possess the means to articulate empty signifiers in place. Moreover, once thumbnail knowledges are established, they are highly stable precisely because they are rarely the focus of attention. It is very difficult to convince somebody that their assumptions about something they do not care about are incorrect. As a result, the articulated thumbnail becomes in effect a one-way discursive ratchet, as 'the lines of equivalence that enable abstraction no longer reflect but diffract, such that the representation travels in ways that no longer fully return' (Machen and Nost 2021, pp. 561–2).

8.2 Thumbnail knowledges in climate discourse

At base, thumbnail knowledge is a weak spot in the landscape of knowledge. Yet whilst thumbnails like these form a crucial component of a diverse armoury of greenwashing techniques, they do not simply exist in all expedient areas. Rather, they are in many cases constructed as empty signifiers, narrated to feel familiar, yet lacking meaningful detail on closer inspection. These kinds of constructed ambiguities are a regular feature of climate discourse, wherein a range of empty, or at least fuzzy, terminologies facilitate grander claims than a given technology or product might merit.

Ryanair's claim to be 'Europe's greenest airline', outlined above, for example, exploits two dubious points in particular: the relatively low age of its fleet and the relatively high proportion of seats filled on its flights. In the first instance, the data provided to support the claim, advertised in 2019, were from a 2011 chart which was both outdated and excluded a number of major competitors. In the second, calculations based on the proportion of seats filled did not take account of seating density, further undermining the calculations on which the assertion was based (Sweeney 2020). Anybody involved in the advertisement would likely have been aware that these claims do not stand up to genuine scrutiny. Yet by articulating the ambiguity around the numbers, the narrative is allowed to do its work, at least for a time.

Greenwashing claims of this sort are par for the course in contemporary advertising and, regardless of the decision of the UK advertising watchdog to ban the advert after a few months, remain highly effective in shaping consumption (BI-T 2022). Yet tricks of this sort do not rely on thumbnail knowledges, but asymmetric information. In other words, it is safe and effective for a company to make an inaccurate claim, because the audience – here, the consumer – will in most cases be unable to locate the information to disprove it. Thumbnail knowledges, by contrast, work in an almost opposite manner, appealing to processes, places or ideas that the audience do know, or at least *believe* that they know, in order to produce a recognition, ring of truth or a sense of agreement.

In the corporate sphere, this approach is fundamental to green advertising and so effective that a recent study found the addition of a single loosely defined, fabricated and unverified 'green' image or claim to improve customer perception of a company's green credentials by some 57%. At its most basic level, for example, words like 'green', 'sustainable' or 'eco-friendly' are instantly recognisable, yet they have no established definition, meaning that companies are able to use them to create a *feeling* of sustainability around a given product, without falling foul of advertising standards. Yet there are a great many more incarnations of this approach.

In 2019, for example, the glass cleaner Windex, owned by SC Johnson, released an advert claiming its bottles are made with '100% ocean plastic'. Yet despite its implications, the plastic used by Windex had never seen an ocean. It had been collected instead from land-based plastic banks

in Indonesia, the Philippines and Haiti: in other words, plastic that might *otherwise* have ended up in the world's oceans had it not become a Windex bottle (Sustainability Agency 2022). Windex's was a textbook case of misdirection, relying on a popular thumbnail that is deemed important, but little understood. Most people are aware that there is a lot of plastic in the ocean and they are aware that it is a problem, yet their practical knowledge of what might be done to clear that plastic amounts in most cases to a few words, images and phrases: The Great Pacific Garbage Patch, single-use plastics, a turtle caught in a pack ring, a stray bottle remembered from a beach holiday.

Thumbnail knowledges like these: readily intuited but scarcely known rely on the audience possessing a specific margin of knowledge. Too little and the implication will not attract attention, too much and it will be met with scepticism. Yet in the middle lies a highly effective zone in which to articulate environmental claims, with relatively little scrutiny attached. What's more, it is an approach with more than merely commercial implications. On the largest possible scale, it may be read in the ubiquity of 'net zero' terminology, invoked endlessly by politicians of all stripes precisely for its half-known quality. Despite sitting at the heart of the UK's environmental policy – entitled 'Net Zero Strategy: Build Back Greener' (BEIS 2021) – net zero is a highly contested term. So contested in fact that many scientists consider it to be 'a dangerous trap' (Dyke et al. 2021): a catch-all concept that combines real, disputed and dubious strategies in such a way to strongly suggest a problem objectively solved.

Yet it is not only this. These very same qualities have seen the concept of net zero employed in recent years for opposite political ends. Media headlines have attacked environmental agendas with lines such as 'Why net zero is DEAD unless Australians go vegetarian and suffer very high inflation' (Thompson 2022), 'Net zero nightmare' and 'It has been clear for some time that net zero is dead as disco' (Canavan 2023). A rather more explicit and extended account of this position was even offered by Mark Dolan (2022), presenter for the right-wing British television station GB News, as laid out below:

I don't think in 2019 anyone voted for net zero, and I'm certainly not sure they voted for a £20,000 bill for an eco-boiler or 30 to 35 grand for an electric car. It's already an outrage that the British public haven't been consulted about the expensive green agenda, even if it is the right thing to do, which it might be ... What's worse is the arrogance of eco-zealots ... There is a certain religious fervour about some members of the green lobby, that we've somehow got to get all of our energy from windmills as of tomorrow morning and segue to a plant-based diet ... No wonder so many of these eco-protesters don't have a job. With the vegan diet, they've scarcely got the energy to protest. (Dolan 2022)

Whether utilised to promote an environmental agenda or oppose it, therefore, the concept of net zero is valuable precisely for its obscurity. It is a term almost anybody would recognise – and often have clear feelings about – but which relatively few people could elaborate upon, making it a fertile thumbnail for imbrication into whatever political agenda one might wish. Yet net zero is far from unique in possessing these qualities. Indeed, the same could be said of almost any of the major scientific, cultural and political concepts that make up climate discourse in the wild. Even the concept of the carbon footprint, the basis of a vast swathe of environmental thinking, is subject to a range of interpretations, making it a useful political tool for its combination of apparent clarity and the huge multitude of ways in which it can be invoked. Indeed, as Erik Swynedouw (2013), for example, has argued, the ‘fetishization’ of CO₂ exhibited in the net zero framework represents a key nodal point which holds together all attempts to govern global warming, ‘thereby creating a dangerous or even apocalyptic climate change as a “constitutive outside”’ (Stephan et al. 2013, p. 58).

This apocalyptic outside acts in effect as an empty signifier in itself, grouping the environmental policies of large-scale polluters and the consumer choices of ordinary people into a bounded ‘green’ inside. This is a gross but hugely effective act of categorical misdirection. The carbon footprint of an individual and the carbon footprint of an energy giant like Shell, responsible for between 1 and 2% of global emissions each year (ClientEarth 2022), are in almost every sense two completely different categories. The two imply not only different sets of responsibilities, but entirely distinct frames on responsibility: a process of global heating driven on the one hand by billions of atomistic agents and on the other by a few dozen global corporations. The reasoning – both forwards and backwards – that each frame denotes is so distinct that they are, from a governance perspective, entirely different entities. Yet this is precisely what makes the carbon footprint concept such a useful discourse. The use of a common terminology allows the two to be conflated, or one emphasised over the other as preferred.

One of the more controversial examples of this practice emerged in November 2020, when the official Shell Twitter account posted a poll with the question ‘What are you willing to change to help reduce emissions? #energydebate’. The poll garnered barely more than a thousand responses before being picked up in the media and widely pilloried for ‘gaslighting’ the public (Carrington 2020). Yet despite (or, indeed, undergirding) the backlash, the intention was clear. By appealing to an unscaled carbon footprint frame, the tweet promoted a narrative of flattened, undifferentiated responsibility, in which the contribution of a multi-billion-pound energy conglomerate and an ordinary individual were conceptually comparable. By narrating a policy of everybody doing their bit, of common but differentiated responsibilities, Shell’s vastly unequal share of culpability is thus occluded.

If it were only Shell up to this kind of discursive manipulation, then it would be a manageable issue, but the concept of the individual carbon footprint is

at present one of the cornerstones of environmental discourse. Indeed, as Michael Mann (2021) has argued, its pre-eminence has been a 'godsend' (Mundy 2022) to opponents of serious climate action, shifting responsibility from corporations to individuals by driving 'a fixation on voluntary action' (Mann 2021, p. 10). That it is effective in doing so relies on the (perfectly understandable) limitations of ordinary people's capacity to distinguish between the most radical and the most conservative environmental policies. Carbon footprints, as thumbnails, are a blank canvass for policymakers. They are malleable, adaptable, but above all, they bring a sense of intelligibility – in other words, a ring of truth – that their clarity as an analytical frame fails to merit. The lines of equivalence established in environmental discourse between carbon footprints and climate action 'refract' the meaning of each, retaining familiarity but making tangible resolution impossible (Machen and Nost 2021, p. 562).

This is, in one sense, both inevitable and necessary. Thumbnail knowledges are an essential part of our knowledge framework and key means of communication. We cannot understand the world through deep knowledge alone, but depend upon the supporting cast of fragments that give structure to that expertise. Indeed, in order to do almost any form of thinking, it is necessary to employ a broad set of conceptual frames, underpinned by key metaphors and elements of container logic, in order to sustain consistency of discourse across the broad range of experiences on which those frames must draw. Yet a key aim here has been to show that they are also important and readily articulated for political ends. The more knowledge that somebody has on a given topic, the less easy it is to persuade them of a particular perspective. Much easier gains are to be found in the realms of the half-known and the half-understood.

Recognising the importance and power of these thumbnails requires, amongst other things, a discussion of the politics of knowledge underpinning our current political condition (Rice et al. 2015). The topography of public knowledge does not simply emerge *ex ante*, but is shaped by the interests undergirding public discourse. Thumbnails like these are not only strategically employed, but also strategically engendered. Countering, or indeed articulating, their power requires a renewed focus on the out of focus; a recognition of the politics of ignorance; and a return to the question that above all undergirds this chapter: 'in our contemporary understanding of climate change, where be dragons?'

If this seems an oblique point, it is. It is no easy task to peer beyond our grid of knowledge, because any standpoint from which we might do so links us inexorably to the thinking from which we are trying to escape. This, though, is perhaps to think too literally. It is not necessary to reinvent the environmental wheel to see potential in the ignorance we didn't know we had. Rather, hegemony depends on actors 'forgetting' or failing to imagine an alternative (Nyberg and Wright 2024, p. 250); on chosen paths appearing unavoidably necessary. So with this aim in mind, the following pair of chapters will explore,

in practical terms, what is lost between the cracks of environmental objectivity – and how new approaches might usefully plug these gaps. By addressing both ‘epistemic violences and material outcomes’ these two chapters aim to show how ‘alternative epistemologies and cosmologies emerge from lived experiences’ (Sultana 2022, p. 3): the many and varied ‘common senses’ that challenge environmental orthodoxy.

Exemplifying this point through the real-world politics of environmental sensing, Chapter 9 will first of all highlight how gaps in the landscape of environmental data reflect political–economic inequalities at every scale, from global geopolitics to provincial budgeting. As it will show, our ostensibly objective climate record is in reality a record of a constructed, governed and unequal environment. By the same token, a different environmental record, more sensitive to the climatic variation of less wealthy, less politically powerful and less economically integrated parts of the world, is possible. The uncertainty we retain around these subaltern environments is an economic necessity in some cases, but it is also a political choice. Environmental governance becomes hegemonic when such choices are naturalised, rendered invisible and unavoidable. In other words, when environmental uncertainty becomes more than incidental. It becomes necessary.

The final part of this section, and this book’s last empirical chapter, Chapter 10, will highlight the power of new ways of understanding the environment. Large-scale modelling, it will show, is not the only useful way to understand environmental change. A human’s eye view can, in some cases, provide equal insight, even where it appears to directly contradict larger-scale data. By returning, in this way, validity and value to the environment as perceived at a human scale, Chapter 10 thus offers a bottom-up counterpoint to large-scale modelling, exemplifying the value of new, bottom-up perspectives on our changing world and indicating new pathways towards them. These alternative choices are not only scientifically important but politically redolent counterpoints to environmental hegemony. By showing that ‘there are always alternatives and possibilities that have been excluded’ (Nyberg and Wright 2024, p. 250), these accounts point to new environmental pathways, directions and choices (Nyberg and Wright 2024, p. 251).

9. What do you know: the politics of environmental ignorance

Nobody told [us] anything. We do farming as we used to do it. When the wet season comes, we start to farm as usual for our family. We ploughed and broadcasted like that ... We joined the [village] meeting but they did not tell us [about the drought]. The village chief did not care about the villagers ... They did not say anything about the climate at that time. (Interview with female villager, [Prey Veng, 2019](#))

We have two things in this area. On the one hand, there is a data shortage, so it's very hard to do calculations because of this scattered information. That is one part. For the other part, it is related to the geography of Cambodia. Cambodia is located in a transition area. If you imagine Indochina, it is located between a major land-mass and the sea. You have the Earth's major land mass of Europe and Asia and Cambodia is located down towards the sea, between the Indian Ocean and the Pacific, and this area is very unpredictable in terms of the climate ... And then you have the, you know, the Tibet Plateau? And that also influences the climate. So, before doing any prediction, you have to understand all these transitions. So it's not linear, it's kind of fuzzy. You expect many, many factors that can influence it. (Interview with Cambodian climate scientist, [Phnom Penh, 2019](#))

The above two quotes, one from an academic working on drought sensing in a major Cambodian university and the other from a local villager suffering the effects of repeated droughts on her livelihood, represent in many respects opposite ends of the spectrum of environmental knowledge. One speaker has a doctorate and spends hours every day using it to analyse environmental data. The other did not attend school at all. Yet distinct though they may be in positionality, these two testimonies speak to a common problem. Information about the environment is unevenly distributed both within and between scales, leaving blind spots and weak spots in both data and delivery. Regardless of whether you are the worst- or the best-informed person in the country, the climate retains a great many mysteries.

