RELATIONS ON THE RIVER BEANE

HEALTH AND PUBLIC INTIMACY IN AN ERA OF UNCERTAINTY

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Declaration

I Maddy Pearson, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

This thesis traces the multiple ways in which individuals relate to the River Beane, an increasingly waterless chalk stream in Hertfordshire, South-East England. It notes how a sense of uncertainty which is social, environmental, climactic, and now too pandemic, comes to be reflected on, experienced through, and in some cases produced by virtue of these local river relations. Based on sixteen months of multi-sited ethnography the thesis engages anthropological theory and methods – with geography, history, and interdisciplinary social science work – to shed light on the myriad ways in which peoples in Hertfordshire, through these relations, come to question authoritative ways of knowing and enacting health for the river, its non-human life, and the humans connecting in and through it.

In the first of three data chapters, concerned local parties decry the death of the River Beane. Death here is enacted as a narrative, metaphor, and as a powerful call to arms, aligning the River Beane with a wider politics of chalk streams in 'crisis', and lobbying for more connective, more-than-human relationships for the future. The second data chapter traces encounters of boundary maintenance and health-as-separation, discussing their temporal, spatial, and species inflections, and noting how the uncertainty wrought by the coronavirus worked to disrupt them. The final data chapter homes in on peoples traversing the boundary of land and water, exploring the relationship between rising numbers of river swimmers on the River Beane, a time of pandemic uncertainty, and emerging enactments of health. The discussion proposes an analytic of public intimacy to make sense of these river engagements as embodied desires for connections which are more-than-human, more than individual, and through which health can be sought and experienced as something connective, intimate, and public.

Contents

List of figures and photographs

Abbreviations

CMS – Countryside Management Service

CRT – The Canal & Rivers Trust

DEFRA – The Department for Environment, Food, and Rural Affairs

DWI – Drinking Water Inspectorate

EA – The Environment Agency

Ofwat – The Water Services Regulation Authority

PHE – Public Health England

PRN – Public right of navigation

RBRA – The River Beane Restoration Association

STS – Science and Technology Studies

WHO – World Health Organisation

Acknowledgements

Writing this thesis has been an unusual journey to say the least. It began by me taking a place that had always been home and positioning it as a beautiful stranger. When Hertford became a stranger, an interesting romance began. We danced around each other, revealing tiny fragments at a time of our stories. Over time we unraveled further and became more comfortable, dwelling together in a way that despite all the previous years spent in each other's presence, never seemed possible before. What I found in Hertford through my research was an intimacy and connection that allowed me, I think, to better understand what my interlocutors were striving for. So I suppose my first acknowledgement is to Hertford. Thank you for one of the most illuminating and unforgettable courtships of my life.

It is always good to start with the positives. Hertford I really do love you. This is not to say that the past four years have been a breeze. They haven't. There have been some incredibly difficult, frustrating and lonely moments. How I got back from these moments, to research, to writing, and to sanity proves that hope can emerge from unlikely places. My favourite cartoon Big Mouth, which I relied on heavily during parts of the pandemic, introduced a character in season three called the Gratitoad. The Gratitoad is a large anthropomorphised toad. This toad tells Jessie, the headstrong but sometimes insecure heroine of the show, that it is impossible to be sad when feeling grateful. In a particularly desolate stretch of the thesis, my partner Jack reminded me of this warty old creature and told me in the most gentle and supportive way to hold on to what I was grateful for. My Gratitoad list has, since then, served as emotional fuel, helping me get this thesis across the line. Alongside this emotional fuel I should probably thank salted peanuts which have, I am ashamed to say, been the complementary physical fuel.

As I munch my way through yet another bag of nuts, my acknowledgements spring forth. They are an overdue pleasure and it's a relief to write something that comes so easily and doesn't need referencing! They start where it all started for me, with my mum Susan. In the moments when my fieldwork baffled me, when I was overwhelmed, when my courtship with Hertford and the River Beane appeared dead in the water during lockdown, Susan was there to remind me that love endures. She is the reason that Hertford will always be home. The older I get the more I realise my privilege and luck that of all the people on earth, she is the one I get to call my mum. Many years ago, Susan, lover of puns, started calling me Professor/Dr Duckheim. This brilliant nickname brings together my childhood nickname of Ducky ("mother says I was a swimmer before I could walk") and the scholar whose organic solidarity influenced my first ever ethnography, which was

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Chapter 1: Why concern yourself with water?

Water is an intrinsic part of life. It is impossible to survive without formulating some kind of relation to it. It should come as no surprise then that anthropologists have long been interested in human-water interactions. These interactions were for many decades seen as illuminating cross-culturally enduring meanings imbued in water – life, flow, continuity, and also as demonstrating water relations as practices of human mastery, with the control of water being inextricably linked to the exercising of political power (Strang 2019a). While there is no doubt that water relations continue to possess such possibilities, in recent years their stability and human-focused nature has come to be questioned. Today, relations with water are seen to materialise in far more complex ways, and appear to be permeated with insecurities and grave concerns. These concerns, at their most basic, reflect a widespread shift in understandings of water's sustainability. Long considered a plentiful and self-rejuvenating bounty, water is today framed as an entity that is polluted and over-abstracted beyond sustainable levels. Governments, scholars, and people concerned about and experiencing adverse water situations, are now asking how we might secure water quantity and quality at present and for the future. These concerns over water are part and parcel of a wider awareness of human-induced environmental change – the 'fractured Anthropocene(s)' that permeate and disrupt water bodies (Kelly 2018), threatening the environmental ecologies to which they remain central.

The questions raised and solutions proposed in the face of these global concerns over water are complex and are themselves permeated with uncertainty. This uncertainty reflects the unpredictability of fresh and ocean water systems (Helmreich 2009), which are inextricably linked to increasingly unstable climactic patterns and environmental landscapes (Barnes 2014; Barnes 2016; Meybeck and Lestel 2018). This uncertainty also relates to the management of water, its commodification and fragmentation (Bakker 2003) and the regimes of power that control not just the substance itself, but popular imaginaries of this liquid (Linton 2010) and how it should be governed (Swyngedouw 2015). Water governance, the political, social, economic, and administrative systems that influence the use and management of water (SIWI 2022:para 2) take centre stage in the securing of 'sustainable' water futures (Carse 2012; Ingold et al. 2016), and yet such practices of governance are precarious (Barnes 2016) and lacking in transparency. As profits for water companies continue to soar, and despotic regimes dominate water landscapes (Strang 2016), water scarcity and pollution have intensified globally, causing yet more health (ill)effects for humans (Wells and Whiteford 2022; Whiteford and Whiteford 2005), non-humans (Clark 2017) and bodies of water (Meybeck and Lestel 2018).

At this juncture, where uncertainty looms and more sustainable and prosperous water futures appear as just another pipe dream (Rest 2019), relations with water hold ever-greater intrigue for anthropologists. Thinking about these issues from a more interdisciplinary perspective, anthropologists have begun to ask how we might facilitate more equitable, environmentally just, multispecies water futures through attention to the reality of water's agentic materiality, multiplicity, and more-than-human nature (Neimanis 2017; Strang 2019b; Strang 2020b; Taylor 2010). Agreeing with the importance of these efforts, this thesis speaks to similar questions but approaches them from a different vantage point. It starts, not by asking how might we facilitate and secure more equitable more-than-human water futures in an abstract collective sense, but by asking how are some people, in a local microcosmic setting where collectivity is not assumed, relating in a very real sense to a vessel of water.

To speak to this question, I tune in through this thesis to the multiple ways in which interlocutors relate to one chalk stream in Hertfordshire, South-East England – the River Beane. Concerns over this relatively short and inconspicuous river emerge from different vantage points, in relation to different issues, and materialise at different stretches along the river's course as well as in offices and homes far from the river's edge. Given the River Beane's multiplicity, its topographical expansiveness, and intermittent wateriness, I situate it as a water(less)scape, teasing out the uncertainties - social, climactic, environmental, and now too pandemic – that shape, are reflected on, responded to, and produced through, those relating to it. To explore these relations, I draw on a wide breadth of ethnography conducted over sixteen months. The ethnography takes me from the barren channels of the River Beane's upper stretches to its powerful flowing currents downstream, from counting invertebrates with river restoration groups to swimming alongside 'unauthorised' river swimmers, from fundraisers in private members' clubs to water company offices and the Houses of Parliament. Just as importantly, the ethnography takes me from a position in which Hertfordshire (the county in which I grew up) appears familiar, to a position in which its waters remind me of just how strange home can be. Doing multi-sited ethnography like this on a relatively short river allowed me to hold in view at all times the heterogeneity of how people relate to the River Beane, to render visible the nonwatery places where waters comes to be materialised (Ballestero 2019b), and to remain poignantly aware that relations with the River Beane are never separate from the wider world of uncertainty that interlocutors find themselves living in, surviving, and in some cases, swimming through.