The one constant, in other words, is uncertainty. Yet despite this, we still continue to think of our understanding of the environment as objective: less of a contradiction than it might appear because objectivity is such a curiously flexible thing. It is understood by everybody, yet unbeknownst to any of them, it means something entirely different to each person. The world's – indeed, not just the public's – understanding of any given issue exists as a kind of tapestry of overlapping and contesting objectivities, rooted not only in differently chosen points of principle, but in different systems of establishing what counts

as truth. The idea of objective, final, truth has a powerful cultural hold. Yet out in the wild, the idea of objectivity is so subjective that you can't even say the same thing in a different place without its meaning changing.

Climate hegemony masks this variegation by acting as a monopoly on truth. By removing not only human subjectivity but also historical and geographical relations, the complexity of the climate is distilled to a series of data points, shorn of context and thus resistant to alternative framings. By removing the 'why' from the production of these sensed phenomena, the political nature of their governance is thus obscured (Machen and Nost 2021, p. 561). Scientific but also interested and economically driven decisions around data transcend their origins to become immutable objectivities, hierarchically outranking lived environmental experience. At this point, climate knowledge becomes its own thumbnail, the detail of its generation, curation and dissemination obscured beneath the fleeting understanding that the weather *was, is or will be* a certain way. Who, after all, has the time to ask the weatherman how he reached his conclusions?

Well, some people do, because they do it for a living. Indeed, it is an issue that crops up frequently in the analysis of climate change impacts, as social scientists trained to treat all knowledge as positional and thus subjective run up against natural scientists who seek objectivity through methods that distance data from opinion. If a natural scientist were, for example, to explain to his colleague that the average rainfall in a certain province of Cambodia is reduced due to climate change, then that statement comes with a mutually intelligible basket of caveats. It will be understood that this assertion depends on the quality of available data, combined with standardised assumptions around the likelihood of certain rainfall levels occurring based on long-term rainfall averages.

This information is so much a part of the message that it would likely be communicated with it as part of the statement's metadata. Yet there are also aspects that the scientists may not communicate to one another, such as the location of the rainfall station, the density of the stations in the area, missing data in the climate record (that is, during periods of disruption or war such as the Khmer Rouge period in Cambodia) or the method used to collect the data (that is, an automatic station or an old-fashioned data collector with a measuring tube and notebook). It would, after all, be impractical to attempt to communicate every bit of metadata to one another in order to make a simple statement, but there is an assumption that the data would be available if needed.

Were they to disagree with one another on a particular point, for example, our two scientists might be tempted to dig deeper into their basket of metadata. And this, indeed, is a very important point about environmental objectivity: scientists often disagree and this is part of science. Two colleagues might carry out their experiments with unimpeachable rigour, albeit perhaps in different ways, but reach different conclusions. Unpicking the reasons for this disagreement, highlighting key points of disjuncture and testing them independently, is the mainstay of the scientific method which, at base, is simply

the imperative to show your working. So many of humanity's great technical achievements of the last half millennium rest on this separation of the personal from the methodological, the maxim that, in choosing whether to believe somebody, listen not to who they are, what they say or how they say it. Ask them instead how they arrived at their conclusions.

It is, of course, never as simple as this in practice. Natural scientists, like everybody else, have reputations after all. It is a widely shared instinct to place greater *faith* in the conclusions of somebody who has achieved a great deal already. There is also, as everywhere, a degree of power and political geography to all this. The famous case of Newton and Leibnitz's simultaneous invention of calculus is a good, if aged, example. Leibnitz had published his ideas first but lacked the political heft to stand up to his opponent – the President of the Royal Society at the time – and died in disfavour having lost his Royal patronage when Georg Ludwig of Hanover became King George I of Great Britain in 1714 (Hall 1980). Reputations are in some cases as important as data in deciding scientific arguments, leading in various famous examples – from Aristotle's centrality of the Earth in the universe to Carl Sagan's warning of a nuclear winter – to incorrect conclusions being widely adopted, at least for a time.

This, though, is far from the problem of climate policy. Despite bumps in the road, science always finds its way in the end. The problem is that the objective conclusions of scientists, with their carefully curated basket of metadata, must at some point be brought out of the laboratory and away from the shared assumptions of fellow scientists to confront the full variety of people involved in the analysis of climate change. At which point, things become complicated, because ordinary people – even people with considerable political power – do not think like scientists. Without the capacity to check the working of a given scientific statement, public viewpoints on science are necessarily judged *subjectively* by non-scientists as questions of trust, belief and personal interests. Yet far from diminishing the importance of objectivity as an *idea*, it actively enhances, even reifies it. Rather than the specific, conditional scientific objectivity from which it stems, objectivity on the basis of scientific authority is presented as an eternal and immutable fact, something to be questioned only by those who dispute the basis of science itself.

Rather than the contestation, disagreement and conditional consensus that achieves rigorous climate science in practice, 'climate science' is presented as a monolith in discourse, both by advocates and opponents of climate action. Al Gore's 'the science is finished' and Greta Thunberg's 'listen to the science' – with the best possible intentions – do as much to sustain this as newspaper rhetoric on the actions of an 'eco-mob'. Climate science, in this homogeneous, apolitical and static guise, becomes its own empty signifier, a thumbnail onto which a whole range of views may be projected.

This creates a blank canvas for the stabilisation of climate hegemony, because it ignores the differing weights of scientific opinion around any given viewpoint, offering ample scope for shifting the Overton window of

climate policy away from the radical action most scientists might back. For example, although scientists have, in general, presented a largely united front on climate change in recent years, the misalignment of public and scientific objectivities plays a role in the promotion of fringe scientific views to the forefront of public discourse. The public prominence of scientists such as Freeman Dyson and Bjorn Lomborg, both of whose views on climate science are far more prominent in the public sphere than they are engaged with in scientific discourse, exemplifies this. To those untrained in the conditional, contested and ultimately collaborative nature of scientific objectivity, one scientist's truth is as good as any other. Indeed, given a choice between several scientists, it is often assumed that the one you agree with most must be the 'truest'.

And this, fundamentally, is the problem. As a scientist, you can do your best and most rigorous work, but you can't endow that work with a 'ring of truth' that will appeal to all the many people you might wish to. Instead, that work – stripped of its situating metadata – enters a battlefield of knowledge in which conceptions of objectivity, as with all norms of knowledge, are culturally situated and vary, sometimes subtly, depending on where they are expressed. Rather than simply being disseminated downwards, climate information becomes a vessel of the power not only to create environmental knowledge, but also to influence and extend its absence. It is in this interpretive stage that the worldview of the hegemonic social group is reinforced and validated (De Lucia 2009), as culturally mediated viewpoints on scientific communication reproduce the hegemonic assumptions that shaped those recommendations. 'Rationalization thusly leads to naturalization' (De Lucia 2009, p. 235), as the formality of environmental expertise reinforces an existing, interested landscape of preconception, prejudice and practical needs.

9.1 The politics of dissemination

Unexamined preconceptions, the thumbnails we encountered in Chapter 8, shape the global landscape of climate discourse. Yet thumbnail knowledges play an equally important role in reproducing hegemonic power structures at the smallest scales of environmental management. At the local level, where it affects people most directly, the competing objectivities that frame the climate are rooted not only in technical frameworks passed down from higher scales, but also cultural frames emerging from local and historical relationships. The smaller in scale you go, the more powerful become norms, practices and power in shaping the landscape of environmental knowledge; the quieter and more distant the voice of the scientist in informing these knowledges. Policy as it manifests at the local level is thus 'marked by the clash of competing political forces in society and the changing hegemonic equilibria that emerge and are stabilized in a particular context' (Griggs and Howarth 2019, p. 466).

As well as being communicated downwards, environmental knowledge is negotiated upwards, the product of multiple, layered contestations.

This is well exemplified by Cambodia's ongoing struggles with drought, which have become a major issue in Cambodia in recent years, affecting livelihoods with increasing severity and regularity since the turn of the millennium (EM-DAT 2022). In many parts of the country, they have become an almost annual affliction. Yet despite their growing influence on agriculture and livelihoods, only a limited amount of monitoring and response infrastructure exists to predict or manage them. Farmers themselves lack a meaningful forecasting system, even in those areas where droughts are expected to be most severe, and whilst the national government does sporadically release drought warnings, their generality makes them little use to farmers. That is, if they receive them in the first place. In the words of one NGO director (Interview with Meredith, NGO Director, 11 April 2019), many involved in drought response 'have assurances that this information is not actually going to get the farmers' level'. They are warnings in name only, never reaching those who need to hear them.

Given Cambodia's low-income status and relatively low levels of government capacity, it is tempting – indeed, has been commonplace – to view such shortcomings purely as the result of an *absence* of governance. Yet this viewpoint underplays the strategic landscape of priorities through which government capacity emerges and proliferates. Rather, as Jean, a technical expert working on disaster monitoring and response for an international NGO explained, both policy and data collection are influenced by the manner in which the government wishes to present itself, so when it comes to drought monitoring:

Obviously there's always going to be politics included. Even in somewhere like Singapore, the air quality monitoring that Singapore has, has similar issues with politics playing in terms of "how bad should the situation look and how bad does it make us look if we're just sitting on the data and not doing anything about it?" And all these kind of things. So, in a country like Cambodia, where the government is a lot less mature, it's always going to be an issue. (Interview with Jean, NGO technical expert, 28 February 2019)

This is not to suggest that the Cambodian government is opposed to publicity surrounding the Kingdom's environmental vulnerability. Indeed, former Prime Minister Hun Sen has himself referred to the threat faced by climate change on a number of occasions. In 2009, he bemoaned publicly that 'Cambodia is so small, so it is not responsible for, but is a victim of, climate change' (VOA 2009). Subsequently in 2013, he emphasised further that 'climate change is no longer a remote case, but is affecting all of us in the present and [becoming] one of the grave challenges that must be addressed in the 21st century' (Sokheng 2023) and has raised the issue on a number of occasions

since. Nevertheless, despite openness over the generalities of climate change, the specifics of its impact are politically charged. As Meredith, the director of a Western NGO outlined:

Flood, because it has a long history in Cambodia that predates climate change's effects, it's not as sensitive, but drought is a relatively new – it's not really new, but there is a perception that it is a new hazard resulting from climate change – and it's much more difficult to address, which I think is also why it's more sensitive.

We initially wanted [our flood programme] to be a drought monitoring and drought forecasting service, but we deemed it too sensitive, especially as we were having these discussions before the national election, around the time of the commune elections and you're aware of the political events that have occurred. You know, today in 2017 the opposition party was dissolved, one of the opposition leaders was put into detention etc. and because of our risk position, we had to take it very seriously and so we pivoted away from any mention of this tool as a drought monitoring or a drought forecasting tool. (Interview with Meredith, NGO Director, 11 April 2019)

Amongst those seeking to bolster Cambodia's drought response, therefore, the sense is of a government unwilling to engage directly with the issue, a position which, viewed on a purely technical level, makes little practical sense. Viewed through a *political* lens, though, the government's reluctance to engage more fully with drought measurement becomes clear. It is a decision rooted not in absolution of responsibility, but in a desire to downplay the public emergence of an intractable problem and in doing so to lose a degree of apparent control over the affairs of state, as Mohammed, a UN technical expert outlined:

Measuring drought ... is not an easy exercise because it could also be political. Because as a disaster it's not an easy thing to really specify the destruction, because you can't see the economic losses as much as you can the percentage of houses washed away by the floods, or those that have been affected, but drought is slow onset, something that's creeping. It's created only by the data. (Interview with Mohammed, UN technical expert, 30 January 2019)

That drought is more difficult both to demonstrate and resolve than flooding provides governments with both means and incentive to downplay its impact. Governments can be more circumspect in addressing droughts than floods, adopting policies more favourable to long-term economic and political planning and potentially more in line with the interests of individual and institutional actors. This is reflected in the retention of control over

drought warnings, which exist only in the form of proclamations from the Prime Minister and ad hoc circulars referring to droughts expected at the national level. In Meredith's words, 'it's like they're happy to send out a piece of paper and send it around to the province and say "we've done our job"' (Interview with Meredith, NGO Director, 11 April 2019). Yet as Mohammed had earlier put it, this type of warning is of little use for farmers seeking to respond to drought:

The type of the government warning is an advisory, but there is no climate information. There is no data behind it. There's the warning, OK, and they will say something like this ... But what is missing about this is the frequency of the official warnings. There is no pattern. It's really random. (Interview with Mohammed, UN technical expert, 30 January 2019)

In a wider sense, though, it is not random at all. It is political. Environmental knowledge is not only a scarce, but also a valuable resource. And like any resource, control over it is important, defined by existing interests and hierarchies in a way that shapes the path it takes through space and across scales. Knowledge is a key tool through which the intellectual and moral leadership underpinning social control is exercised (De Lucia 2009) because it facilitates not only action, but acquiescence to the system of moral logic that surrounds it. Like flood information, for example, drought data are disseminated downwards through the formal political hierarchy of the Cambodian state, beginning at ministry level – in this case the Ministry of Water Resources and Meteorology (MoWRaM) – and moving down towards the district, commune and village levels of governance. So, by the time information arrives at the village level, accounts of the process of dissemination are couched, invariably, in the language of hierarchy and control. As the chief of Wiel Snguet village outlined for example:

... the top level informed the provincial level, the provincial level informed the district level, the district level informed the commune level and the commune level informed the villages ... They informed me and then I disseminated it to the people in the village. I told the villagers. I control my village. (Interview with Village Chief, Poup Weil Snguet, 1 February 2019)

Dissemination, in other words, is often more effectively framed as a political problem than a technical one. Like everything else in the global South, the linked processes of climate analysis and adaptation depend on the division and allocation of scarce resources and expertise. Technical deficiencies must therefore be read in terms of the power structures, hierarchies and interests that surround these allocations, which are subject to the same politics of the possible as resource allocation more generally (Mickelson 2009). Efficiency is

important, but from a governance perspective, the retention of control even more so, as outlined again by Mohammed:

Why is it so political? Why is there freaking out over sharing the data? ... Well, they say it isn't easy basically. They say that they are improving the data, or they say that we don't want people to use this data ... It's not a direct quote, but from what I understand from analysing their statements it is that if people use wrong information in a warning, then people could go against the ability of the government to prepare its responses. But then again forecasting is forecasting. We are not the owners of the universe. We can't tell you exactly what's going to happen, you know. That's information that's important to the public, that's what forecasting means. (Interview with Mohammed, UN technical expert, 30 January 2019)

Rather than viewing the absence of effective drought warnings as a merely technical shortcoming, therefore, the dissemination of environmental data makes more sense as a feature of national-scale political and environmental goals. Anticipating that local drought warnings may instigate pre-emptive action on the part of smallholders, ministers fear a loss of control over rural activities, which feeds into an unwillingness to cooperate in expanding access to drought information. And this is not all. From a governance perspective, Cambodia's rural areas are not an undifferentiated monolith, but a patchwork of contested responsibilities, as Vuthy, a senior MoWRaM official, outlined:

[Wells are] not under my control. It is for the Ministry of Rural Development [to deal with]. But I know that as a result of deforestation, water levels underground have changed and sometimes the water table also changes because they have many kinds of wells. Deep wells, shallow wells, surface wells or drill wells ... But in the year 2015, some shallow wells or ponds dried up because the ground water had changed. And anarchy, without control, will create a lot of problems by [people] drilling wells without properly respecting sanitation, meaning they can cause ground water pollution. This is also now an issue. (Interview with Vuthy, MoWRaM senior official, 28 February 2019)

Wells, in other words, may be a good solution, but they are not part of MoWRaM's institutional mandate and thus undesirable from an organisational perspective. Yet this is only part of a wider story around legitimacy and power in Cambodian governance. Like many other sectors, irrigation has been a site of substantial investment from foreign and domestic parties in recent years, instigating a jostling for power and influence in an increasingly lucrative sphere. It is also a struggle from which MoWRaM has emerged largely preeminent, having, in view of experts on Cambodian irrigation policy, 'not

really subscribed to the political agenda of sharing irrigation management responsibilities beyond well demarcated projects' (Venot and Fontenelle 2016, p. 17), but instead 'strengthen[ed] and position[ed] itself as the key player in the irrigation sector' (Venot and Fontenelle 2016, p. 18).

And the politics go deeper still. In a wider sense, 'irrigation comes as a package of intensifying agriculture' (Interview with Jean Philippe Venot, irrigation expert, 19 February 2019), wherein large-scale irrigation projects are prioritised over smaller-scale and privately owned initiatives. Decisions over drought information dissemination, well use and adaptation planning are thus far from being policy islands. Rather, they are an integral part of a wider process of development planning that is itself a process of negotiation and contestation. Economic and political elites in Cambodia have a say in the direction of agriculture, as they have a say in everything, meaning data collection is a question not only of technical capabilities, but political and economic priorities also. As Meredith elaborated:

Logging ... has been a huge source of revenue generation for the elite for the past 20 years and now the time is up for that. So, basically, they have to turn their sights to another industry, another sector and I think that's going to be agriculture. Cambodia has huge potential for agriculture. I know people who have worked in the private sector in agriculture, Westerners working with some of these elite families and he's saying that they have thus far no interest at all in developing their plantations or whatever it is, but now that you know their bills are still coming in, they need to send grandkids to expensive international schools, they need to find money, you know? (Interview with Meredith, NGO Director, 11 April 2019)

This is far more than just a Cambodia problem. In measurement, as in response and planning, all resources are limited, so trade-offs always have to be made somewhere. What is known depends on what is needed and what is needed shapes what is done. As a crucial link between landscape and policy, environmental scientists don't just inform policymaking with neutral information. Rather, as Esther Turnout (Turnout 2018, p. 363) puts it, 'science is constitutive of those objects and renders them amenable for policy and governance'. By obscuring the significance of locality and particularity, modern science thus creates the intellectual mechanism through which environmental governance is universalised (De Lucia 2009); specific environmental qualities elided by the control exercised over them. There is, in other words, no such thing as neutral environmental knowledge because interests and priorities *inevitably* shape the landscape of knowledge creation and dissemination. We know what we need to know, but who this *we* represents depends not only on the strength of our need, but who we are and what we have, resulting in a 'socially and historically specific landscape of possible intervention in the face of climate change' (Paprocki 2021).

On the other side of the coin, however, is the less appreciated corollary to this interested landscape of knowing: the landscape of the un- or half-known: the thumbnails we met in the [previous chapter](#). Viewed in the wider context of hegemonic control over the practice of climate governance, these gaps in the landscape of knowledge are not merely absences. They are outcomes of cultural and political struggle ([Schiebinger 2004](#)); the blank spaces in the grid of knowledge on which a wider ‘regime of truth’, in [Foucault’s \(1972, p. 133\)](#) words, is built. It is through the articulation of these gaps that the limits of knowledge and action are naturalised. Yet this naturalisation would be impossible were it not for the sense of familiarity offered by thumbnail knowledges, which shroud ignorance under the distracting illusion of sufficient understanding. Such thumbnails enable knowledge to be on the one hand deflected, obscured or concealed; and on the other magnified in such a way as to overpower or deny the unknown ([McGoey 2016](#)). The resulting hegemonic knowledge–power relations ‘squeeze out other ways of doing climate governance’ ([Machen and Nost 2021, p. 555](#)). Knowledge is power, but it is thumbnail knowledges above all that obscure the full range of choice we possess.

9.2 The politics of data creation

Whether for political expedience, economic gain or administrative priority, the geography of governance spawns a geography of environmental knowledge in its own image. And this is true not only at the smallest scale, such as the battle for drought information played out amidst the parched fields of Cambodian villages, but also the largest, where the global geography of weather station density reflects the uneven landscape of global wealth. Data inequalities like these *matter* ([Cinnamon 2020](#)) not only because of their ability to disempower, misrepresent and elide, but because of what they are able to reveal about the diverse and contested spatialities of climate knowledge ([Mahony and Hulme 2018](#)). That rainfall station density is more than 10 times lower in the Peruvian Andes than Switzerland (one station per 5000 square kilometres versus one for every 475 square kilometres) tells its own story: the questions we ask about the environment are the questions posed not only by science, but by power.

As with any form of knowledge, in other words, climate data are generated under interested circumstances. What is allowed to exist and what does not exist are, in many cases, dependent on the measurer. As one of the world’s less wealthy countries, Cambodia has to make numerous trade-offs in how it measures the environment, meaning that, as in much of the global South ([Gubler et al. 2017](#)), environmental data are often lacking in both availability and precision. Indeed, as Mohammed, himself one of the technical experts tasked with upgrading Cambodia’s rainfall sensing apparatus explained it, ‘we’ve figured out that to cover Cambodia completely, we need to get at least

200 stations and I think so far, we have only a combined 100 stations ... and another problem is that the number given by MoWRaM doesn't necessarily mean that they're functioning. So having the stations is important and the second thing is having available data that is regularly collected' (Interview with Mohammed, UN technical expert, 30 January 2019).

A particular problem is the distance between the stations. As Jean, working for an NGO on flood response, explained, 'they're 50 kilometres apart. So, it might be raining really heavily in between the two stations and you wouldn't know it' (Interview with Jean, NGO technical expert, 28 February 2019): a shortcoming that, from a technical perspective, is especially problematic in Cambodia. As Meredith outlined,

we have a microclimate phenomenon in Cambodia, where even in the past few weeks now we've been getting rain, but it's very localised and in other areas we have drought, so we really need this micro level, district level information in order to inform decision making by farmers. (Interview with Meredith, NGO Director, 11 April 2019)

Just as it does at a global scale, this uneven geography of data collection reflects wider political-economic realities. Expertise tends to be centred in major towns and cities, leaving areas which are economically and geographically isolated with limited and low-quality data, despite often being of considerable importance to modelling. As Dr Reaksmeay, a Mekong River Commission technical officer, explained:

In Cambodia we have many problems for the rainfall data collection, especially for mountainous areas and low-lying areas. In the urbanised areas, much more data has been collected, so further from these areas towards the forested or mountainous areas, the stations are very far apart and they are difficult to maintain. Nowadays I think that MoWRaM has been externally funded by the UNDP and JICA to try to install some stations in remote areas. But the problem is operational maintenance, which is far behind what is needed ... They're not difficult to maintain. But the telemetry requires some expert or technical people who can, I mean, go daily or weekly to check the stations and adjust the data logger at the station. But now, in Cambodia especially, we don't have enough capacity to do that effectively. (Interview with Reaksmeay, Mekong River Commission technical expert, 30 January 2019)

Local economic inequalities like these lead to a higher proportion of missing data from stations located outside of urban centres, as local staff lack the technical knowledge to maintain the machinery. The further away from the political-economic centres of the country, the patchier, less dense and less reliable the environmental dataset becomes: an image of socio-economic

inequality played out in the bits and bytes of the weather record. Since direct international funding was removed a few years ago, 'most of the stations are not working well', as Reaksmey explained (Interview with Reaksmey, Mekong River Commission technical expert, 30 January 2019). Despite increasing the number of machines, the bureaucratic politics of sub-national governance have undermined the technicalities of maintenance, drawing data collection into wider budgeting disputes and negotiations. In Mohammed's words:

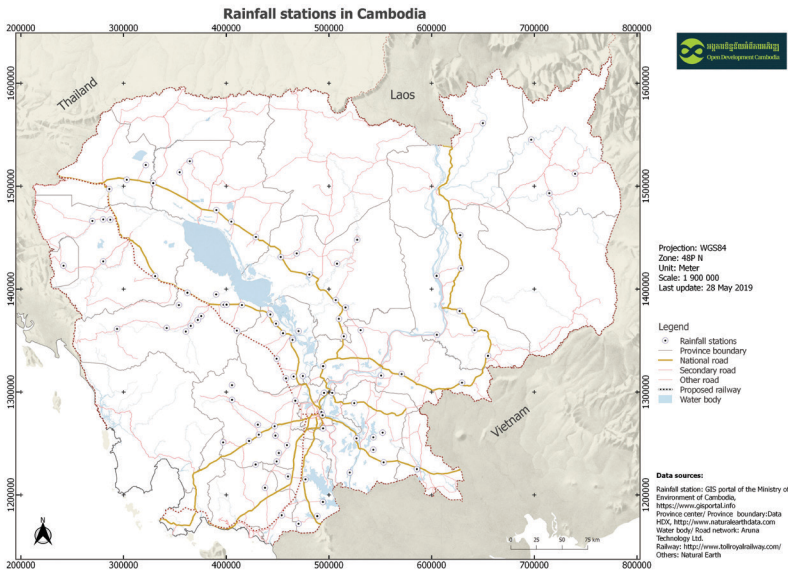
The way that it works is that there are provincial officials responsible for meteorology and water sources and they are the ones that are responsible for checking the stations. But in practice, if there is damage ... [it can be difficult to fix] because these people, they are not really technical people. Some of them are just fixed-term contractors to the authorities and other are just contracted [for a single job]. And some are really just doing it voluntarily. Meaning that, you know, if there is a failure in the system, in this case it's really up to them whether they want to contribute or not. And that causes frustration, but it goes with the politics, the policies of the ministry, the cabinet decides on how much money they want to allocate to this and that determines how many people they would hire in the field. (Interview with Mohammed, UN technical expert, 30 January 2019)

The result of these local impasses, Dr Reaksmey explained, is that in many cases 'nobody has been assigned for maintaining [stations]. So only a few months after installing them, they don't work well anymore' (Interview with Reaksmey, Mekong River Commission technical expert, 30 January 2019). Yet these same issues run deeper than maintenance itself, shaping the very nature of the data collected. Allocating responsibility for weather stations to government means allocating financial responsibility, which then becomes a political rather than a scientific question. The priority of sub-national administration is to ensure that such financial burdens are distributed equitably, thus taking decision making over the positioning of weather stations out of scientific and into political hands. As shown in [Figure 9.1](#), weather stations in Cambodia have, until a recent round of expansion headed by UNDP ([Usamah and Roelle 2018](#)), followed a strictly local administrative pattern, rather than one representative of local hydrology.

This is a source of considerable frustration to those tasked with collating the data, who complain that:

a working group was set up to discuss precipitation measurement, which depends on agro-meteorological zones. We need at least two to three per province, depending on historical disasters. However, population density was not taken into account and different funders fund different parts of the network. So, it was organised

Figure 9.1: Map of rainfall stations in Cambodia after UNDP-led expansion in 2018



Source: Published by Open Development Mekong, under a CC BY-SA 4.0 licence. See <https://data.opendatacambodia.net/en/dataset/rainfall-station>.

Note the proximity of weather stations to roads. Before 2018, the locations of the first round of expansions were close to provincial centres or capitals.

by province but not in the correct way. I kept questioning this decision. Distance and hydrology should figure and hydro-morphology is also important. (Interview with Mohammed, UN technical expert, 30 January 2019)

Moreover, as Jean, tasked with coordinating disaster preparedness with these data, outlined further, such structural impediments frequently undermine its usefulness:

One of the problems that we have here is that I haven't seen anyone at a ministry level that can actually properly understand these data and can actually guide us to properly say where these things could be. Even some of our rain gauges, for example, I think may be in the wrong place, because we get directed by the provincial disaster management committees when we go out, so it's the people who are in charge of disaster management, especially floods, who tell us 'this bridge or this river bank location is good', but often we end up placing our sensors in urban areas, so in Preah Vihear town, for

example, there's a bridge going over the river there, and we have a sensor on the bridge itself, but if that actually shows a potential flood, then given that it is in town we can't really advance warn anyone, because it's basically measuring at the population centre that we want to evacuate. (Interview with Jean, NGO technical expert, 28 February 2019)

As a result of this positioning, analysts and forecasters find themselves 'really struggling ... to actually pinpoint where is really at risk. It's so erratic what happens' (Interview with Jean, NGO technical expert, 28 February 2019). Yet many of those involved in generating environmental data have little ability to influence the factors that shape it:

As an NGO we're not at a level and it's not our mandate to lobby the government one way or the other. We provide tools for the government and then we work with the UN to work out strategies around what the UN wants to do and what the government wants to do. Most of the time all of those strategies kind of align into a bigger picture. (Interview with Jean, NGO technical expert, 28 February 2019)

Indeed, it is this bigger picture that is key. If the pursuit of environmental knowledge is inevitably political (Hulme 2018), then its non-pursuit must be equally so. Rather than a series of disconnected issues in data collection, the capacity of the agglomeration of bodies involved in climate modelling to accurately monitor rainfall and water levels is itself shaped by political administrative, as well as scientific, priorities. The data gaps that result reflect, in a direct sense, low capacity and/or socio-spatial distancing from centres of economic wealth and technical expertise. Yet in a wider sense, the uneven resolution of environmental data reflects the unequal geography of political administration. Those working within the field of climate data collection view their efforts as existing within a framework of political relationships wherein data gaps are not incidental, but agentive, the product of negotiation. Technical shortcomings, similarly, are understood as being shaped by administrative and political structures.