As the uncertainty encircling interlocutors grows denser and hazier over the pages that follow, what does become clearer is the rhizomatic reality of the river itself and the myriad modes

through which people relate to it. This reality is one of multiplicity, dynamism and rupture. It is a moving landscape through which different interlocutors enact across their relations with the river, varying notions of life, death, absence, presence, connection, disconnection, health and wellbeing. For some interlocutors, relations to the River Beane are from the outset oriented around securing a more prosperous future for the river, its non-human and human dependents. For others, relations to the River Beane begin from more insular and even selfish standpoints, over time quite accidentally leading individuals to form deeper more intimate connections to the river, its non-human life, and to other river immersers. In noting what these relations produce, intended or otherwise, I pay particular attention to the ambiguities that arise. I note the ways in which interlocutors hold in tension seemingly incommensurable ideas on what it means for the River Beane to be living or dead, and for health and wellbeing to be experienced, or threatened, through different modes of relating to it. I recount the ways in which interlocutors hold at the same time ideas of the river as a space of risk, danger, and disease, health and wellbeing, a space for multispecies connection and separation, and the river as a space for neoliberal individual responsibility for health, while also one for deep intimate connection with bodies human and otherwise, that relate in and through water. I ask how these tensions render visible the boundaries that have been constructed and maintained (in discourse and physical landscape) to keep certain species and entities separate in the name of environmental health. Further to this, I ask how such boundaries come to be challenged by interlocutors, who in the face of uncertainties relate to the River Beane and non-humans in ways that shake the bedrock of 'authorised' ways of knowing what can be considered healthy.

In homing in on river-based relations and uncertainty in this microcosmic setting, I speak to a small but important emerging body of anthropological work, that pays attention to, and takes seriously, people's relations to local bodies of water, their temporal and topographical situatedness, and the way they speak to experiences of water governance, health and uncertainty (see Hoover 2017). Such work is important in its attention to the ways people in local contexts are viscerally 'doing' human-environmental relations, and through such practices come in some cases to think differently about what health in relation to an environmental waterscape can be.

Aligning myself with this work, I am able to demonstrate why rivers, as particular entities through which people come to engage with water, are worthy of anthropological concern. Firstly, relations on rivers allow us to see how waters come to be emplaced and made sense of physically, sentimentally, and historically, as well as how they are imagined for the future. Secondly, relations on rivers allow us to explore in detail microcosmic examples of how people engage with bodies of

water in the Anthropocene; to attend to how people's relations to water are changing as waters themselves change. Thirdly, relations on rivers like the River Beane allow us to see the foregrounding and backgrounding of different 'kinds' of water, being a river that is supported by the same chalk aquifer from which local domestic drinking water is abstracted. Finally, relations on rivers like the River Beane tells us something about water relations even where water is absent – where it defies the sense made of it as that which flows and gives life (Strang 2004). Thus rivers offer novel and illuminating ways of making sense of relations between humans, non-humans, and particular vessels of water or water(less)scapes.

Uncertainty never sleeps

This thesis was always set to be a foray into uncertainty. It was clear from my first week of fieldwork scoping that different interlocutors and different groups concerned about the river did not agree with one another. Myriad ways of relating to the River Beane were at play. Through these different relations different ideas about life, health, risk, responsibility were being enacted, challenged, sometimes secured, sometimes reformulated. Thus question after question emerged and little appeared to be answered. Was the River Beane a river anymore if it was waterless? Why was the river dry? As the research progressed, more uncertainty arose. As the CovSars2 pandemic[1] hit, new ways of relating to the River Beane were conditioned. Relating through river swimming brought further questions. Was it healthy to swim in the River Beane where its waters did flow? Who was responsible for river swimmers? What did it mean to be responsible?

The uncertainty produced through relations on the River Beane coincides with and reflects some of the concerns that permeate the present, itself experienced as increasingly uncertain. By this I mean a present in which societal concern about multiple crises such as climate change, environmental degradation, and increasingly virulent viruses come to make the present feel particularly uncanny (Bryant 2016), and render the 'immanent, imminent', despite it being ostensibly unknown (Caduff 2015:68). This is conditioned in part by news and social media, scientific projections, and government policy objectives. Together they contribute to a societal sense of living through a time of instability, a time where the next crisis is never far away. Thus when I discuss uncertainty throughout the thesis, I am discussing this sense of uncertainty as it

[1] I indicate the official epidemiological referent CovSars2 here to demarcate the coronavirus pandemic that emerged in 2020 from other coronavirus pandemics. From this point on in the thesis however, I refer to CovSars2 as the coronavirus pandemic as this was the term used by the author and all interlocutors I spoke with throughout the research.

emerges through localised experiences of relating to the River Beane. Interlocutors try to make sense of the River Beane as a localised body of water (or waterlessness) whose health, or propensity to give or take health, is contested. This localised environmental sense making is configured within a wider sense of living in an uncertain world.

Throughout the thesis, I work to keep visible the challenges I encountered through such a venture into uncertainty, to formulate a subtle dialogue with them in order to be both reflexive and honest about the joyous, fruitful possibilities of such research, as well as the pitfalls and frustrations along the way. The fact that six months into ethnography my fieldwork was irrevocably disrupted and changed forever by the coronavirus pandemic only strengthened my resolve to reflect on uncertainty not just as a theme of the research but as an undeniable part of its methodology. Given this commitment to holding uncertainty in centre view, it only seems appropriate that I do not work to produce bold conclusions in this thesis, to wrap up relations on the River Beane and present them as a finished entity. Instead by highlighting the multiplicity and dynamism of relations on the River Beane, I contribute to and support an evolving anthropology of uncertainty. This scholarly sub-field encourages attention to uncertainty not as that which paralyses, but as that which begets movement and change, often in surprising directions that warrant more scholarly attention (Samimian-Darash and Rabinow 2015). By way of concluding remarks then, I reflect on the importance of tuning in to uncertainty. Taking inspiration from Donna Haraway, I will insist that this moment of uncertainty forces us not only to 'stay with the trouble' (Haraway 2016) but to stay with the tensions that sprout out in unexpected ways. These tensions are worthy of our attention, being situated as they are at the interface of dominant narratives and power structures that have long conditioned how water-relations can be imagined and enacted, and emerging relations forged by some people as they connect deeply and intimately with and through the River Beane. As these individuals and groups relate in these more intimate, connective ways, they raise hopeful possibilities, sometimes accidentally, of how such relations might be done differently. They consider how they might be done more equitably for the future, securing a more holistic sense of wellbeing for all bodies connected in and through the river.

I keep the introduction to this thesis and to the river around which my interlocutors were relating short. This is done with deliberate reason. In chapter four I use ethnographic data alongside archival research and an introduction to the legalities of ownership, responsibility, and management of the River Beane, to give the reader a more visceral picture of the research setting. This scene-setting is deserving of its own chapter as even in trying to unproblematically present the landscape of the River Beane, tensions and uncertainties appear. These emerging uncertainties

act as seedlings to the ethnographic chapters that follow and thus are better situated just preceding them. I do here, however, provide some initial bearings to help the reader begin navigating the thesis.

Sites and themes of the thesis

In chapter two I introduce social science literature that has helped me to situate and problematise the scapes and subjects of my research, human and otherwise, as well as the modes of uncertainty their relations to the River Beane reflect, respond to, and produce. Central to the this chapter is my tracing of the anthropology of water, a sub-discipline which is only now coming of age (Ballestero 2019a) and which has, with the ontological turn, come to attend water as an entity that far exceeds its human ascription with meaning, and defies in intriguing ways, human attempts at its taming. As a sub-discipline which is increasingly interdisciplinary in scope, the anthropology of water encouraged my engagement with history, geography, Science and Technology Studies (STS), and with scholarship that takes seriously other ways of knowing and relating to environmental scapes, drawing my attention to what it means to be affected through them. Taking this broad amalgam of literature in as much of a together fashion as possible has allowed me to observe the River Beane as having its own vibrant materiality. I am able to account for the River Beane as a temporal and topographical landscape for relations that are inherently uncertain, dynamic, and more-than-human.

In chapter three I move on from the literature review and demonstrate how taking seriously the dynamic and heterogenous nature of water-relations requires a methodologically flexible, multiple, and rhizomatic approach. I draw on Deleuze and Guattari's figure of the rhizome (1988) to explain my commitment to ethnography that follows uncertainties in people's relations to the River Beane as they sprout out and emerge in non-linear, surprising and sometimes fleeting ways. Alongside this I consider existing ethnographies of rivers and the importance anthropologists have placed on mapping not only the landscape one sees, but the multiple histories and experiences that accompany them for local people (Strang et al. 2010). Staying committed to multiplicity, I draw on Ann-Marie Mol's notion of the body multiple (2002), to make sense of the multiple enactments of the River Beane that are brought into being by virtue of differing ways of relating to this vessel of water. Taking these aspects of methodological inspiration together leads me to frame the River Beane as a water(less)scape, in doing so resisting the image of waters as inherently continuous, flowing, and processual, and instead thinking about instances of uncertainty and rupture that permeate the River Beane and the relations people forge with and through it.

Having laid out my methodological approach, I discuss the main ethnographic sites of fieldwork, from walking methods, interviews and observations, to what I refer to as the immersive ethnography of river swimming, and then to its polar opposite of online virtual research. I go on to think about the movement and orientation of relations, discussing the implications of conducting the second half of my research during the coronavirus pandemic. Finally I discuss the importance of ethics and reflexivity, engaging anthropologists who have tried to debunk these concepts and problematise the shadow side of fieldwork, which is particularly pertinent where one's research and private life are intimately meshed (McLean and Leibing 2008) as mine were.

In chapter four, I lay out the essential workings of the River Beane, its organisation, ownership, and management. I draw on ethnographic anecdotes and images from the field to demonstrate that the practice of organising, owning and managing the Beane is never simple and involves a complex and fragmented set of actors operating across different regions and scales. I do this to give the reader a true feel for this complicated landscape, to render visible how much goes on along a river less than fifteen kilometres long, and to give a first feel for the river's geography and uses, past and present. I also introduce the reader to some of the key authoritative actors along the River Beane. I am hopeful that this chapter allows the reader to better navigate the data chapters that follow and that in introducing acronyms here, they come to be made a little more familiar and meaningful rather than serving as empty jargon as they can unwittingly do.

The dead river

In chapter five I discuss the discourse of the dead river, and recount how some interlocutors relate to the River Beane with dedication and vehement regarding stretches of the river that do not move at all. These dry, fitful and intermittent water(less)scapes challenge dominant imaginaries of rivers as spaces of flow and life, and are the object of concern for interlocutors working to restore the River Beane. Interlocutors from river restoration groups and wildlife charities draw attention to the river's death, not as that which signals a finite ending, but as a powerful embodiment of disconnections of local people from their source of water and the non-humans and environment they share it with, of water ownership and management in England as an increasingly fragmented landscape, and of the local water company and authorities such as the Environment Agency (EA) who they felt were not fulfilling their environmental duties. In order to rally attention to this death as disconnection, interlocutors from these groups used measuring practices such as riverfly monitoring and borehole dipping to both quantify absence and to put it to work, producing

number narratives (Brooks 2017) of species, surface water, and aquifer-level decline. By rendering absences of species, water, and of river-responsibility by local water authorities visible, and connecting them to a wider UK politics of 'chalk streams in crisis', climate change, and future uncertainty, concerned interlocutors tried to draw more politically powerful interlocutors into the fold to support their charge for protection of the River Beane. These dedicated practices and ways of responding to the uncertainties of the River Beane as a water(less)scape did not however produce fewer, but in fact in some cases produced more unknowns. As a successful lobby to reduce water abstraction failed to return surface water to the River Beane, and as some water company representatives used notions of liminality, transience and geomorphology to refute disconnection as death, more uncertainty rather than less emerged.

Mobilising boundaries

While some interlocutors in chapter five stressed the importance of connection in facilitating life for the River Beane and in encouraging healthy local environmental relations, as I demonstrate in chapter six, others worked harder than ever in the face of uncertainty to maintain boundaries, striving to uphold the health of humans, non-humans, and environmental scapes like the River Beane, as being conditional on such entities remaining discrete. I trace three encounters of boundary maintenance and health-as-separation as they arise through, and are in some cases challenged by, existing and emerging ways of relating to the River Beane. I discuss the temporal, spatial, and species inflections of these boundaries, noting how the uncertainty wrought by the coronavirus worked to disrupt them.

In the first example of boundary maintenance on the River Beane I demonstrate how some of the same interlocutors from chapter five, who stressed the importance of connection for the River Beane and its dependent life forms, simultaneously upheld degrees of separation, encouraging not all connection, but crucially, what they perceived as the right kind of connection or separation to facilitate health. Framed through the lens of biodiversity and reflecting a 'politics of belonging' (Lien 2005), a backwards looking imaginary of what a healthy chalk stream can be led a local river concerned group to work to resurrect a ghostly chalk stream flagship species – the water vole - and to cull an existing invasive one – the American mink. Restoring the River Beane was in this case about connecting the river to an imagined state of health past, embodied in a no-longer-present flagship species, which if returned to the river would demonstrate the possibility of a more hopeful future. The nature-cultures that sought to derail this effort – a burst weir and a

pandemic virus – point to the tensions and ironies of working to restore a river to an imagined point in history where humans appear to be curiously absent.

In the second example of the chapter a further politics of belonging emerges, this time played out not over different species but across sub-groups of the same species relating to the River Beane. Save Beane Marshes, a crowdfunding effort to buy and gift a portion of marshland housing the River Beane to a local wildlife charity worked to foster a sense of connection between local people and the land and river that they argued needed saving. Local people were encouraged to invest emotionally and financially in this portion of land. The successful fundraising and gifting of the land was not however tension-free. Some local residents were disappointed and upset that while they had been enlisted to save the land, they would now be prevented from accessing it. The saved space was to have no public access as it was touted as a space "for nature" by the conservation scientists who would, despite this statement, manage the land. Thus in the case of Save Beane Marshes, ordinary or 'lay' people enlisted to connect to the River Beane and the land housing it in one sense, had their opportunities for further connection to it foreclosed. Their being more physically connected to it was framed as an invasion that might threaten its wellbeing as a space of nature.

In the final example of boundary maintenance I look at ongoing efforts of local river authorities to keep human swimmers separate from the River Beane and River Lea, noting how Weil's disease is mobilised to encourage the separation of different species bodies and spaces – land for humans, rivers for rats. I look at how river immersion highlights issues not only of health, but of how health intersects with legal responsibility, with authorised swimmers being demarcated as those who sign their legal responsibility for contracting Weil's disease, and unauthorised swimmers being demarcated as those who do not. While the Weil's disease narrative of potential death from supposedly disease-laden rats had deeply impacted folklore, I look at how the uncertainty of the coronavirus pandemic led some people in Hertfordshire to scrutinise and reposition this risk, considering swimming in the River Beane and Weil's disease as lower risk than the threats posed by a pandemic virus. These diverse examples of boundary maintenance and their shifting parameters demonstrate the dynamic nature of relations, and how uncertainties from burst weirs, to crowdfunding efforts, to pandemic viruses, all impact, and are made sense of, through people's modes of relating to the River Beane.

Immersion

In chapter seven I discuss the rising popularity of immersion in the River Beane, despite the best efforts of local land and river owners to deter swimming. I situate these immersions alongside a history of river swimming in England, tracing the activity's rise, demise, and present-day resurgence. In drawing historical accounts and present immersions together, I nod to the intimate relationship between temporality and dominant epistemologies of health, tracing a broad shift in understandings of rivers as spaces for health and connection, to the spatial separation of humans from rivers and non-human river-based life in the name of health. I consider how this might be shifting again towards a visceral ontology of health in an era of uncertainty, as I discuss how some interlocutors along the River Beane see immersion not as the antithesis of health, but precisely as a present-oriented holistic way to be healthy. This orientation has to be understood in relation to the pandemic uncertainty of the summer of 2020, the closure of many leisure spaces, and the sense of social isolation experienced by individuals during the government-imposed lockdowns.

As the chapter progresses, I demonstrate how river swimmers on the Beane did not frame their practice as one that was de-facto health giving, but as a practice of ongoing negotiation, attention, and mediation. As swimmers demonstrated respect for the river's own rhythms, its seasonal changes, currents, temperatures and non-human life, they fostered quite accidentally a stronger sense of connection to this local river. Their practice complicated neoliberal notions of freedom and health, as while swimmers often spoke of taking individual responsibility for themselves in the water, of mitigating risks through swimming in small groups, wearing suitable swimming apparel, and swimming to keep fit and healthy, they also expressed freedoms that cannot be understood through this lens. Swimmers found freedom in relating to and forming close social bonds with other swimmers, they found freedom in moving through the water in ways that felt good rather than through prescribed strokes, and they found freedom in forging a sense of spiritual and affective connection with this local waterscape as a space for holistic wellbeing rather than as a space for bodily improvement.

Relations on the River Beane as relations that matter

In chapter eight I draw the preceding three data chapters into conversation with one another. I unpick through this discussion chapter two important sets of questions. Firstly, I ask why these relations matter to interlocutors on the River Beane, and secondly, I ask why as scholars or those interested in public health these relations should matter to us. I coin the term public intimacy to

make sense of relations on the River Beane as ways of thinking about and 'doings' that sometimes purposefully, and sometimes by accident, produce deep affective connections between humans, non-humans, and the waterscapes that support and connect them, as they are experienced as part of a present that is increasingly uncertain. I offer public intimacy as something rhizomatic, generative, and surprising, a kind of affective momentum which I argue we would do well to tune in to, since it demonstrates how some people are, within their own localities, calling into question authorised ways of knowing and doing water relations, trusting their own modes of producing knowledge through the fostering of engaged, connective intimate relations.