By determining what should be counted and how, these shortcomings not only imprint the climatological record with the political geography of the state (Turnout 2018, p. 363), but also play a key role in shaping the decisions that result from it. What renders this type of environmental governance hegemonic is its capacity to secure the consent and compliance of its subjects through the production of self-reinforcing discursive truths. By reflecting the power structures that underpin its governance, the record of a governed environment naturalises and rationalises those structures, enabling an existing order to be reproduced without direct challenge (Griggs and Howarth 2019, p. 466).

9.3 The politics of data sharing and the power of the unknown

When it comes to science, no country is an island. Simply look at a map of the rapid geographical spread of steam technology through Europe during the Industrial Revolution – from Britain, to Belgium, France and the Netherlands and then onwards – and the political-geographical influence on scientific endeavour becomes clear. Science, in most cases, travels by the same roads as trade. Yet relations like these are not only a question of scientific *progress*. They shape the diffusion of scientific *knowledge* too. Just as they do the flow of technology, borders shape the flow of information between nations. There is a problem though. Unlike many technologies, most environmental, meteorological and climatological phenomena transect these borders, meaning that understanding them on a day-to-day basis requires unconstrained political cooperation: a resource much less readily available than might be hoped by those doing the monitoring.

In Cambodia, this is a problem regularly brought home by the Kingdom's dependence on the Mekong River: one of the dominant factors in shaping Cambodia's propensity to floods and droughts (Eyler and Weatherby 2020). Like the other five riparian states that depend on this vast waterway, sharing information on what is going on upstream is crucial to predicting the water flows that define economy and livelihoods, so it would appear to be in all parties' interest to do so efficiently and transparently. Yet the reality is different. Data on the Mekong's flow are intertwined in wider political discussions on managing the Mekong, including hydropower, shared economic development strategies and water management. As Vuthy, one of MoWRaM's most senior officials, explained, this is an issue compounded by the centralisation of power in the upper echelons of the state – a feature of national politics throughout much of contemporary Southeast Asia (Morgenbesser 2020), but also of Cambodia's 'authoritarian turn' (Lawreniuk 2020) – which has seen responsibility for data sharing move upwards towards the highest levels of domestic power. As he bemoaned:

So now, Cambodia, Vietnam and Laos are the members of the Mekong River Commission, but sometimes it is a little bit depressing. I heard that the ministers of environment of Laos and Vietnam called my minister to discuss our methodology. So, my minister agreed and now we will have a meeting in Ho Chi Minh. Even though we are members of the MRC and it is supposed to facilitate exchanging information, sometimes we compete in what we use according to the requirements of economic growth of each country, so it can be difficult to facilitate [sharing data]. So, for the MRC, the council level is the ministry level, but now the ministry level has no power ... (Interview with Vuthy, MoWRaM senior official, 28 February 2019)

Amidst these discussions, there is one piece of information that forecasters require above all else: when will the dams be opened? We already know from [Chapter 6](#) that the many upstream dams criss-crossing the Mekong River system hold back a huge amount of water: 50 billion tons ([Stimson Center 2023](#)), or up to 70% of the Mekong's total flow at points in the wet season ([Son 2023](#)), to be precise. From a forecasting point of view, though, volume is less important than timing. It is not uncommon for a handful of upstream dams to release a cubic kilometre, or one billion tons, of water in a matter of hours, raising or lowering the level of the river by several centimetres overnight. This plays havoc with models attempting to assess annual trends or short-run flood risks, but it would be manageable if it were known in advance. Yet far from acting transparently, upstream dam operators tend 'not to warn people in advance or coordinate with authorities, if they let out too much water, or if they need to release some pressure' (Interview with Jean, NGO technical expert, 28 February 2019). As Vuthy continued:

They have many disaster management committees to train people how to read the land, but the flood risk of a river you cannot predict perfectly. Why can't you predict it? Because the natural law is now changed. As you know, almost 70% of Cambodian territory is under the area of the Mekong. The Mekong river crosses Cambodia almost 5000 km in length, around 4800 km: almost 10% [of the river], but the territory of Cambodia is under 80% of the Mekong. Upstream there are many developments, especially hydropower, so predicting the water levels is not so accurate. Sometimes, when a hydropower dam such as in Laos, for example, is connected, the water levels change and change quickly, dramatically. Before I used to record one hydropower station and they opened it according to an irregular process. [Rather], when they see the clouds getting dark, they open the [water] gates quickly, so the water [level] changes quickly, making forecasting water levels a little bit difficult for us [and making it difficult for us] to run modelling to calculate the level of the river. (Interview with Vuthy, MoWRaM senior official, 28 February 2019)

The growing influence of hydropower dams on water levels in Cambodia makes hydrological modelling and flood forecasting extremely challenging. Dams release water as and when they need to. They have no timetable of water releases to stick to, nor do they provide public records of previous releases. Individual governments along the Mekong do have access to this information, but – despite the MRC's principle of mutual openness – no common interest in sharing it, as underlined by Mohammed:

As far as the MRC is concerned, Cambodia has an obligation to share the data with the different actors and vice versa, but in

practice it depends on the different actors ... There may be doing things eye to eye and there may be some mechanisms and obligations of those member countries, but I haven't seen in practice the data from those organisations fed into one platform and that is what we need, because if we want to do climate modelling then we need all of this data put into one platform. But in the MRC, they just manage their own data ... [So when it comes to sharing it] there are big negotiations. (Interview with Mohammed, UN technical expert, 30 January 2019)

As the country through which the majority of the Mekong River flows, China naturally looms large in these discussions. Data sharing with Chinese counterparts is crucial to flood modelling, yet it is shared only sporadically, undermining forecasting. And this reflects a wider problem of communication between Western and non-Western actors. Unlike Western and Cambodian NGOs, Chinese NGOs participate to a far smaller extent in public forums and engage much less in open-source software and open-source data arrangements, creating blind spots in environmental data collection:

We don't know ... we have no visibility into what Chinese NGOs are even here. What they're doing. They don't join the same forums, the same collaboration meetings as we do. They're very much doing their own stuff and we, without saying anything too bad here, we're focusing a lot on teaching the government and providing systems that are open source all the way through, so the hardware, the actual devices themselves we build in an open source manner, so we can do open source software and open source data, so that any data can be downloaded by anyone in the world. And it's already shared with MoWRaM, with UNDP, with anybody else who wants access. We are hearing the opposite happening with some of these Chinese-based initiatives, where it's very much closed systems that are never really shown to the public, or to other NGOs or other actors. (Interview with Jean, NGO technical expert, 28 February 2019)

Yet despite Western NGOs' view that their Chinese counterparts are shunning the established norms of data sharing, the relatively closed approach to information exhibited by Chinese NGOs is more the rule than the exception. The practical politics of environmental data collection means that multiple scales of interests imbricate themselves into climatological knowledges, engendering gaps and inconsistencies on the one hand, but also defining the politics of possibility in relation to climate data. Environmental data play out in a landscape not only of unequal power to make decisions, but also unequal power to shape environmental knowledge. Distinct though they may be in theory, each realm of climate response exists within these overlapping spheres of control.

Interesting as it may be, though, this imprint is no conscious befuddling of an intended dataset. There is no conspiracy, no dark-suited schemers plotting in dimly lit back rooms. Rather, the naturalised centrality of experts, models and financial metrics generates a hegemonic consensus around which environmental governance revolves. This consensus emerges from ‘an alignment of material interests and discursive frames among the core actors in the assemblage’ (Wissman et al. 2024, p. 711). Yet in cementing legitimacy for these interests, the hegemonic logic of environmental governance reproduces itself through the landscape of the knowledge it engenders.

The Cambodian farmers we met at this chapter’s outset, for example, are not being retained in the environmental dark as part of a conscious strategy to disadvantage them, but because the priorities for the creation and dissemination of data lie elsewhere. Viewed in this light, the lack of an effective plan for the long-term sustainability of smallholder agriculture should not come as a surprise, because the long-term sustainability of smallholder agriculture is not – and never was – the plan. Like most low-income countries, Cambodia’s national strategic development plan (RGC 2019a) is focused on a transition towards an industrialised future. There is nothing in these plans about how to retain a large proportion of the country in smallholder agriculture. On the contrary, the development models underpinning it indicate, some would argue require, the opposite: large, mobile workforces providing the unlimited supplies of labour that underpinned the earliest development models (Lewis 1954) and continue to do so to this day.

This clash of priorities helps to explain not only why drought messaging ultimately doesn’t find its way down the administrative structure of the state from the Ministry of Water Resources and Meteorology to the drought-prone villages that need it most, but also the fuzziness of Cambodia’s wider drought prediction, which, like environmental measurement more generally, blurs upon closer inspection. From the national to the village scale, Cambodia’s climate record and the uneven environmental knowledges that spring from it are imbricated by the complex political geography of a dynamic and contested region. Much objectivity is generated and much claimed within these circumstances and all of it is situated within a political context that shapes how – and why – the environment is observed. Yet the contestation, power and choice that characterise this arrangement are masked by a ‘mutual collapse – between objectivity and power’ (Mouffe 1999, p. 753) that naturalises the resulting knowledge. The monopoly on truth becomes a monopoly on governance.

Far from being incidental, the resulting data gaps, information asymmetries and technical shortcomings reflect both geopolitical power relations and the architecture of the state in particular ways. Not only is the availability of climate information shaped by national and sub-national interests, but the high levels of uncertainty engendered in water-level monitoring by undissemminated data and rapid hydropower development presents a record of regional tensions and Chinese hegemony, respectively. Even in the measurement of domestic rainfall, the very data points comprising the Kingdom’s rainfall record reflect

both the political administration of the country and a landscape of funding dynamically shaped by the geopolitics of the region. Since what isn't counted gets easily forgotten ([Turnout 2018](#), p. 363), this influence is durable. Yet it is not inescapable. By confronting the thumbnails that guardrail our environmental knowledge, a whole world of novel thinking emerges that – as shown in the [next chapter](#) – offers the potential to denaturalise and destabilise existing hegemonies of environmental thinking.

10. Confronting our dragons: new perspectives on environmental change

Presently, it is getting hotter ... And there is stormy wind often ... I grow cashew trees. Whenever there is stormy wind, my cashew fruit will fall down from the trees. (Interview with Dara, fruit trader, [Phnom Penh](#), 2021)

Presently ... there is little rain ... My crops don't grow well because of the shortage of water. (Interview with Reaksmey, rice farmer, [Kdau](#), 2021)

The life of a Cambodian farmer is a complex one. High-pressure decisions must be made over the type and amount of fertiliser to be used on a plot of land, the correct approach to planting seeds and the type of rice to be grown. Should it be recession rice, planted in retreating alluvial soil? Should it be floating rice, capable of growing underwater? Should it be short or long-tailed rice? And who will buy it when it fruits? Should it be sold to the local middleman, even though his prices are low? Would it be better to keep some of it for consumption or plant a smaller crop this year? Above all, though, the major question, the gamble that trumps all else, is the big one: *when* should I plant my crop this year? Which month, which week, which *day*? It is a conundrum that haunts the dreams of farmers because the consequences of a bad bet are so dire. In the words of many rice farmers, it is simply a question of luck. As one such rice farmer, Vuthy, summarised:

[Rice farming is just] good or bad luck. I never believe that we'll have a good yield. The reason why I think it's good or bad luck is because I cannot predict this year if it will be successful or not. So, it's good or bad luck. If it is lucky, it yields. And if it is bad luck, it will not yield. I cannot guarantee it. All farmers are like this. (Interview with Chan, rice farmer, Kampong Cham, 15 February 2021)

Yet the intervention of fate does little to halt the agony of attention. Farmers may not always know the reason for changing weather patterns – in the words of a second farmer, 'I don't know the reason ... I just look at the sky [to see] whether it will rain or not' (Interview with Village Chief, Twer Sray, 18 March 2021) – but depending on the sky means watching the sky each day: thinking about it, talking about it, assessing its changes, musing on its trajectory, planning ways to address each eventuality. It means, in other words, a lifetime of attention to the workings of the clouds and their caprices: as far from thumbnail knowledge as can be. And farmers are far from the only

such example. A few kilometres away, amidst the bustle and dust of the country's urban environments, the life of a garment worker presents distinct but equal challenges. How can I meet today's production target during long days of stifling heat? Can I afford medicine to alleviate my headaches and tiredness? How long can I go on in this job? Like farming, sustaining an industrial livelihood in ever-rising temperatures requires constant thought, energy and attention. As a factory worker in Kampong Cham province complained:

[The temperature] has changed so much. It seems like we cannot accept this change ... Sometimes, [workers] pass out. A garment worker passed out since it was sizzling, and then they had a convulsion. (Interview with Dara, garment worker, 19 January 2021)

Both of these people are affected by climate change. After all, climate change is no more a solely rural phenomenon than it is a solely polar one. It is, in one sense, universal: affecting all of the world's environments and, to a greater or lesser extent, all of the world's people. Yet because we do not have direct, unmediated access to a single, objective reality (Turnhout 2018), the ways in which people experience it depends to a great degree upon circumstance. After all, people are busy solving the myriad challenges they face, making attention a very scarce cognitive resource (Weber 2010).

There is only ever so much attention to spare, so people spend it on the things of greatest consequence to their lives, creating deep knowledge around those aspects of the environment that they depend upon most, whilst the remainder are sidelined or forgotten. This process of attention-driven subjectivity results in a personal, environmental epistemology through which one's environment is perceived, embedded in experience and embodied in a lived experience distinct from the Eurocentric modernity of its larger-scale analysis (Sultana 2022). In the case of farmers, this may place rainclouds at the centre of attention: an ability to predict when and where and how much rain will fall, far beyond a casual capacity. Others, who daily face the challenge of sailing a boat to fish, may possess a deep knowledge of wind speeds and directions. And for those, like construction and agricultural labourers, who must endure hours of heavy outdoor work in the heat of the day, an embodied awareness of humidity and temperature may occupy the mind, even if, like many forms of tacit knowledge, it proves challenging to articulate.