The thesis ends with a short epilogue. The epilogue serves as a reminder not only to the reader but also to the author that it is impossible, and I would argue, undesirable, not to be affected by our research. Now more than ever, in times of uncertainty and disconnection, being affected is a hopeful possibility. Thus while certain modes of connective relations with the River Beane continue to be foreclosed, the desire for their resuscitation, or for their reimagining altogether, is worth holding on to.

Chapter 2: Literature review

The watery field of anthropology

Anthropology, whether it acknowledges it or not, is an inherently water-based discipline. Not only does water make up most of the Earth's surface, but it is also the central substance of all living beings. Thus, in studying any aspect of the social, any entity or network of relations human or otherwise, the anthropologist is always in a sense thinking about and observing watery-bodies (Neimanis 2017). While many anthropologists may not appreciate the complicity of water in the inception and continued feasibility of their discipline, and 'despite having come of age only recently, the anthropology of water is expansive' (Ballestero 2019a:406). Anthropologists have made water an increasingly fruitful object of study, reaching a point in the twenty-first century where water's multiplicity acts as 'an analytic starting point rather than a revelation' (Ballestero 2019a:406). Ballestero intimates this trajectory as one of 'coming of age'. However, as I will trace through the pages of this literature review, water was mostly omitted and only superficially included in early anthropological works. How water came to figure more prominently as an object worthy of enquiry over the second half of the last century speaks to the emergent, dynamic, and contested history of anthropology as a discipline, the crisis of representation that threatened to derail it, and to the ontological turn which may have saved it.

The ontological turn has been crucial to the anthropology of water. This turn affords opportunities to destabilise what water *is* and what water courses and/or bodies *are*, exemplified through novel approaches to the entities and objects of interest in watery ethnography (Helmreich 2009; Helmreich 2011) that push the reflexive, conceptual and experimental potentials (Holbraad and Pedersen 2017) of such vibrant matter (Bennett 2010) in new, altogether 'spongier' directions (Ballestero 2018). This kind of approach has far-reaching potential for social scientists engaging with waters in an era of increasing uncertainty (Barnes 2016; Samimian-Darash and Rabinow 2015), and in the face of fractured Anthropocenes (Kelly 2018). It allows them to make better sense of the amphibious (Gagné and Rasmussen 2016; Krause 2017), sedimentary (de Micheaux et al. 2018) multi-species entanglements (Morita 2017), environmental infrastructures (Carse 2012) and the explicitly non-watery spaces where waters are enacted in relation to the past, present, and to increasingly contested futures (Ballestero 2019b; Barnes 2016; Muehlmann 2012). The ontological turn has also afforded attention to alternative voices and ways of knowing and engaging waters (Hoover 2017) with scholars reflecting on the rise of nature-based spirituality (Taylor 2007) as peoples make intimate, often localised connections (Anderson 2013; Game and Metcalfe 2011) with the 'quickness' and animating qualities of water (Strang 2020b). Through

these immersive connections to blue space, peoples are argued to feel a sense of holistic wellbeing (Foley 2015; Foley and Kistemann 2015). The combination of more ontologically fluid approaches, spaces for alternative knowledge and serious attention to the materiality of nature-based spirituality, have allowed scholars to revisit the relationship between citizenship and water. Departing from narratives of governance and human mastery (Wittfogel 1957) these accounts both describe and proscribe dynamic and ecological modes of relating to nature as citizenship (MacGregor 2014), advocating a 'more-than-human hydro commons' (Neimanis et al. 2015:2). Returning to these ontologically inflected works and pondering their use for this thesis later in the review, I start now at the beginning, with anthropology's shallow interest in water.

The absence of water from early anthropology

Stefan Helmreich, one of a number of anthropologists today engaging waters in novel and thought-provoking ways, has pondered the relationship between early anthropology and water. Echoing Gísli Pálsson who has argued that early anthropological reliance on seawater as a passage to fieldwork makes 'anthropology, the study of humanity… as much the child of seafaring as of colonialism' (Pálsson 1991: p. xvii), Helmreich uses the example of Malinowski's Argonauts of the Western Pacific to demonstrate how bodies of water have long facilitated the passage to fieldwork, as well as acting as spatial signifiers of the distant 'other' (Helmreich 2011:135). Despite this fact, until the latter half of the 20th century anthropologists hardly engaged with water as an object of study. Where water was discussed by anthropologists prior to this, it tended to be in light of religion and ritual with accounts being mostly 'folkloric in nature, about water beings, water divining or water symbolism' (see discussion of early works in Wagner et al. 2018:1). Anthropologists interested in the role of water in religion have continued to focus on its symbolic importance, noting how the direction of river water flow can be central to both understandings of life and death, and the religious rituals that surround them (Oestigaard 2005; Parry 1994). That religious waters are imbued with purity, can cleanse the soul, and are conceptualised as 'holy' has been documented with striking similarity across different world religions (Oestigaard 2017) and similar sentiments have been traced in the context of Celtic and Roman societies which considered waters to be living, with generative and healing powers (Taylor 2010). Such beliefs are still visible in England in cities such as Bath Spa, where bathing in 'natural' waters drawn from springs, continues to be understood as having therapeutic import (Gesler 1992). It is only very recently, that scholars interested in religion and spirituality have asked how water's materiality inflects, dictates, or serves to disrupt such understandings, as well as how its physical status as that which

'animates all living kinds' (Strang 2020b:115), allows it to be understood as 'living' and thus in a way spiritual, even for those with secular views (Strang 2020b).

The failure of anthropologists for decades to engage with waters beyond determining them as symbolically relevant to religion and ritual has been a serious oversight. The reason for this blind spot has been traced back to the 1800s and the forefather of sociology Emile Durkheim whose 'social facts' alongside Western cartesian binaries allowed sociology to emerge as a discipline in the first place. Tvedt and Jakobsson have argued that social science's lack of attention to entities such as rivers can be explained via this history, since 'only based on this dichotomy between 'nature' and 'society' could sociology as a distinct, autonomous discipline develop. It was social facts, and definitely not the river as physical nature or as an historical agent of its own, that should be the object of study for social scientists' (Tvedt and Jakobsson. 2006:xv). While the social sciences continued to develop over the next century and anthropology as a separate discipline emerged, scholars continued to follow in Durkheim's footsteps in terms of framing the 'social' as the object of study. This binary has been further entrenched by theories of history and modernity from scholars such as Marx and through the ontological separations built into the water governance mechanisms of 'hydro-modernity' which both conjure and entrench an imaginary of society and nature as being ontologically separate (Swyngedouw 2004:14). Thus, even as sociologists and anthropologists became increasingly interested in processes of modernisation, 'modernity is summarized by explicitly relegating nature, and consequently the water landscape, to a place outside… [the] picture of what is to be explained' (Tvedt and Jakobsson. 2006:xvi).

Turning towards water

Water governance, modernity and development

In 1957, a piece of work emerged which drew attention to water beyond the remit of religion and ritual, highlighting the political import of water governance, and framing it as an object worthy of enquiry. It was then that the historian Karl Wittfogel published 'Oriental Despotism', an interesting albeit incredibly rigid outline of what he calls 'hydraulic civilization', a form of state governance over water resources in East Asia that he argues results in particularly powerful despotic regimes of rule (Wittfogel 1957). While water appears only relevant in Wittfogel's account so far as human mastery is exercised over it, it planted a seed in terms of water's relevance for social science studies. This kind of historical and biographical monograph of water remained popular with social scientists and anthropologists in the following three decades speaking to different sub-disciplines such as development, political, and economic anthropology, as well as some continued attention from the anthropology of religion. Thus by the middle of the century the

‘field we now call the anthropology of water came to be focused mainly on the value of water as a political and economic ‘resource’ rather than on its mythological and symbolic qualities’ (Wagner et al. 2018:2).

Works in this area reflect on the industrial economic boom that began in the 1950s, fuelled in large part by hydro-power dams and irrigation systems, which, such scholars argue, formed central parts of modernisation and state building projects (Kaika 2006; Kelly et al. 2018; Mosse and Sivan 2005). Anthropologists devoting attention to the politics of development, modernisation, and water governance have paid attention to the conflicts that emerge as such modes of management intersect with local cultural understandings of waters. The edited volume ‘Water, Culture and Power’ provides a set of ethnographies, many of which interrogate how localised concerns over water and power intersect with global discourses on development (Johnston and Donahue 1998). Others note that despite the outsourcing of Western water governance solutions, and a dominant ‘engineering’ approach, religious authority and temples are, in many locations, still central to water management (Lansing 2007; Orlove 2016). Swyngedouw argues that processes of modernisation and urbanisation can be understood as ‘particular socio-spatial processes of metabolizing nature’ (Swyngedouw 2004:8) with waters being one of these ‘natures’ par excellence. Writing a decade later in relation to the history of Spain, Swyngedouw takes pains to demonstrate that ‘hydro-modernities’ are never straightforward and linear, but are inherently contested because ‘the material acting of water… is itself a historically and environmentally constituted process; its political performativity changes as the fabric of hydro-social constellations changes too’ (Swyngedouw 2015:29). Also demonstrating awareness of changing hydro-social constellations, Laura Bear has interrogated the complexities wrought by neoliberal economic policies, which come to impact social relations and inequalities as they play out on riverscapes (Bear 2011). Such policies merge with other modes of relating to rivers, as an era of debt governance comes to affect individuals’ pre-existing ritual relations to the Hooghly river in India (ibid), where similarly to other global nations, water as a resource has increasingly been privatised (Bakker 2003). Veronica Strang has noted how trends towards transnational, privatised ownership of water work to silence other ways of knowing waters, their agency, and spiritual connotations, leading, as she paraphrases Wittfogel, to increasingly ‘despotic regimes’ in Australia and England (Strang 2016).

Given that waters are deeply politicised, and governed through increasingly complex processes and ‘regimes’, it is not surprising that anthropologists have also revisited Wittfogel in noting the relationship between waters and citizenship. Nikhil Anand juxtaposes the physical pressure of

piped water to the political pressure such infrastructures place on a municipal water company to secure water to citizens (Anand 2011). In a city where water connections are intimately bound up with citizenship status, these water infrastructures work as powerful actants. In chapter 6 of his book Hydraulic City (2017), Anand interrogates the notion of 'disconnection', arguing that in the peripheral Premnagar district of Mumbai, city engineers 'make Muslims as dangerous outsiders through infrastructural practices' (2017:195). Water infrastructures are here left to degrade, causing individuals to form illegal connections or to revert in their own words, to the 'backwards' countryside water of boreholes. These practices are unjustly inscribed by municipal water engineers as justifying why these populations are '"not good" and undeserving of hydraulic citizenship' (2017:195). Thus Anand draws our attention to 'the varied possibilities of politics and personhood that are enabled by this strange, liquid, material' (Anand 2017:216).

Water infrastructure (a seminal aspect of water governance) remains central to development discourse and such infrastructures are central to the delivery of international aid. Whether they be the large scale infrastructures of clean water systems encouraged through the World Health Organization's (WHO) water sanitation and hygiene (WASH) program, or the 'little development devices' of humanitarian aid efforts such as the 'life straw' (Redfield 2012) water governance has gone global. The centrality of water to development has made it an object of enquiry for medical anthropologists who have explored the nexus of water systems, human health, and power (see discussion in: Whiteford and Padros 2011). More recently, in line with the WHO's sustainable development goals, medical anthropologists have become increasingly interested in questions of sanitation, making explicit that such systems reflect the political-ecological dynamics of the sites in which they come to be situated (Wells and Whiteford 2022). Water thus continues to pepper global, national, and localised political relations (Orlove 2016), with water governance comprising a lively field of its own (Ingold et al. 2016). Water governance is rendered highly visible in an era where water has become more heavily commodified and privatised (Strang 2016) and is perceived as an increasingly scarce resource (Bakker 2003; Barnes 2014; Barnes 2016), as well as an increasingly contaminated and polluted one (Hoover 2017).

Pollution

The issue of pollution is worth dwelling on here since it has been approached by anthropologists in numerous ways and occupies an increasingly central position in the anthropology of water today. The structurally oriented works of Victor Turner and Mary Douglas continue to inflect anthropological framings of pollution. Turner's structural-functionalist perspective focused on pollution in terms of ritual symbolism, arguing that during rites of passage, initiates in the liminal

period (existing between their past, and following the ritual, newly assumed state) are seen as particularly polluting precisely because they fall outside the social order (Turner 1967). They are polluting because they are position-less. A similar approach is taken in the structuralist work of Mary Douglas, whose work on purity and danger argues that entities such as dirt are seen as polluting due not to their tangible material, but precisely because they constitute 'matter out of place' in terms of not fitting into the categories through which sense is made of the world (Douglas 1966). Anthropological work on religion has noted the associations made between pollution and water, with particular concerns in Brahmic communities that water could transmit impurity between castes (Oestigaard 2005; Parry 1994), and those interested in symbolism note the myriad ways in which pollution and destruction come to be made sense of through waters (Krause and Strang 2013).

Those moving away from the over-deterministic roots of structuralist accounts and thinking about pollution not in a symbolic, but in a more material sense, argue that 'matter out of place' remains useful to think with. These works include tracings of the politics of belonging that occur in and along waters (Lien 2005), and those using 'matter out of place' to make sense of conservation practices on waterscapes that work to weed out foreign matter (Milton 2000). These practices reflect enduring colonial discourse of the racial 'other' as being polluting to the body politic not only of the human, but of the authentic 'natural' waterscape and its authentic non-human inhabitants (Lavau 2010). Tracing ruddy duck conservation across Europe, Milton argues that while conservationists 'value species, above all, in terms of rarity and vulnerability to extinction' (Milton 2000:239), outside of such considerations, the boundaries of alien and native powerfully guide the actions of conservationists, in turn contributing to the 'making' of such boundaries through their actions. Medical anthropologist Christos Lynteris has noted that the boundary work maintained between species often speaks to enduring public health and modern epidemiology as apparatuses of state and capitalist management. Nowhere, he argues, is this more clear than in relation to the rat, whose polluting presence is not about being matter out of place in a Douglasian sense, but is instead about the way the rat 'called into question social relations humans had built around themselves and animals (Lynteris 2019:3). The presence of rats along waterways, argues Karen Sayer, has long been framed as a threat to human health but also as an indicator of class and social divide, with those humans in closer proximity to the landscape of rats framed even by medical professionals in the 20th century as unhygienic (Sayer 2019). Thus we see species boundary work along riverscapes has not just been about species boundary maintenance between

different sets of non-humans, but also between humans, and those ostensibly 'vermin' non-human species.

Medical anthropologists have also become increasingly interested in this topic from a physiological, and health justice perspective. The connections medical anthropologists make between (un)healthy environments, (ill)health, and the racial politics and gender-biases of proximity to environmental contamination (Singer 2011; Wells and Whiteford 2022; Whiteford and Padros 2011) have positively influenced recent works in the anthropology of water. This is also true of multi-disciplinary scholarship which has produced fruitful insights into the racial topographies and politics of polluted water supplies (Fennell 2016) and the 'chemo-sphere' of dwelling in proximity to pollutants (Shapiro and Kirksey 2017) The influence of this broad set of works can be seen in works focusing explicitly on the lived experiences of indigenous communities whose lives have been irrevocably altered by their being situated along polluted and degraded watercourses (Hoover 2017; Jacka and Wagner 2018). While noting the issues of ill-health caused by such pollution, these scholars also pay close attention to the modes of food production and consumption, spiritual relationality, and other aspects of daily life which are in a sense contaminated and altered by these degraded water courses (Hoover 2017-9). They also note the defiant actions of those being polluted, as they strive for environmental justice, which must be recognised not only within the context of polluted waterways and racial geographies, but of colonial land-grabbing and re-settlement that are unique to indigenous populations (Hoover 2017: see introduction). Issues of water pollution have increasingly taken centre stage in anthropological and multidisciplinary studies in the face of the Anthropocene (Deane-Drummond 2018; Swyngedouw 2011), an issue I will return to later in the review when I discuss waters of the Anthropocenes.

Still falling short

Anthropologists across different sub-disciplines, as well as historians and those working in a more multi-disciplinary sense altogether, appear since Karl Wittfogel's 'Oriental Despotism' to have turned towards water. That being said, as Ben Orlove (2016) states in his reflections on the anthropology of water, much of this work has been historical or biographical, ignoring waters' temporalities, and how trajectories of society-water relations, which are normally represented in relation to particular epochs or trajectories of development, do not reflect the agency of waters themselves. Further still they omit experiences of society-water relations in places where understandings of water include agency, spirit and soul (ibid). Orlove defends the work of Laura Bear in this respect, and I would argue that publications preceding Orlove's, most notably Nikhil

Anand's and some of Veronica Strang's work, should also be seen as diverging from this trend. And yet, as an important conclusion to this section of the literature review and a springboard to the next, Orlove's concern about the lack of nuanced representations of waters nods to many of the issues bound up with anthropology's more general crisis of representation. In the following section I reflect on how this crisis, and the ontological turn which ensued from it, have led anthropologists to interrogate and characterise waters, and water-relations in more reflexive, illuminating ways.