Yet these islands of deep knowledge are the exception that proves the rule. In each of these examples, as for everybody, 'knowledge' of the climate is an uneven construct: an amalgamation of the deep and longstanding understanding that emerges from extended focus and the shallow, surface-level thumbnail knowledges we possess about most processes. What you know about the climate depends, in other words, on what you do. Our understanding of the environment may be structured by 'a grid of intelligibility of the social order' (Foucault 1978, p. 93), but this grid is illuminated by attention,

the daily exercise of which generates narrow pathways of deep knowledge amidst a landscape of gaps masked by thumbnails.

Put another way, each of our mental maps of the environment is filled with and delimited by 'here be dragons' warnings. Puncturing the fragile certainties of those thumbnails reveals that grid and, in doing so, the social structures that underpin it. So, when it comes to the climate, we can learn a lot from where those dragons are and why. And this, after all, is intuitive enough. Even those whose livelihoods are many steps removed from the natural environment can relate to how personal circumstances shape the experience of weather. Indeed, in popular culture it is a point pithily exemplified in the 2019 South Korean movie *Parasite*, wherein a wealthy lady's exultation that 'the sky is so blue today – and no pollution, thanks to all the rain yesterday' is juxtaposed against her driver's flooded basement flat.

This is a point with real-world implications. For those whose livelihoods are more climate vulnerable, especially those where engagement in climate-vulnerable primary livelihoods is considerably more common, the 'scarce resource' of attention is expended to a far greater extent on climactic observation. Like the rich lady's driver in *Parasite*, a real-life garment worker is a lot more likely to think about high temperatures and urban flooding than their boss. Since attention is scarce, in other words, it is expended to the greatest extent on those dimensions of the climate most significant to the observer. The result, to paraphrase Foucault (1972), is a regime of environmental truth drawn from and constitutive of social inequalities. Yet when it comes to the climate, this diverse landscape of subjectivity abuts a fault line in environmental scholarship. There remains an uncomfortable disjuncture between the large scale at which the physical impacts of climate change are generally studied and the local scale at which its human impacts tend to be observed (Conway et al. 2019). Acknowledging this means embracing a fractured landscape of environmental knowledge. It means, otherwise put, 'recognizing and accepting the co-existence of multiple ways of knowing and being in the world, whereby the Eurocentric colonial model is but one way of existing and relating to socio-ecologies' (Sultana 2022, p. 5).

And so, we encounter a problem. Confronting the hegemony of environmental knowledge requires a ground-up perspective. Yet there is, simply put, far too much variation in the way that people interpret and describe their environments for it to appear like rigorous data. So what use, ultimately, is a distracted and partial opinion about the weather to a climate scholar? Does ascribing value and meaning to it change the fact that it remains, if it differs from larger-scale data, *wrong*? No – but it does achieve something else. People may be poor judges of the climate in an objective sense, but they are world experts in how it affects them. This gap between what happens to the environment and what is perceived to happen is not simply noise, not random error. It is consistent, predictable and meaningful, revealing the hidden structures governing human relationships to their environment. In other words,

mapping the grid of deep knowledge reveals the unequal structures through which the environment is articulated.

This is promising. Yet exploring this hidden landscape of environmental perception means squaring the circle of the subjective and the objective; aggregating environmental subjectivities sufficiently to locate consistencies between them. And it is to this end that the data outlined in this chapter were created. Generated over three months in 2021, this nationally representative survey of 1273 Cambodian respondents presents data on climate perceptions and livelihoods in 63 villages across 20 randomly selected communes, weighted to reflect the populations of Cambodia's four agro-ecological zones: the Tonle Sap, the highlands, the mountainous regions and the Mekong delta. In addition to questions about livelihoods, respondents were asked whether they had perceived each of 16 climate change indicators, the aggregated answers to which are in [Table 10.1](#), which compiles the subjective perceptions of more than a thousand Cambodians about the changing climate they face. As it

Table 10.1: Perceived changes to the climate amongst rice farmers and garment workers

Climate change indicators Changes to:	Percentage of garment workers perceiving (%)	Percentage of rice farmers perceiving (%)
Rainfall intensity	86	90
The number of rainy days	43	84
Unseasonal rain	43	79
Groundwater depletion	43	57
The wind	57	77
Drought frequency/intensity	71	93
Flood frequency/intensity	29	54
The temperature	100	93
The number of hot days	57	80
Soil erosion	14	24
Soil fertility	57	66
Drinking water availability	29	44
Invasive plants/weeds	86	92
The number of pests	86	93
Livestock diseases	86	92

Source: National Climate Perception Survey 2021 ([Parsons 2021](#)).

shows, every indicator save rising temperatures is experienced to a greater degree by rice farmers than garment workers: an understandable result given the different ways in which the two groups work, one sweating in airless spaces and the other surrounded by – and entirely dependent on – nature.

Yet this is only a part of the story. When it comes to thinking about the environment, people – as in any walk of life – don't exist in a vacuum. They talk to others, they listen, they read, they observe the behaviour of their peers, crafting a viewpoint on climate and environment that filters personal experience through the lens of received wisdom. People experience risks themselves, but so too do they invest time communicating risks (Wahlberg and Sjoberg 2000), meaning that both personal and interpersonal risk perceptions play a role in shaping conceptions of the climate (Wahlberg and Sjoberg 2000). Environmental pressures are thus both tangibly felt and absorbed from the wider milieu (Warner et al. 2010), making positionality crucial to how environmental impacts are interpreted. Changes to the climate are observed, interpreted and communicated through the lens of working lives, returning a degree of locality and personal experience to a phenomenon born in a spreadsheet, as exemplified by the words of a Phnom Penh-based fruit seller:

Humans destroy nature every day, so that is why there is climate change. They burn whatever in the industries. The iceberg in the Antarctic pole gets melted day by day. There are no exact seasons. There are no more forests. That is why the weather is getting hotter and hotter. (Interview with Sokhorn, Phnom Penh fruit seller, 23 March 2021)

Sokhorn the fruit seller's statement, which combines global narratives of melting icecaps, national narratives around forest loss and the local perception of temperature, highlights the multi-scalar complexity of climate change perception. Yet it also alludes to a sense of the social inequalities – of powerful industries versus community resources; of forests consumed for the profit of a few – underpinning these changes, something unpacked more explicitly by Sokhorn's neighbours and others like them. One Phnom Penh-based businessman, for example, concluded that, when it comes to climate change, 'for the urban people, it is normal, but for the rural people, there may be a lack of rain' (Interview with Vireak, Toul Kork businessman, 23 March 2021). On the other side of the rural–urban dyad, a rural village chief was more specific still, highlighting that 'for rich people, they use the air-conditioners. But for poor people, they only have small houses, [so] they just let it be' (Interview with Village Chief, Pteah Pseing, 17 March 2021).

Society and climate are, in other words, inseparable. Just as you can't explain carbon emissions without reference to the industries that emit them, neither can you explain the impacts of those emissions without reference to the social structures that articulate them. This makes analysing these impacts far more

than simply geographical. In addition to physical landscapes, climate impacts map onto landscapes of poverty, precarity, inequality and prejudice (Parsons and Nielsen 2021). And in the vast majority of cases they do so in one direction. The poorer you are, the more acutely you experience the climate; the wealthier you are, the more insulated.

There is no need for a complex set of tools to measure this relationship. Take the most basic of wealth indicators, for example: the size of the house one lives in. If mapped against the perception of climate change, as evidenced in Table 10.2, a clear relationship persists in every one of the 15 climate change indicators. In 14 out of 15 of these indicators, the relationship is statistically significant, with 12 of these 14 statistically significant at 99% confidence.¹

Wealth, as these data show, insulates people not only from the *effects* of climate change, but even from *experiencing* it in the first place: something not sufficiently acknowledged in approaches to its measurement. Just imagine the difference in the experience of a heavy storm under the tin roof of a single-roomed, self-constructed riverside shack: the noise of rainfall so loud even a shout won't carry through it; walls straining against the wind to the point of collapse; billowing drafts that upend the room's contents. It is a visceral experience – felt, heard, feared, embodied – diametrically opposed to the same storm a mere few metres away in one of the hundreds of riverside condos that have sprung up amidst 48,000 construction projects approved across Cambodia by the Ministry of Land Management in the last decade (Sokmean 2020). From behind the hermetic seal of double-glazed windows, air conditioning, insulation and luxury, the same storm, though mere metres away, is a world apart. Different weather for a day but, over time, a different climate entirely.

Stark disjunctures like this play out in plain sight every day. Yet in most cases the gradient of environmental privilege is more subtle. In Cambodia, for example, environmental inequality manifests often through the lens of elevation: an axis of climate change vulnerability that tends to be overlooked in a country known for its flatness. Yet when it comes to water, a little topographical difference goes a long way. In areas prone to drought, the lowest-lying areas stay wetter for longer, whilst in areas prone to flooding, the same applies, with opposite effects. Although the differences are rarely more than one or two metres at most, this third dimension plays a major role in the social geography of climate change impacts. In the words of one village chief:

Four years ago, there wasn't enough rain, so it caused rice damage. We didn't use water from other sources ... [so] for lowland rice fields, villagers could still cultivate rice, but for upland rice fields, it was impossible ... (Interview with Village Chief, Teuk Asamapiep, Banteay Meanchey, 31 March 2021)

Table 10.2: Climate change indicator against number of household rooms

Climate indicator	Average number of rooms: did not perceive the change	Average number of rooms: perceived the change	Statistical significance
Changes to rainfall intensity	1.9	1.42	0.000**
Number of rainy days	1.98	1.38	0.000**
Unseasonal rain	2.0	1.31	0.000**
Groundwater depletion	1.76	1.23	0.000**
Changes to the wind	1.79	1.37	0.000**
Changes to storms	1.59	1.43	0.047*
Changes to droughts	1.84	1.42	0.000***
Changes to floods	1.54	1.42	0.011*
Changes to temperature	1.53	1.47	0.559
Changes to number of hot days	1.84	1.38	0.000***
Changes to soil fertility	1.53	1.27	0.000***
Changes to soil erosion	1.74	1.25	0.000***
Changes to drinking water availability	1.6	1.28	0.000***
Changes to weeds	1.74	1.37	0.000***
Changes to pests	1.78	1.36	0.000***
Changes to livestock diseases	1.77	1.37	0.000***

Source: National Climate Perception Survey 2021 ([Parsons 2021](#)).

And this is far from an isolated case. In fact, possessing high land or low land is one of the most significant factors shaping how the climate is perceived in rural Cambodia. As shown in [Table 10.3](#), 13 of 16 climate change perception indicators are statistically significantly higher in those possessing

Table 10.3: Perceived changes to the climate amongst farmers with low and high land elevations

Climate indicator	Per cent with high land experiencing	Per cent with low land experiencing	Statistical significance
Changes to rainfall intensity	85	90	0.003**
Number of rainy days	74	85	0.003**
Unseasonal rain	66	81	0.000***
Groundwater depletion	49	59	0.000***
Changes to the wind	74	78	0.337
Changes to storms	96	89	0.000***
Changes to droughts	82	93	0.000***
Changes to floods	56	54	0.288
Changes to temperature	96	94	0.109
Changes to number of hot days	68	82	0.004**
Changes to soil fertility	12	25	0.001***
Changes to soil erosion	58	68	0.000***
Changes to drinking water availability	35	45	0.001***
Changes to weeds	80	93	0.000***
Changes to pests	75	94	0.000***
Changes to livestock diseases	70	93	0.000***

Source: National Climate Perception Survey 2021 ([Parsons 2021](#)).

low-lying land than those with land on higher ground. More surprising still, the land referred to is farmland, not house land. Two houses may sit side by side, but the house whose inhabitants possess *agricultural* land that lies lower by as little as a metre relative to their community experiences the climate as wilder, less predictable, riskier, than do its neighbours. Though their lives may be adjacent, the environments they perceive are quite distinct.

That these tiny agricultural land elevations play such a significant role in shaping perceptions of climate change indicators highlights the centrality of work and assets in the perception of climate change. The climate is perceived

through the lens of pressing needs, so the effect of climate on land is experienced in large part through livelihoods, in addition to the lived and felt experience of the environment. Although they may be physically present on their agricultural land for a small proportion of the year, during the planting and harvesting seasons, the impact on environmental perception shapes the worldview of the observer. Once an environmental lens has emerged through the prism of needs, it becomes naturalised to the extent that it is seen as stemming directly from nature itself (Turnhout 2018). Each person's lens fundamentally structures what is observed and how, constructing environmental perception around it (Turnhout 2018). Nature is observed through a grid built from the unequal attentions of livelihood.

This perspective opens up a fault line in the universality of environmental analysis. Perception of the environment may on the one hand be shaped by discursive formations. Yet the influence of these formations is itself rooted in material interests and activities. The result is a grounded subjectivity, anchored to the earth and the livelihoods it facilitates. And it is precisely this grounding which is lost in the abstraction of environmental analysis, resulting in environmental analysis 'too distant and too sterile from our everyday embedded and embodied interactions' (Machen and Nost 2021, p. 561). It is a juxtaposition whose tensions open opportunities to disrupt climate change adaptation discourses (Broto et al. 2023, p. 973), but only if it can be scaled by other means, as an alternative climate cosmology rooted not in the analysis of space, but life and work.

10.1 One place, many climates: interpreting environmental subjectivity

One person's drought is another's heatwave. One farmer's flooded field is another's desperately needed irrigation. It is a lot to make sense of. Yet the subtleties and inequalities of Cambodian rice farming convey an underlying message: that the experience of the climate is not embodied directly but indirectly, through land, labour and assets. And this is as it must be. After all, to a subsistence farmer, the timing of the rain is no incidental curiosity, but a fixation on which life and livelihoods depend. If that farmer does not happen to have livestock, then the incidence of livestock diseases is of little relevance: thumbnail knowledge that may be broadly understood but nothing more. And this is only to distinguish two types of farmers. For a motorbike taxi driver, an office worker, a fisher, a construction worker, the experience of the environment is *objectively* identical, but *subjectively* entirely distinct.