An altogether different turn

Ontology and the anthropology of water

Anthropology's crisis of representation demonstrated uncertainty as to the adequate means of describing social reality (Marcus and Fischer 1986). It led to questions about the power dynamics of who gets to do the representing, who or what is represented, and to philosophical questions of what representations actually are. These queries, which threatened to leave the discipline in disarray, eventually led to an ontological turn. The ontological means that 'one's assumptions about what any given object or term of inquiry might be are called into question' (Holbraad and Pedersen 2017:3) as ethnographic material is given freedom to dictate the direction to be followed, and what can constitute ethnographic material in the first place is seen as a far more fluid and open. A-ha moments are not slotted into neat pre-existing theoretical models, but are taken as provocation to continue following; to uncover, to be surprised. The ontological turn is thus an inherently methodological turn, one that 'poses ontological questions to solve epistemological problems' (ibid:5).

The ontological turn has had a great impact on the anthropology of water. As Hastrup and Hastrup write in their introduction to Waterworlds, 'anthropology now finds itself at a moment in time when the field is literally wide open', where 'there is no given anthropological object, but multiple composite objects', and where 'fluidity on all accounts is the order of the day' (Hastrup and Hastrup 2016:2). In the same way in which medical anthropologists have used an ontological approach to demarcate the human body as 'multiple' (Mol 2002), scholars have noted the multiplicity of waterscapes (Ballestero 2019a), increasingly understood as ethnographic subjects in their own right as attention is paid to 'the ways in which human lives… are interwoven with the lives of rivers, the landforms through which they flow and the other species they sustain' (Wagner et al. 2018:5).

Utilising an empirical ontological approach, Law and Lien interrogate the ways in which Atlantic salmon are enacted as an effect of relational practices. This approach allows the authors to consider the ways in which 'salmon are indeed inextricably linked with people, [and yet] they also escape from and are Other to the human' (Law and Lien 2012:365). By attending to a number of objects often curiously omitted from less empirically grounded accounts of human, non-human, water-based interactions, the authors show how 'hands, gloves, slithery fish, wheelbarrows, water and arthritis are being woven in a further web of choreographed relations' (ibid:370). The authors remind us that such choreographies are always precarious and thus the enactment of what a salmon 'is' is always open to fluidity and change. These ontologically grounded accounts have made headway in challenging some of the binaries through which waterscapes have long been made sense of, for example as those which 'flow' and give life (Strang 2004). This ontological approach has allowed anthropologists to think beyond conventional waterscapes, attending for example as Ballestero does to the underground aquifer, which challenges the above/below ground dualism, and the notion of water bodies as those which flow and have clear boundaries (Ballestero 2018; Ballestero 2019c). Ethnography attending to such entities is able to challenge the ontological 'water-tightness' of dominant imaginaries of waterscapes (Cortesi 2021). For others, attention to oft-ignored entities, the 'muddyscapes' of sediment that condition livelihoods and governance along particular waterscapes, is not only ethnographically illuminating, but is also an invocation to challenge theoretical and diagrammatic representations of the water cycle (de Micheaux et al. 2018), which even where expanded to include the human (see Linton and Budds 2014 later in this review) are limited in making sense of the multi-species, multi-material essence of waterscapes. Finally, in taking an ontological approach to the study of water, and attending to its 'perpetual metabolism', Swyngedouw argues that we might be able to rework dominant modes of political ecology that unwittingly uphold notions of separation between nature and society. This notion of metabolism demonstrates, with particular relevance for bodies of water, that 'every body and every thing is a cyborg, a mediator, part social, part natural, lacking discrete boundaries and internalizing multiple contradictory relations that redefine and rework them' (Swyngedouw 2004:18). Swyngedouw's work presents the perfect juncture to turn to actor-network theory which has been an intimate part of many of these more ontologically inflected works on water.

ANT, assemblages and infrastructure

Alongside the ontological turn, studies of water have also been heavily influenced by complimentary theories such as the actor-network theory of science and technology studies (STS) scholar Bruno Latour. Latour's theory draws attention to the network of actors which can be

human, non-human, technological and environmental, that make up social phenomenon (Latour 2005). Scholars have taken inspiration from ANT and Appadurai's notion that objects have social lives, using these approaches to rethink water (Wagner 2013). This has allowed them to pay attention to the agency of this substance and how waters are not only put to work for human social, economic and political gain, but also, crucially, how waters themselves disrupt such human intention, 'leaking' out beyond control (Anand 2015). These ideas speak to a growing body of work at the intersections of anthropology, geography and philosophy that think about materials such as electricity and water, through the lens of the rhizome (Deleuze and Guattari 1988), as 'vibrant matter', that not only constitutes part of actor-networks, but crucially, displays agentive capacities to both drive and disrupt such networks and the discourses that hold them together (Bennett 2010; Muehlmann 2012).

While ANT has been helpful for anthropologists attending to water, this is not to say the theory is flawless. Social scientists, including Latour himself, have critiqued the theory for the anthropocentric nature of the notion 'actor', the unproblematic connections assumed by 'network' and the ignorance of unequal distributions of power. However, noting the theory's continued popularity, Latour has argued that 'the only solution is… not to abandon the creature to its fate but continue all the way in developing its strange potential' (Latour 1999:24). Anthropologists seem to have taken heed of this and have developed the theory's strange potential by refashioning, or perhaps more accurately, complicating it, through the notion of the 'assemblage'. Thinking about the engagements of human, non-human, 'natural' environmental elements, and technological objects as assemblages makes visible the messy contingent process of such comings together. Bruce Braun's 'global natures in the space of assemblage' is a poignant review of works using 'the word assemblage, so as to stress the *making* of socionatures, whose intricate geographies form tangled webs of different length, density and duration' (Braun 2006:644). Exemplary of this trend is the work of Anna Tsing who draws attention to assemblages to render visible 'spatially far-flung collaborations and interconnections' and the 'zones of awkward engagement' that emerge therein (Tsing 2005:xi).

Scholars have used the assemblage to take more explicit political ecological positions. Sarah Whatmore asks how decentring social agency and 'apprehending it as the 'precarious achievement' spun between social actors rather than a manifestation of unitary intent' (Law 1994:101 cited in Whatmore 2002:3) might make space for 'hybrid geographies' in which human non-human environmental relations come to be understood beyond the binaries of subject/object,

nature/culture. In a not dissimilar vein, Jane Bennet has explored the relations that make up infrastructures of domestic utilities supply. Tracing the assemblage of humans, objects, and electricity during an electricity blackout in America, Bennett notes the culmination of agencies which come together in sometimes unexpected and undesirable ways, wherein the 'vibrant matter' of electricity can never be fully harnessed or tamed, exerting agency within the assemblage, exceeding or precluding the infrastructure of electricity supply it is being engaged for (Bennett 2005; Bennett 2010). This work is part of renewed attention to infrastructures and can be seen in the way anthropologists are working to frame waterscapes such as dams, watersheds and canals (Carse 2012; Strang 2013), beyond the auspices of human industrial power and modernisation as was the focus of the anthropology of development in the 1990s and early 2000s. Instead, environmental infrastructures are now framed as assemblages of the human, non-human environmental, and technological interacting in fluid, dynamic, and increasingly in the face of climate change, surprising ways. Such environmental infrastructures are about 'the making and remaking of worlds at once material and semiotic, and inhabited not only by people but also by a multiplicity of nonhumans' (Morita et al. 2016:3).

The idea that infrastructures can be understood as assemblages has been persuasively argued in relation to water. While earlier anthropological works in this vein aligned human-river-industry relations tightly to Latour's ANT (Kortelainen 1999) works since, have sought to complicate this. In paying attention to 'the rhizome of underground and surface water flows and the streams, pipes, machines, and canals that come together in water gushing from fountains, taps, and irrigation channels' we are able to better make sense of what Swyngedouw calls 'a deeply interconnected socio-nature' (Swyngedouw 2015:21) which conditions 'scalar relational networks.... that produce spatial geometries' and articulates 'with produced territorial configurations like river basin authorities' (ibid:30). Morita notes the contingent infrastructural assemblage of farmers, non-humans, rice, and river water in the Chao Phraya Delta (Morita 2017), while Carse interrogates the multi-state politics and assemblages through which bodies of water are infrastructuralised, turning 'volatile river systems into a generally manageable water source for the canal' (Carse 2012:541), and how water-related crises can be understood as infrastructural events (Carse 2017). Highlighting the myriad ways in which nature comes to be infrastructuralised, Carse argues, is a challenge to a set of binaries that equates infrastructure with artifice, and nature with its absence. Finally, attention to assemblages and the agencies of non-human and environmental materials within such engagements, has led anthropologists such

as Andrea Ballestero to investigate the underattended waterbodies that are aquifers, asking how such entities evade being 'infrastructuralised' (Ballestero 2019c).

If ANT and the fruitful discourse of assemblages have helped anthropologists to move beyond waters as meaningful only through their physical role in human industrial history, and their ascriptions as meaningful through religious symbolism, the ontological turn has in many ways allowed scholars to put ANT's strange potential into practice. Scholars have rethought the very substance of water, what should be followed, attended to, and studied when thinking about human-non-human water engagements. I now turn attention to scholarship which thinks about how waters have been enacted through different conceptualisations and categories, and how these waters 'multiple' are often enacted in non-watery places (Ballestero 2019b).

Waters multiple

Despite a growing number of anthropologists studying waterscapes such as rivers as ethnographic subjects in their own right, scholars have continued to pay attention to how waters are conceptualised, enacted, experienced, and understood from a human vantage point. That many of these conceptualisations exist synonymously speaks to the ontological notion of waters as multiple, and also to the idea that ways of conceptualising and categorising waters change over time. It is pertinent to note that scholarship does not always do one or the other of these things (water as the ethnographic subject versus human conceptualisation of water), but increasingly works to demonstrate the complexities where dominant human conceptualisations of water are rendered futile by water's vibrant matter, or by competing modes of knowledge (Muehlmann 2012). While water's conceptualisations are multiple and multifaceted, I home in here on three broad enactments that have been helpful to think with in relation to my own watery ethnography, those of H_2O, Anthropocene water, and number narratives. As part of my exploration of these enactments I consider some themes that nestle within or at least alongside such enactments, such as citizenship and conservation, which have great relevance to the anthropology of water today. I also use the final enactment, number narratives, as a gateway to explore uncertainty as an anthropological object of study.

H_2O

Writing in 1986, the historian Ivan Illich introduces a 'historicity of matter', tracing the kinds of water society creates and then lives by, thinking about this in both a temporal and spatial sense. Illich argues, 'not only does the way an epoch treats water and space have a history: the very

substances that are shaped by the imagination – and thereby given explicit meanings – are themselves social creations to some degree' (Illich 1986:4). For Illich, 'the H_2O which gurgles through Dallas plumbing is not water, but a stuff which industrial society creates' (ibid:7), and a stuff that helps uphold the image of circulation as the embodiment of health, and frames the city as that which needs to be 'constantly washed' (ibid:45). Illich argues that a profound separation has occurred between individuals and water in the urban setting, since only H_2O may circulate in the city (ibid:75-6), 'living waters' fade from view, becoming conceptually and spatially less and less accessible. Illich concludes that 'H_2O and water have become opposites: H_2O is a social creation of modern times, a resource that is scarce and that calls for technical management… Water can no more be observed; it can only be imagined' (ibid:75-6).

Thirty years later, geographer Jamie Linton likewise historicises H_2O but in relation to its inception in scientific thought and diagrammatic representation. Linton encourages us to 'think about water primarily as a process rather than a thing' (Linton 2010:4). While this implies water's reality as indeterminable, Linton argues that a pervasive hegemonic lens for viewing this entity exists in Western thought. This lens is conditioned by scientific knowledge, which has produced and represented water in an increasingly fixed sense (ibid:13) through an abstraction he terms 'modern water'. Modern water for Linton is a way of knowing and perceiving water as being in basic nature H_2O. This implies that water as H_2O and the hydrologic cycle through which it appears to seamlessly circulate have always existed awaiting scientific explanation. For Linton, this discourse of modern water does two main things. Firstly, 'these ideas and meanings… get fixed in a material sense, as in the concrete engineering and infrastructural works that materialize hydrosocial relations in different places and times.' (ibid:9), and secondly, this discourse produces waters that are 'deterritorialized and dematerialized' (ibid:18). This speaks to Strang's concern that abstracted water 'denies the reality of local, specific human-environmental relationships and alienates the medium through which individuals can identify with a locale and its other inhabitants' (Strang 2004:246).

Anthropologists draw our attention to the tensions that exist in this process of 'fixing' water, since 'pure water, outside of the laboratory, is pretty much a contradiction in terms. As an almost universal solvent-cum-carrier, water is never just H_2O, even though we tend to insist that it is, or that if it isn't, it should be' (Thompson and Beck 2017:335). In order to challenge the dominant process of water as H_2O, Linton and his colleague Jessica Budds have proposed the 'hydrosocial cycle' as an alternative way to represent the cycle of water, making visible the relational, dialectical nature of water and its social management and use (Linton and Budds 2014). The

hydrosocial cycle encourages attention to the water-cycle not as a natural phenomenon 'out there', but as a process of networks, climactic, environmental, human, and technological. Reflecting on the ways in which waters are perceived as both a natural resource 'out there', and a technological commodity from a political economic vantage point, Wilk argues that water's commodification as bottled H_2O relies on a complex mixture of marketing in the face of increasing distrust of state provided tap water. And yet, Wilk argues, the success of bottled H_2O is not in producing 'artificial' H_2O, but of having 'the unusual capacity to disemically carry and transmit the magic and power of nature and modern technology at the same time' (Wilk 2006:308). Thus citizen consumers get to drink an H_2O legally certified as 'safe' while also getting the marketed benefits of 'natural', 'minerally rich', 'pure' sources of water from geographically distinct locations such as mountain springs in Sweden, or from the 'virgin ecosystem' of Fiji (ibid:305-6).

Anthropocene water/waters of the Anthropocenes

The process that Linton demarcates as water, Illich's history of water's encasement and shift from 'living waters' to H_2O in cities, the hydrosocial cycle, and H_2O as a bottled commodity all demonstrate human attempts to master and utilise waters. This fits within a wider anthropological observation that western capitalist society has traditionally been a process of 'conquest' over nature (Kelly 2017), a process that is only beginning to change now, as the devastating impacts of such conquests on the environment becomes clear (Carse et al. 2016). This narrative of modern capitalist conquest gone awry (Beck 1992) has led to the Anthropocene, an unofficially coined geologic period proposed by the Nobel Prize winning chemist Paul Crutzen, in which the effects of human activity are understood to have categorically altered earth's climate, environments, and ecosystems (Kelly 2017; Swyngedouw 2011) moving us beyond the Holocene. As Jason Kelly argues, 'the Anthropocene nearly always serves as a metanarrative of modernity' (Kelly 2017:9).

Given water's topographical dominance in terms of surface area, and its centrality to all forms of life, it is unsurprising that concerns about the effects of this epoch are often framed in relation to this substance (Gibson and Venkateswar 2015). Melting polar ice caps, rising sea levels, extreme weather events such as floods, droughts, and tsunamis, are all climate-water related issues that have been linked to the Anthropocene (Strang 2020b:9). In attending to the Anthropocene, anthropologists have expressed the 'urgent need for critical reflection on the state of our environment, on human subjectivity and actions, but most importantly, *on their inextricable entanglement and how to then research this*' (authors' emphasis, Neimanis et al. 2015:68). These scholars advocate four directions, including attention to nature-cultures and feminist post-

humanism (see alternative knowledge(s) later in literature review), trans and post-disciplinarity, and finally, increased efforts in 'developing a "citizen humanities" (ibid:70).

Responding to such calls, social science scholars and institutes have taken an increasingly eco-political role, creating research initiatives and networks such as the University of Indiana led 'Rivers of the Anthropocene' (ROA). ROA works to establish multi-disciplinary solutions to the problems wrought by this period, and 'using freshwater systems as a framing device' (Kelly et al. 2018xvii), has drawn together in an ensuing publication, transdisciplinary approaches to methods, histories, and experiences on rivers during the Anthropocene. The book's editor Jason Kelly uses his introductory chapter to make clear that there is no one 'Anthropocene' but a plethora of fractured Anthropocenes, with attention to this multiplicity allowing for three crucial things. Firstly, it 'helps combat a tendency to oversimplify complex historically emergent biophysical and sociocultural entanglements' (Kelly 2018:3). Secondly, it reminds us that Anthropocenes are both 'descriptive and prescriptive' (ibid:12), they are intellectual categories for describing environments, but also, they are lived phenomena experienced on different scales (ibid:13). Thirdly, Anthropocenes, 'removes what has become an increasingly artificial divide between human and natural history' (Kelly et al. 2018:73). Convincingly developing some of these ideas Celia Dean-Drummond argues that 'entanglements between humans and river systems' are interesting as they function as case studies for 'reflection on the ways humans envisage their specific ethical responsibilities' (Deane-Drummond 2018:55-6). For Deane-Drummond, the grand narrative of the Anthropocene is 'wedded to the specifics of the drama of the local' (ibid:60), and it is these local dramas and the kinds of 'agency in the context of a specific community' which 'invites what might be called a version of post-natural politics, one where the human and nonhuman creatures are embedded and woven together' (ibid:61). Within the collection, a handful of more ethnographically focused accounts 'examine the contemporary context and how people live with their anthropocene riverscapes (Kelly et al. 2018:118). Stephanie Kane's insightful comparison of two rivers in Singapore demonstrates the multiplicity of Anthropocene rivers which can be seen as powerful geological actors, foregrounded during moments of flash flooding, and yet also as the backstage "unthought known" when encased in underground systems of water supply where they rescind from view (Kane 2018:136).