Accounting for this subjectivity makes understanding environmental impacts a lot more complicated. Rather than a single axis of differentiation – physical geography – an intersectional approach capable of recognising the

complexities of human interaction with the environment is essential. And even once we have got our heads around this, it means a whole different set of tools is needed. It means recognising not only that people experience the environment differently, but that the environment is itself conceived differently to different people. One knows, to return to Oliver Ibert's point in [Chapter 8](#), exactly what one's environment is like 'until one is forced to define it. Its elusiveness becomes obvious [only] when one tries to pin it down in definite terms' (Ibert 2007, p. 104). The physical geography of climate is thus, from a human perspective, thumbnail knowledge. What might seem to be a common, shared experience, fragments upon definition into a far more complex and variegated picture.

The quotes that open this chapter are one example of this. Both relate a personal story of climate change through the lens of personal livelihoods. Both refer to the same place and time. Yet climate change means something different in each case. And this should not be surprising. It is one thing to lie in bed listening to the tin roof strain against the wind, quite another to know that each gust means another freshly planted sapling uprooted, another fifty dollars of seed and fertiliser to be purchased in the morning, another month to wait for a return on your investment. In equal measure, it is one thing to walk regretfully through the bone-dry earth around your house, quite another to feel one's stomach tightening at the dawning of each blue sky, coming to terms each day with the slow-burn catastrophe of another failed harvest. The weather means something quite different when you really depend on it. And what it means has a lot to do with what you need from it. Above all, at the root of these divergent perspectives is the fact that the data are the same, but the frames themselves – the lenses through which the very idea of the climate and its changes are interpreted – are different. Climate, like weather, is experienced through hands and bellies before it is known with the mind.

This subtle differentiation in how the climate is framed in the minds of those who live it tends to be airbrushed out of analysis by the corrective nature of environmental research, which steers informants into a specific frame of climatic analysis. And this is, in many ways, an entirely logical endeavour. Yet the range of responses that arise if this is *not* done bears illumination. Take, for example, the following four accounts of environmental change from a single village in Kampong Thom province in Cambodia. The question asked was the same in each case: 'Over the past 20 years, how do you think the climate has changed?'. The responses were as follows:

There are significant changes. Foods contain a lot of chemical substances [now].

There are slight changes. Sometimes, it is hot. Sometimes, it is cold.

There is stormy wind this year.
It is so hot now.

Perhaps the first thing you will observe of these four statements is the lack of agreement between the responses. Though not mutually exclusive, the statement ‘sometimes it is hot. Sometimes it is cold’ partially contradicts the statements ‘it is so hot now’. The second point you may notice is that at least some of those answering have ‘misunderstood’ the question. The presence of chemicals in food is not, of course, a direct function of the climate, whilst the third statement ‘there is a stormy wind this year’ is expressed over an ‘incorrect’ timeframe of a single year. The frames – of time, environment and context – are different in every case.

What, then, is one to make of personal accounts such as these? In one sense, they are simply a mess: a jumbled medley of the local environmental and the climatic, the long term and the short term, the subjective and the objective. Yet in another, equally relevant, sense, they are accurate and perceptive answers. Although none of the answers may speak directly to climate change in a global climatic sense, the respondent in each case has simply interpreted the question in the context in which it was asked or, put more simply, they have answered the question that was asked. The Khmer word for climate: *arkastheat* (អាកាសធាតុ) does not directly translate to the scientific meaning of the term in English, but includes characteristics also of the word environment, *boresathan* (បរិស្ថាន). And there is a deeper level at play also. For most people who use it, *arkastheat* – as with equivalent words in many languages – has not yet made the scalar leap that the word environment has in global Northern public discourse. Just as it used to be in Europe, the climate still generally means your immediate climate: weather, air quality, chemical pollution (see my previous book, *Carbon Colonialism* [Parsons 2023] for a further discussion of this). This is not ignorance or confusion, but a direct and useful response to a *personally* important topic.

That these interpretations of the climate as a frame are either considered to be wrong, or merely elided by methodologies that ignore the subjective and lived experiences of climate, highlights the pre-eminence of Eurocentric research methods that undermine the knowledges and experiences of marginalised populations (Keikelame and Swartz 2019). Yet it also alludes to the vast challenges in countering any such hegemonic scientific framing. Mitigating scientific hegemony means compromising the aggregation of knowledge itself, placing established scientific framings on an equal footing with viewpoints that cross-cut and undermine established definitions. This may not be comfortable, but whether it is done or not, the choice is political.

After all, knowledge is never value neutral. Choices over the sorts of knowledge that one chooses to create and to endow with authority carry political weight (Hulme 2018), making the pursuit of environmental knowledge an unavoidably political act (Hulme 2018). And its non-pursuit is equally so. The decision to reject the experiential framings of those who live their own environment is a reflection, above all, of power. Where ‘projections and calculations are employed to legitimise policies and interventions’ (Turnhout 2018, p. 363), he who controls the analytical frame controls the solution and its

implementation. In the parlance of [Laclau and Mouffe \(1985\)](#), the repression of competing ideas in favour of 'experts, models, and financial metrics' ([Wissman et al. 2024](#), p. 711) entrenches the lines of equivalence which construct broader campaigns and coalitions between different demands and identities ([Griggs and Howarth 2019](#)). The control of climate knowledge thus facilitates not only the construction of environmental narratives, but also the framing of environmental subjects. Whether victim, vulnerable, farmer or Cambodian, these categories are built into environmental data in a way that precludes alternative 'cosmologies' of environmental experience ([Sultana 2022](#)).

This recognition not only facilitates a better understanding of the impacts of climate change, but it opens the door to a much more sophisticated, socially and economically sensitive perspective on how these impacts are distributed. In the 21st century, no village, or even any person, is an island. People and places are linked into multi-scalar systems of economy, mobility and mutual dependency. How somebody perceives the climate may therefore have as much to do with needs and pressures hundreds of miles away as those that surround the perceiver. Two-thirds of a village may be in the grip of an extended drought, but the third whose migrant family members have helped them to build a well experience the climate quite differently from the remainder. Flows of money like this construct social geographies of climatic inequality, even within a single climatic data point. What's more, by shaping the thumbnails that punctuate and structure the geography of deep environmental knowledge, these social, economic and emotional ties bridge space, 'telecoupling' ([Friis and Nielsen 2019](#)) – or mutually connecting distant environments – through the actions of the humans who populate them.

This is a point that seems less oblique in practice than in theory. A person's experience of the climate, as we have seen, depends to a great extent on what they have and what they do. Yet in an increasingly mobile and complex world, a person's assets and livelihoods are more than local. They depend on practical networks of obligation and assistance that support livelihoods and smooth shocks. When a garment worker is laid off, suspended or has their overtime cut back, then assistance will likely come from rural areas in the form of rice, borrowed money or an invitation to return. Conversely, when a shock hits rural areas, it is garment workers left to foot the bill. Migrant relatives of flood- or drought-hit areas are expected to increase their remittances to cover the cost of failed harvests, replanting and subsistence in the meantime. As the mother of a garment worker in one drought-hit village explained of her daughter, for example:

her salary is only 180\$, and she has to send me 100\$ each month. She keeps some money for rent and food, but I generally use the money to buy rice here and send it back to her because rice in Phnom Penh is more expensive. (Interview with Yay Ti, rural mother to a garment worker, Poup Chamnat Srok, 31 March 2021)

And accounts like these are common. As a union representative explained of his colleagues, rural pressures from miles away:

...affect the garment workers [here]. When there was a drought, they had to send more money to their hometown. The garment workers have to work harder, [but they] cannot get much salary [so] they cannot support their family much at all. That's why some garment workers have to find part-time jobs, working in a shop or any restaurant, after working in a factory for 8 to 10 hours per day. It affects their health, [but] it is about what is needed in their family. They have no choice, so they have to work [even] harder to support their family. (Interview with Bora, union representative in a Kandal factory, 19 January 2021)

Reflecting stories such as these, [Table 10.4](#) highlights the relationship between remittances sent from migrant workers to their home households and the 10 indicators of climate change perception most closely linked to farming and agriculture. In all 10 cases, the total amount of annual remittances received was higher on average amongst those perceiving changes to the climate than

Table 10.4: Mean remittances of those perceiving and not perceiving changes in climate change indicators

Climate change indicator	Mean annual remittances of those not perceiving (USD)	Mean annual remittances of those perceiving (USD)
Number of rainy days	1555	1759
Unseasonal rain	1606	1773
Groundwater depletion	1712	1756
Changes to the wind	1321	1860
Changes to droughts	1445	1758
Changes to number of hot days	1133	1913
Changes to soil fertility	1305	1983
Changes to soil erosion	1654	2125
Changes to weeds	1556	1774
Changes to pests	1665	1743

Source: National Climate Perception Survey 2021 ([Parsons 2021](#)).

for those not doing so. In certain cases, such as the perception of changes in soil fertility – a key indicator of agricultural yields – the difference is over 50%, whilst in indicators relating more directly to shocks, such as drought perception, the data show a difference of 22%. Simply put, households who receive higher remittances are more likely to perceive climate-linked environmental change. For them, the environment is defined by economic flows originating hundreds of miles away.

These data support the myriad stories related by migrants and their families, which consistently highlight the importance of modern sector workers in keeping farming afloat in a changing climate, but also the pressures placed on workers to do so. It is very difficult, in other words, to be *only* a farmer in 21st-century Cambodia. The need for external income is so substantial that migrants, whether overseas or domestic, long term or circular, are an integral part of the basic practice of agriculture. Without the money from a garment, construction or other waged worker coming in, farming becomes a debt-funded lottery, as evidenced by a pair of recent studies (Bliss 2022; Guermond et al. 2022) outlining the growing volume of land sale linked to debt in Cambodia. As of 2022, agricultural land sale resulting from debt default was running at over 5% per decade, with the bulk of these originating in households that do not have access to migrant income. In households whose *only* income comes from farming, the ratio of household debt to income is 167%, more than double the ratio of those that do contain migrants, at 80% (Guermond et al. 2022). Without migrants, agricultural debt tends to move in only one direction, as exemplified by a village chief in Preah Vihear province, in the northwest of Cambodia, who highlighted the complex interconnections between climate-linked pressures such as droughts, local environmental degradation and migration:

From 2017 to 2019, the [environmental] situation was getting serious and we could not earn more money [to cope]. We went to loan some money from microfinance, but we didn't know what to do with that money. When we grew rice we couldn't sell it at a high price. Then we could not sell a lot of cassava. We didn't feel good ... Previously we could find a lot of fish and some good trees. Nowadays, we cannot find them anymore and there is more population now [too]. There are 759 villagers, there are 208 families and 170 households ... Some people didn't have a field to grow rice, so they went out [migrated] for work. Some people went to Thailand. My nephew is living in Thailand right now. (Interview with Village Chief, Poum Bomnol, Preah Vihear, 25 March 2021)

This is a frame, in other words, that cross-cuts multiple discrete areas of policy and scholarship. Migration, climate, microfinance, Cambodia's demographic bubble: each subject to its own set of policies. Yet the vital interconnection laid

out so clearly in the village chief's account of his village's recent travails is almost entirely absent from policy, not only in Cambodia, but almost everywhere. Remittances are a key means by which vulnerable communities cope with the impacts of climate change (Musah-Surugu et al. 2018) and have become a 'life-line' of resilience for many (Orozco and Yansura 2013, p. i). Yet despite the vast size of these flows – internal remittances from the Cambodian garment industry alone are estimated at close to 1 billion USD based on national surveys (Care Australia 2017), whilst globally international remittances are estimated at over 700 billion USD (OECD 2020) – space continues to reign supreme in policymaking, persistently relegating the social systems in which people and places are embedded to secondary status. Knowledge silos like these strip society from the climate and its management. Unbinding and discarding the web of interrelations that govern the experience of environmental change, they petrify its dynamism. What remains is a dissection, with few clues to the living form of a system defined by change, complexity and care.

Yet as the data in this chapter demonstrate, an alternative arrangement is possible: one in which networks of actors and their climates are interlinked not merely by top-down spatial modelling, but by the grounded materiality of livelihoods and assets. Indeed, what we can read from these data are alternative lines of equivalence, which transcend the spatial, foregrounding instead an environmental cosmology rooted in the lived experience of work. From the perspective of its impacts, the lines of equivalence that connect the perception of the climate are thus not found in spatial patterns, but in working ones. To a rice farmer, a drought means crop failure; to a garment worker, it means the meagre meals that follow larger monthly payments to one's parents. To an office worker, it may mean little more than headlines in a newspaper. And it is in many cases these equivalences, not those arising from common spatial geography, that constitute the basis of a shared experience of climate change.

10.2 Climate thumbnails: from the subjective to the disciplinary

'Hellfire', read Britain's *Sun* newspaper, as temperatures in London breached a previously unthinkable 40°C in 2022 (Sun 2022). But the future those days revealed was no indiscriminate inferno. As millions of inhabitants of Europe and the US have discovered amidst the lethal heatwaves of recent years – when summer temperatures have regularly broken records – extreme weather is experienced quite differently in a room with a fan or air conditioning, or when at rest rather than at work. Yet as citizens of the global South have long known, one's environment is no coincidence. Exposure to a heatwave, like any other form of environmental exposure, is the product of multiple converging inequalities. And these same vulnerabilities may be familiar in quite different

environments. Just as struggling families in Britain face 'heat or eat' trade-offs, so must struggling families in Cambodia endure heavy, outdoor work in the hottest part of the day. Though worlds apart climatically, both heat and cold exposure are produced by similar forms of social marginality.

Amidst the sizzling factories and scorching construction sites of Cambodia the same principle applies. Exposure to the rigours of the environment is structured by interlocking global inequalities (ILO 2019), leading both to far greater impacts of heat stress in the global South, and local and regional ones in sites of exclusion and marginality. Those who are relatively socially disadvantaged are likely to find themselves disproportionately affected by temperature extremes (Hansen et al. 2013), with ethnic, political and social marginalities creating key focal points for negative heat impacts. These inequalities of exposure have always existed, but climate change is intensifying them, accentuating the segregation between 'the cool haves and the hot have nots' to such an extent that 'in the US, for example, immigrant workers are three times more likely to die from heat exposure than American citizens' (Fleming et al. 2018, pp. 1–2).

It is becoming, in other words, increasingly clear not only that the world of work is intimately connected with the changing natural environment (ILO 2019), but that the same injustices and precarities that structure it are shaping how the impacts of climate change manifest. Climate change exacerbates precariousness, disrupting work and intensifying individual risk (Newman and Humphrys 2019). Working arrangements, in particular their relative security or precarity, shape both a worker's direct experience of environmental pressures and their ability to manage or mitigate them. These conditions are socio-economically influenced not only in a local sense, but by global regimes of politics and power from colonialism to neoliberalism. Interpreting the ways in which these multi-scalar structures of power shape the impact of climate change represents the next frontier of climate analysis and policy.

The crucial work to bring the social dimensions of environmental vulnerability into the analysis of climate change impacts is already underway. Yet, in the spirit of reflexivity that has driven this book, it is perhaps of equal relevance to ask why such questions have for so long remained at the margins of climate science. The social inequalities of climatic exposure are, after all, so well known as to be a feature of history and literature as much as social science. From Charles Dickens's depictions of a frozen London in *A Christmas Carol* to Arundhati Roy's depictions in *The God of Small Things* of a heatwave in Kerala, the world is well aware of the inconsistencies and injustices of extreme weather. Yet the continued, undergirding assumption that it is space, rather than people, networks and societies, through which the impacts of environmental change are channelled represents perhaps the ultimate climate thumb-nail: known in a general sense but always sufficiently out of focus to allow this ill-fitting logic to pass scrutiny despite clear examples to the contrary.

We may know that social inequalities play a role, in a general sense, in channelling the impacts of climate change, but the dynamics of these

structures – crucial questions over how these inequalities are changing and evolving over time – remain beyond the purview of scientific analysis. More so still the reasons for these inequalities. Questions around *why* the inequalities that structure climate change impacts persist and deepen are abandoned to the long grass of moral speculation. They are idiosyncratic failures of governance at their most specific, but more commonly simply *ex ante* characteristics of a site; just the way things are. What appears from a human's eye view to be an inextricable and holistic condition, livelihoods played out amidst competition for resources and environmental security, is sliced and segmented in its analysis: certain parts elevated to objectivity, others consigned to subjective interpretation, and others still excised entirely.

By ensuring that this slicing is sufficiently consistent across groups and geographies, the inherent contradictions between lived experiences and the frameworks employed to interpret them are rendered stable and even naturalised. Concepts such as efficiency, resilience and risk are employed sufficiently flexibly as to embed them into various contexts in a variety of different ways, generating tensions that, 'rather than being resolved, accommodate contradictory aspirations' (Broto et al. 2023, p. 986). Hegemony is thus achieved not through the application of an iron doctrine, but a woolly one, whose strategic malleability is hidden in its own ubiquity.

That the most tangible, embodied, dimensions of the changing climate have hitherto tended to remain a tacit, local knowledge, left to the side of the global climate breakdown narrative, speaks to the anti-political nature of much climate discourse. The boundaries between the scientific and the political are situated in such a way as to localise and marginalise the social, rendering it indistinct and contested in contrast to the clarity of environmental systems. Much as the topography of public knowledge is shaped by the interests undergirding public discourse, scientific and policy lenses reflect upstream interests and the politics of the possible. The way we understand climate change scientifically is therefore a function of the politics of knowledge (Rice et al. 2015): a point with two implications.

First, the 'dragons' of your contemporary scientific knowledge – the themes and frames which remain persistently beyond the focus of scholarship and research – are there for a reason. You know what you know because it is deemed useful and necessary to somebody. Whose voice is loudest in the deeming is therefore a question not only of need but of power. Yet if this first point offers realism, a second offers hope. By seeking out alternative climate knowledges, you are therefore seeking not only to fill gaps, but to redress this imbalance of power by bringing to light environmental logics whose marginality reflects a wider disempowerment. Climate thumbnails, the known half-knowns of environmental scholarship, represent a crucial political frontier. Whether attributing value to subjective climate perceptions, observing how complex mobilities reconfigure environments or recognising the politically charged precarities that shape the impacts of climate change, alternative climate knowledges represent a subaltern challenge to the politics of climate

change. Whilst climate capitalism's 'system-friendly reforms are a formula for continuity in change, managed from above' (Carroll 2020, p. 14), these voices from below constitute the opposite: a destabilising viewpoint illuminating the presence of different paths and alternative futures.

Note

- ¹ In simple terms, statistical significance refers to the likelihood that a given relationship is not due to random chance (otherwise known as the null hypothesis). Thus, 95% confidence means that there is a 5% chance or less that an apparent relationship is due to random chance, whereas 99% confidence indicates a 1% chance or less. In Table 10.2, one asterisk indicates 95% confidence, two asterisks indicate 99% confidence and three asterisks indicate 99.9% confidence.

11. Climate control: over to you

The message of this book is a simple one. After decades of inaction, unmet promises and backsliding, the climate impasse may loom larger than ever. Real change feels further and further away. Yet to fixate on one blocked path is to miss myriad alternatives, big and small. Human actions over the last 300 years may have unleashed a warmer and less stable world; one in which hazards like floods, droughts, heatwaves and landslides have hence become a fixture for a hundred generations (IPCC 2018). Yet despite this, ordinary people retain considerable powers to mitigate those impacts. You can begin to stem the tide; to say this far and no further. And as the stories throughout this book have shown, you have far more tools at your disposal than you might think. The global economy's thirst for extraction may seem unslakeable, yet it appears so because it is locked in by deeply embedded norms, assumptions and frameworks that are subjective and interested, but no less universally applied for that.

On the one hand, this is bad news. By rendering social scientific analysis, in all its multiplicity and subjectivity, imperative to climate change scholarship, this book has highlighted how much more work is to be done to understand our rapidly changing world. On the other, though, it offers something many environmentalists have felt starved of in recent years: hope. Recognising the power and subjectivity of the lenses through which we observe and narrate the climate reveals a new and powerful set of levers with which to shape its impact. The changing climate, from this perspective, acts not only through emissions, but through everything we do, make and think. Yes, this is an intimidating prospect analytically. But it leaves you with a whole society of options to reduce the harms effected by the carbon frenzy of recent centuries.

And there is more to it, also, than this. One of the core messages of the 10 preceding chapters is the centrality of economic relations to the experience of climate change. Many people may face the same hazard, but their experience of it is rooted in social and economic inequalities over which governments have immediate power. Reducing the number of hazards in our warmer world may be beyond current technologies, but reducing the impact of those hazards is a task firmly within our grasp. We cannot prevent heatwaves, but we can provide fans, we can reduce working hours at the hottest times of day, and we can demand these standards throughout our supply chains. We cannot prevent low rainfall, but we can mitigate the impacts of drought, ensuring that its worst impacts are not shouldered by those with the least capacity to bear

it. So, whilst our influence over the climate as a meteorological phenomenon may be limited, the climate is far from *only* meteorological. In its impacts on the world it is cultural, social and economic: all spheres over which people and politics wield substantial control still.

This is heartening. Yet amidst this great diversity of options, the aim of this book has also been to explain why our choices often appear so limited. Climate change is not an issue beyond human technical capacity to 'solve'. Amidst the innumerable multi-scalar details of climate policy, the elephant in the room has always been energy: a sector which, whilst disaggregated, variegated and complex, accounts for almost three-quarters of all global emissions (Ritchie and Roser 2020). Aviation and shipping present greater challenges to transition from fossil fuels, yet these much-discussed realms constitute only 1.9% and 1.7% of global emissions, respectively. Energy use in buildings, by contrast, accounts for 17.5% – 10 times more – and is solvable in principle through the kind of energy transitions that are, in parts of the world, already slowly underway.

Indeed, solar energy prices have fallen so substantially in recent years – shrinking almost 2000-fold from 126 USD per Watt in 1975 to 0.23 USD per Watt in 2022 (Ritchie and Roser 2024) – that it has now become the 'cheapest ... electricity in history' (IEA 2020). Why the pace of transition has not matched that of technological development is a problem often correctly ascribed as political (for example, Giddens 2009), but incorrectly framed as an intractable problem of political or, more commonly, public will (Kamarck 2019). In reality, that will has long existed. Successive polls reveal a majority of people in favour of taking strong action on climate change, even if it will cost them money. Some 88% of EU citizens support the goal of net zero by 2050 (European Commission 2023) and even in the US, where the climate is a notoriously divisive issue, a majority of Americans backed the climate and energy bill passed by Congress in 2022 (Orth 2022). The problem is that action continues to be framed in terms of a more intractable problem still: 'can we have economic growth *and* tackle climate change at the same time?' (Serin 2022, p. 1, emphasis added). And this is no accident. Indeed, rendering the problem intractable is a key part of this narrative. As Bill Gates summarised on his blog in relation to solar energy:

Think of some inventions that help fight climate change. What came to mind first? I bet you thought of solar panels and wind turbines. In my experience, that's what people point to when they think about reducing greenhouse gas emissions. They're not wrong. Renewables are getting cheaper and many countries are committing to rely more on them and less on fossil fuels for their electricity needs. That's good news, at least in places that get a lot of sunlight or wind. Everyone who cares about climate change should hope we continue to decarbonize the way we generate electricity. I wish that were enough to solve the problem. Unfortunately, it isn't. Making

electricity is responsible for only 25% of all greenhouse gas emissions each year. So even if we could generate all the electricity we need without emitting a single molecule of greenhouse gases (which we're a long way from doing), we would cut total emissions by just a quarter. (Gates 2018, p. 1)

For such a high-profile public figure this is a startlingly blunt piece of sophistry. It may well be true that electricity generation accounts for only a quarter of carbon emissions *at present*, but any conceivable path to net zero sees it becoming a far larger proportion of a rapidly diminishing whole. Energy use in transport, for example, is currently 16.2%, part of which may be managed by reducing global freight volume and part by electrification. Neither this nor the 25% of global emissions used in industry reduces the importance of clean energy. It simply necessitates each sector of the global economy to find the best new ways to use it.

It doesn't stand up, but it doesn't have to. Arguments such as these are not necessarily intended to be convincing, but rather to redirect political pathways into the long grass of intractability. The invocation of 'grand challenges' (Gates 2018, p. 1) not only distracts from the urgency of immediately achievable policy goals – the elimination of coal from the national grid and supply chains, for example – but diminishes the expectation that major change will be achieved in the near future. It is, after all, far more politically acceptable to fall short of a 'grand challenge' than an open goal. And this, as this book has aimed to show, is not merely a description of the problem. It is the problem: power and interests playing out in the architecture of your thinking on the climate; stifling radical policy, disempowering popular will and deflating movement building for change.

This, though, is not news. The ways in which corporate actors have contributed to this process has been well documented, not least since their high-profile 'capture' of COP28, chaired by a Saudi Arabian oil executive (Mooney 2023). Phrases of the sort used by Saudi Aramco, such as 'even under the most aggressive climate models, demand for hydrocarbons, though declining, will continue to play an important role in the energy mix for many years to come', or 'in many growing markets there will be a need for hydrocarbons well beyond 2050' (Saudi Aramco 2022, p. 2), deploy a well-practised blend of obfuscation, misdirection and delay. And it is a stunningly successful blend at that. By displacing debates undergirding policy from discussions which might have an immediate and negative impact on corporate actors – including, but not limited to, enforceable global emissions taxes (Skelton and Allwood 2017); a legally mandated and appropriately penalised transition away from fossil fuel use by energy companies; or regular independent assessment of supply chains to tackle the shielding of key industrial sectors (Grubb et al. 2022), climate discourse has consistently been sidelines in favour of more amenable and less radical territory.

By establishing a widely understood set of conceptual frames as boundary markers and reference points on climate change, the dominance of these

narratives shapes climate action without the need for more direct intervention. Yet in doing so, they also enact a second, opposite (and arguably more important) dimension of control over the terms of climate change policy: shaping not only which suggestions are raised and which pathways considered, but which are *not raised* and which are *not considered*. As shown in [Chapters 8–10](#), by restricting knowledge on certain policies – in the realm not only of public policy but also science and scholarship – the landscape of climate change discourse has come to be dominated by thumbnail knowledges: discursive lacunae characterised by the illusion of depth. By structuring policy thinking in this way, the articulation of these thumbnails not only discourages the pursuit of further research, by reducing the clarity of its absence, but also discourages the usage of what already exists by masking its rarity and value.

This might well dampen your spirits. On the one hand, it demonstrates that the knotty problems in which you find yourself bound are no accident, but the product of interests aligning in opposition to action. On the other, the invocation of power presents an unwelcome analytical challenge. Power is notoriously hard to interpret objectively ([VeneKlasen and Miller 2002](#)). Not least because you can't see it. Rather than a clearly identifiable target, power is, as summarised by Lisa VeneKlasen and Valerie Miller, 'both dynamic and multi-dimensional, changing according to context, circumstance, and interest. Its expressions and forms can range from domination and resistance to collaboration and transformation' ([VeneKlasen and Miller 2002](#), p. 39). Combined with the scale and breadth of the climate emergency, this makes drawing a thread from interests to impacts extremely challenging. Yet for all this it is possible. And it is urgently necessary.

So, action is necessary. That much is clear. But it is necessary first to understand why previous efforts have failed. And this gives rise to certain questions. How, for example, do particular policy discourses or programmes become hegemonic in the first place? Through what logics and mechanisms do certain policy discourses outcompete others? How do they entrench that power? Most importantly, in what ways, and how, might such dominant orders be resisted and challenged? The answers, it is increasingly recognised, lie not in further theorisation, but in connecting the various arenas of scholarship and policy towards an integrated understanding of how hegemony emerges and persists in our complex and multi-scalar global environment ([Griggs and Howarth 2019](#)).

This book has sought to confront the hegemony of this trajectory through a series of three necessary syntheses: first, of hegemony scholarship with the wider landscape of environmental social science; second, of contextual foci on the various dimensions of hegemony – from global governance to water management; and third, of the resulting conceptual frame with the lived, empirical reality of climate hegemony. From this standpoint, the book provides a basis not only to interpret these complex interrelations, but also to challenge and confront them: to read the interests which underpin climate governance and

elucidate their connection across and between scales. So, towards this end, the book has sought to address the problem via the conceptual foundations of hegemony: the objectivity, universality and necessity that cement the direction of the status quo, shrouding alternatives beneath the disinterest afforded to the impossible. Aiming to rupture these certainties, it has presented three alternative pillars on which to build a new environmental paradigm: *subjectivity*, *partiality* and *choice*, each of which contains the tools to deconstruct its hegemonic counterpart.

Within the frame of *subjectivity* is an exposition of the metaphorical and categorical domination of the frames shaping climate analysis and policy. Within the frame of *partiality* is a challenge to the tools of narrative and scalar sophistry in the communication of climate discourse. Whilst in the final frame, *choice*, the aim has been both to elucidate fragmentary thumb-nail knowledges: areas of understanding that are key to the circulation of interests in environmental practice for their capacity to conceal alternative environmental cosmologies. Separately, each of these theoretical interventions describes one aspect of the architecture of power underpinning climate change. Together, though, they highlight something simpler: climate discourse does not describe climate change, it propels it.

As shown in the course of this book, it does so in three stages. First, dominant discourses, generally supportive of the interests of a 'historic bloc' and thus espoused and repeated by media and policymakers at multiple scales, shape the rules of engagement with the environment. Second, although partial discourses themselves may ebb and flow over time, the mutual collapse between objectivity and power ensures that this fundamental architecture – whether drawing direct relations between climate and migration, or segregating environmental risk from industrial development – remains intact. The status afforded to these durable knowledge architectures transforms an initial rationalisation into a naturalised assumption, thereby providing the stable foundation that underpins hegemonic thinking. From here, the establishment of climate hegemony is further consolidated by a third stage, as what were once lines of analytical equivalence become irreversible abstractions. And at this point, the transition is permanent. Metaphorical constructions, whether carbon footprints or net zero, cannot be reverse engineered to the empirics they describe. Rather, as categories, they transcend space and scale, decontextualising and linking policy goals, even as they are articulated by stakeholders in a variety of environments.

Climate politics, thus, do not govern the person under climate change; it creates them. First by framing environmental impacts as a distinct category to the economic conditions they meet; second, by foregrounding interested narratives on climate change impacts capable of jumping scales to influence policymaking at multiple different places and levels simultaneously; and finally, by articulating thumbnails of low knowledge to establish durable fallacies which border and delimit both policy development and knowledge creation. And there is, of course, no artifice to this, no coordination, or any need for

it. Rather, climate change as a major policy agenda is in thrall to a hegemonic atomism in which individuals respond freely and independently to market signals. Everything else stems from this.

There is just one major problem: the independent climate agent at the centre of this thinking – *homo climaticus*, we might call them – does not, in fact, exist. Under climate change, as under any circumstance, people are both infinitely variegated and deeply embedded in their social and economic contexts. Now take this human subjectivity and combine it with the mathematical impossibility of attributing any specific event to climate change. Climate change makes hazards like floods, droughts and hurricanes more likely, but it is impossible to say with certainty that any given one would not have happened in a cooler world. The populations they displace, similarly, can only be *statistically* linked to climate change. Compare movement between two regions from one decade to the next and a clear relationship might be detected, but zoom in to a human's eye view and the climate credential dissolves once again, dissipated into probability. And so *homo climaticus*, subject of 10,000 urgent headlines, is revealed up close to be a mirage. The person remains, the pressures and the hazards and the hardships remain, but the label itself disappears.

Viewed in this light, climate vulnerability is revealed as an unembodiable concept. Yet it is no less powerful for it. Rather, the construction of the person under climate change as a focal point and policy agenda serves the wider purpose of turning the tables on the victims of climate change, 'weaponizing vulnerability' by turning threatened populations into threatening ones (Thomas and Warner 2019). And though they may not have been planned, *homo climaticus* has become increasingly essential in this role: a lynchpin restraining the heaving contradictions of an increasingly unequal and extractive global economy. If they did not exist it would be necessary to create them. So, we do create them. As scholars, scientists, policymakers and the public, we reiterate, strengthen and entrench the frames, narratives and knowledges that transfigure a climate-changed human being into a 'threatening, monstrous, figure from the future' (Baldwin 2016, p. 80). And in this regard, at least, it is highly successful, facilitating a policy landscape that actively necessitates intervention and control beyond the borders of the state.

The accounts shown throughout this book have highlighted the various levers which effect this influence at multiple scales. Aggregated together, these processes result in a clarified imaginary of climate change impacts, segregated from the economic processes that undergird them. Yet they also drive it, via irrigation processes attuned to environmental rather than economic realities, legal frameworks that fail to account for the economic processes that shape environmental breakdown, and scholarship tightly bound to a particular set of places, methods and frames. As a result, the fossil fuel industry is not merely resilient to the issue of climate change, but stronger, bigger, more powerful than ever, *because* of the issue of climate change. The annual

statements of Gazprom and Saudi Aramco – both announcing a succession of record-breaking profits in the early 2020s – bear tragic witness to this fact.

Far from undermining the activities of leading polluters, climate governance has in many cases strengthened the hand of the worst environmental abusers by providing a new lever of power over livelihoods. The government of Cambodia, amongst a great many others, is not undertaking rear-guard action against its poor environmental performance, but is actively strengthened by its environmental policy agenda. The emphasis of common but differentiated responsibilities, the targeting of Vietnamese minority populations on the Tonle Sap and elsewhere: these are proactive and powerful forms of governance and the government is more powerful for them, not less. And this power, naturally, has come at the expense of others. The people governed by this environmental compact – here and elsewhere – have not gained a voice but lost one, their capacity to push back against the politics of their expropriation undermined by newly empowered technocratic narratives of progress, now allied to the anti-politics of sustainability.

And this is no great novelty of the climate breakdown era. On the contrary, sustainability, like any political topic, is an infrastructure through which power circulates. Knowledge and policy on climate change don't only reflect political interests, but entrench and support them at all scales. The ways in which we discuss climate change and what to do about it are not only co-opted by powerful interests, from fossil fuel lobbyists to national governments. They actively entrench the power of those bodies by bending public, political and scientific knowledge to their will. Yet this circulation of power requires characters to function, agents either to help or to hinder, focal points to embody the practice of policy, into which role steps the climate-vulnerable body: as a rebalancer of circulation, a reconfigurer of threatened populations into threatening (Thomas and Warner 2019), a delimiter of the frames of possible action.

All of which might seem a rather oblique mechanism: vulnerability as mediated through conceptual and discursive frames. And this is precisely the point. Power, after all, lies less in the answers given to climate questions than the manner in which they are asked. By defining the terms of engagement with climate change, the range of possible answers is reduced; the hand presenting future pathways forced down predefined and predictable channels. In effect, the apparent universality of these frames operates as a 'regime of obstruction', extending across scales, all the way from the everyday to the global (Carroll 2020, p. 9), connecting what appear to be local decisions to a wider landscape of institutions and governance. It is only by critically engaging with these terms that the interests underlying them may be seen and a broader range of futures revealed. How, for example, are these frames articulated and narrated in various contexts? How does this emplotment foreground or omit certain actors? Asking these questions is the first step to confronting climate hegemony.

Take the [IPCC's \(2018\)](#) special report on climate change impacts, for example, which states that exceeding a 1.5°C target would lead to, amongst other impacts, a significant increase both in poverty and disadvantage, and specific health-related impacts linked to extreme or prolonged heat:

Poverty and disadvantage are expected to increase in some populations as global warming increases; limiting global warming to 1.5°C, compared with 2°C, could reduce the number of people both exposed to climate-related risks and susceptible to poverty by up to several hundred million by 2050 (*medium confidence*). ([IPCC 2018](#), p. 9)

In addition:

Any increase in global warming is projected to affect human health, with primarily negative consequences (*high confidence*). Lower risks are projected at 1.5°C than at 2°C for heat-related morbidity and mortality (*very high confidence*). ([IPCC 2018](#), p. 9)

In themselves, there is little fault to be found with these predictions, which draw on a wide range of available evidence to highlight key areas of potential risk under different scenarios. Yet in striving for political neutrality, these forecasts nevertheless entrench a governance regime on climate change that bears little resemblance to a reality deeply embedded in the global political economy. As outlined in broad and longstanding literatures on development ([Ferguson 1994](#)) and disasters ([Kelman 2020](#); [Oliver-Smith et al. 2017](#)), poverty, even under extreme circumstances, is never a purely environmental phenomenon. Disasters happen 'by choice' ([Kelman 2020](#)): the product of structures and processes subject to high levels of shorter- and longer-term human control. Indeed, it is not the environmental hazards themselves that affect lives and livelihoods, but the combination of those hazards with the socio-economically stratified inability to avoid them that does so ([Connor 2022](#)). Framing this merely as evidence of the need for adaptation effectively dislocates these lethal structures from the interests that produce them, rendering them not only apolitical, as intended, but anti-politically divorced from the wider mechanism through which those structures are continually produced, reproduced and transformed ([Ferguson 1994](#)).

By turning attention to how climate policy shapes the experience and impacts of the changing climate, this book has aimed towards an account of how prejudice, distinction and narratives of place – at multiple scales and modes of formality – are constructed around environmental problems. Seeking, in part, to confront the 'myth' of climate policy as a rational and disinterested process ([Symons 2014](#), p. 266), the cases here have sought to demonstrate how the differential experience of climate pressures drives not only economic inequalities, but political and social ones also. And from this

standpoint, it has aimed to convince you, the reader, of one thing above all: the need to repoliticise the study of climate change impacts, in order to better understand interests that construct and sustain marginality amidst the dynamism of the changing climate.

On a practical level, this means interrogating the validity of the narratives, containers and terminologies which structure our understanding of climate change. Above all, it means doing so in a manner grounded in the experience of local communities, so as to identify the gap between the lived experience of the environment and the containers we use to measure it. That gap, the margin between these two frames, is where the politics lies. And interpreting it means addressing 'both epistemic violences and material outcomes' (Sultana 2022, p. 3). By 'weaving through such mediations' (Sultana 2022, p. 3), it is possible to arrive at a new and fleshed-out understanding of climate hegemony in practice: an account not of dislocated environmental trends, but of socially mediated environmental power grounded in lived experience.

Why it has taken so long to bring climate policy down to Earth in this way is a topic in itself. In an era in which climate change has become as ubiquitous a presence in the pages of social scientific journals as it has in the media, political discourse and the minds of the public, it feels uncanny that as recently as 2010, the late sociologist John Urry had cause to lament that 'the social sciences have been nowhere – barely even Johnny-come-latelies' on the topic (Szerszynski and Urry 2010, p. 3). Yet discomfiting though it may be, facing up to the adolescence of climate scholarship in the social sciences is important. On the one hand, it means recognising the vast achievements of social scientific disciplines in building a broad and original base of knowledge on this vital topic. On the other it means exploring the reasons that scholarship has proceeded along certain pathways whilst leaving others relatively untouched. And it means, above all, understanding the politics that underpin these disciplinary directions.

Perhaps more importantly still, it means speaking to the grave abuses of power enacted by scholarship that excludes itself from analysis. Yet help is increasingly at hand. A growing array of voices from the global South are foregrounding an awareness of the deep imbrication of power within the scholarship and policy of environmental management, showing – as decolonial scholar Farhana Sultana expresses it – how 'epistemology and materiality' combine to shape the 'praxis of material outcomes and lived experiences' (Sultana 2022, p. 6). Above all, these new lenses offer a conceptual toolkit to interpret these multiple scales and legacies of power: a crowbar, scalpel and mirror to unpick the deadwood of our own scholarly assumptions. Yet for all that, this is a field still, only now, emerging from its chrysalis, stretching to bring its full array of powers to bear on the topic of climate change; to extend and question the terms it has inherited from elsewhere.

By evidencing the subjectivity of the frames we used to interpret the climate, the partiality of so much of the evidence used to support and naturalise the frames, and the many choices and alternatives hidden behind the

environmental policy grooves we are so settled in, the goal here has been to confront the many dimensions of climate hegemony as a single, connected entity. What remains is not an alternative edifice, but a newly liberated eye. And it is with this unshackling in mind that this book has aimed towards forging a new pathway in the social scientific analysis of climate change, constructing knowledge against the pervasive scalar grain of globalised thinking by stubbornly foregrounding the human on either side of the analytical lens.

This means, in some respects, reexamining the foundations of climate analysis; building upwards and outwards from the construction of society to face the problem of climate breakdown. Rather than analysing from the climate down, this new impetus must instead progress upwards from the social to the atmospheric, to think and write with those at the coalface of climate breakdown (Sultana 2022) as a standpoint from which to push back against the dominance of climate governance. And as climate scholars, as policymakers and as people under climate change, you must above all remember to accompany your subjects under the microscope; to ask not only how you can fill gaps in your knowledge of the climate, but how – and *for whom* – those gaps and others came to be.

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CLIMATE HEGEMONY

CONFRONTING THE POLITICS OF ENVIRONMENTAL IMPASSE

Laurie Parsons



'Deftly moving from the global to the local, the general to the particular, this book demonstrates why, when it comes to climate change, we need analysis that holds all scales close.'

– Jonathan Rigg, Professor of Human Geography, University of Bristol

Climate action is at an impasse. Its political opponents are stronger than ever, its advocates powerless. Almost every major government and corporation expresses their commitment to tackling climate change, yet decades of discussion, governance, and action have failed to stop carbon emissions advancing to record annual levels. How has so little been achieved for so long on such an urgent issue?

In *Climate Hegemony: Confronting the Politics of Environmental Impasse*, Laurie Parsons shows how the architecture of environmental thinking has been locked into ineffective pathways. We don't need to be coerced into inaction on climate, because our understanding is constrained by metaphors, rhetoric and assumptions so embedded we have long since ceased to see them.

To confront this, *Climate Hegemony* brings us a human's-eye view of the climate crisis, building up from lived experience to reveal the interests and politics that underpin the impasse. Drawing on almost two decades' research at the frontline of global development in Cambodia, Laurie Parsons reveals the chasm between how climate change appears in a newspaper, or a policy bulletin, and how it appears to those immersed in the places it affects. From this perspective, the limitations of current environmental thinking become clear, but so too do a great many alternatives.

In this powerfully argued work, Parsons set out how, if we were to rethink the perspective from which we understand climate change, we can build knowledge from and for marginalised communities, from the ground upwards, challenging the impasse and creating new pathways to address and adapt to the social impacts of climate breakdown.

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