Water in the Anthropocene as Rivers of the Anthropocene makes clear, has spurred ever-more environmentally oriented modes of relating and practice. As Scarpino writes, 'in the end, an obligation to be stewards working to restore "disturbed harmonies" may be the most important lesson derived from studying the history of the Anthropocene' (Scarpino 2018:114). The notion of

stewardship is just one among many that have emerged under an increasingly broad conglomerate known as conservation. While conservation has a long history, intimately related to the ecology movements of the 1960s and 1970s, of interest here are emerging forms of conservation, since they are directly related to the Anthropocene, and tend to be oriented around concerns of biodiversity loss, climate change, and sustainability biodiversity (Bowker 2007; Lavau 2010; Lorimer et al. 2015; Milton 2000). This can be linked to the coining of and rising importance attributed to 'planetary health' which emphasises human dependence on natural ecosystems for good health, advocating human stewardship for ecologically sustainable futures (Farman and Rottenburg 2019). This has led scholars to ask how we might imagine and create more-than-human healthy publics (Hinchliffe et al. 2018).

In much the same way as Kelly situates the Anthropocene as an 'is' and an 'ought' (Kelly 2018:11), emerging framings of conservation tend to both intellectually describe, and physically condone, particular forms of practice. Interestingly, while these framings of conservation have differences, they also have an overarching similarity: their conviction that conservation practices are part and parcel of emerging modes of citizenship. Barry argues for a shift from environmental to sustainability citizenship which acts not only as a form of '"maintenance"… but also a corrective… requiring "corrective" or "oppositional" work in the form of resistance and challenging the underlying causes of… unsustainable development' (Barry 2006:32). Lorimer argues for recognition of how globalisation inflects such citizenship practices, part and parcel of a swell of global volunteering, which is very much in 'vogue' (Lorimer 2010). Hartley Dean argues for a 'green citizenship, which would be built on notions of co-responsibility and an ethics of care for the environment and those unequally affected by environmental degradation (Dean 2001). Building on this from a more materialist/embodied standpoint, Gabrielson and Parady advocate a more corporeal green citizenship, one that uses the physical body as a vessel for connection to the planet and its non-human inhabitants (Gabrielson and Parady 2010). Finally, scholars have moved towards the term 'ecological' and framings of ecological citizenship (Saiz 2005) asking how we might move beyond mothering earth in our modes of ecological citizenship (MacGregor 2014) towards more radical or anarchic ecological action and ethics (Smith 2007).

Another notion worthy of attention which speaks to the Anthropocene, environmental degradation and conservation-cum-citizenship, is that of citizen science. Citizen science can be situated within a wider history of citizenship in England (Faulks 1998), and has allowed such a country to overcome environmental management problems associated with 'low levels of public expenditure' by enlisting volunteers to deliver 'national and international biodiversity conservation obligations'

(Discussion of Anheier and Salamon's 1999 work in Lorimer 2010:311). Thus scholars have noted 'Britain's journey from a delight in observation of nature, to concern for its future, to a highly structed and target-driven approach to its conservation' (Lawrence 2006:281). Citizen science is typically understood as 'networks of non-scientists who help to 'analyse or collect data as part of a researcher-led project' (Gura 2013:219). Water bodies, as spaces that support diverse ecologies, have been a central focus of citizen science efforts with volunteers undertaking species monitoring, and measuring for pollutants such as nitrates and phosphates (Hegarty et al. 2021). The rise of citizen science on water bodies in the UK is reflected in large scale projects such as Freshwater Watch, which works to complement, and fill the gaps, in data from water regulatory agencies.[2]

Despite the normative description, scholars increasingly note that it is communities, individuals or 'non-scientists' defining the object of concern and study in citizen science efforts, challenging the power dynamics and claims to exclusive 'scientific expertise' of powerful institutions of commerce and government (Buytaert et al. 2014; English et al. 2018; Irwin 1995; MacGregor 2014; Rowland 2012; Strasser et al. 2018). Thus it is interesting to note that while citizen science in one sense propagates the notion of scientific rationality, it simultaneously produces alternate knowledge with the power to call scientific expertise into question, in some cases challenging the position or notion of 'expertise' altogether (Irwin 1995). This challenging of authority has been explored by scholars that recognise alternative formations such as 'social movement-based citizen science' which emerges where 'activist groups design studies not only to improve knowledge but to foster collective action and political change' (Ottinger 2016:90). In this way, citizen science might speak to a growing sense that 'the world is not made of '"matters of fact" but rather of "matters of concern"'(Latour 2016:221). Others recognising this heterogeneity have taken issue with the overarching narrative of 'citizen science' which fails to capture the diversity of 'epistemic practices' such as 'sensing, computing, analyzing, self-reporting, and making' that distinguish modes of citizen science or participatory research (Strasser et al. 2018:55). These authors also question the choice of language in a narrative move towards 'citizen'… which needs 'unpacking as it is unclear what it means to say that scientific literacy and scientific practice should become part of a fully developed citizenship' (ibid:67).

[2] https://earthwatch.org.uk/news/blogs/464-earthwatch-s-citizen-science-methods-highlighted-in-parliamentary-enquiry

Number narratives

Both H_2O and waters of the Anthropocenes demonstrate the multiplicity of water as a substance. They also hint at the ways in which waters are materialised not only in and along waterscapes but in marketing materials, scientific diagrams, intellectual categories, and in practices of citizen science. I turn now to number narratives as a final example of the multiplicity of watery materialisations, focusing in depth on three ethnographic works. Number narratives across these works encapsulate many of the concerns over sustainability already explored in my discussion of Anthropocene waters adding further depth and weight to this interesting line of study.

Ethnographically tracing debates over water scarcity in Smoketree California, where an underground aquifer serves as the sole domestic water source, Brooks hones in on what she calls 'number narratives' (Brooks 2017). By this, Brooks means the 'numerical stories about how an environmental object works in a particular place and time (ibid:51). Drawing on the insights of Asdal (2008), Brooks argues that numbers-as-narratives 'make environmental objects real, but real according to the logics of a particular perspective' (ibid:45). Thus in the case of the underground aquifer in Smoketree, where projections shifted from water as being plentiful for '500 years', then for only '50' years, and finally to being framed as sustainability = 0, such 'number narratives make groundwater—a substance that is, by its very materiality, unseen, uncontainable, and unpredictable—seem visible, bounded, and manipulable (Brooks 2017:34). Brooks argues that such numerical narratives poignantly impact the water worlds (Hastrup 2009) of local residents and how they relate to their local water environments. That being said, some of Brooks' informants particularly those with a scientific background pointed to the 'numerical and narrativizing practices that reduce water's material complexities; emphasizing a potentially misleading quantitative number at the expense of a more uncertain qualitative one' (ibid:49). Thus exploring number narratives is 'an entry point for considering how Smoketree's water became enrolled in particular environmental and technological politics for particular reasons' (ibid:187), and hints that a 'water problem is not about numbers at all, but about old tensions, uncertain technological and political futures, and the potential failure of everything that can't be quantified.' (ibid:34).

Brooks' conclusion about enumeration speaks to the earlier work of Muehlmann who contrasts enumeration and that which remains 'uncountable' along the Colorado River delta in Mexico. Muehlmann explores the political work that counting, and the construction of a water resources 'countdown' does (Muehlmann 2012). For Muehlmann, enumeration can be understood as a strategy for commodifying resources, but also serves as a call to arms where the narrative of the

countdown in relation to river water, non-human species, and native language speakers, implies a zero point of no return which must be avoided and managed by enlisting ever-more counting practices (ibid:341). In this case, 'scarce' water is materialised through counting practices which then set in motion legal processes of control, rights, and environmental protections which often dispossess indigenous populations of their lands in order to save water for use elsewhere. While counting is a strategy often enlisted by the state or by water companies and engineers to avoid scarcity of the entity through which profits are obtained, Muehlmann also describes how counter-counting can be enlisted as a 'potentially potent rhetorical tactic among subaltern groups… invoking the specter of an immediate environmental crisis that needs to be prevented' (ibid:344). Yet for all this counting, water remains evasive. It is never entirely countable, despite efforts to frame and materialise its flow in numerical data. Drawing on Deleuze and Guattari's image of the rhizome, Muehlmann explains that for the Cucapa, an indigenous group averse to these kinds of enumeration management strategies, the river, like the rhizome, is acknowledged as having 'multiple entryways'…as 'always in motion'… 'perpetually in construction or collapsing'… 'breaking off and starting up again' (ibid:343). For the Cucapa, enumeration is not problematic due to its inaccuracy but 'by the fact that enumerations "distort" the rhizomatic character of rivers, species, or language speakers' (ibid:349). What is demonstrated so aptly in this work is the way different interlocutors with differing agendas work to enumerate, or evade enumeration of the river, and that 'the segmenting and hierarchizing portrayals of the river – precisely those portrayals that obscure its rhizomatic characteristics and make it a countable and commodifiable entity – have had particularly dramatic long-term material consequences for Cucapa people and other residents of the delta' (ibid). Thus Muehlmann asks not only what enumeration and the 'countdown' do as ways of materialising 'scarce' water, species, and language speakers along the river delta, but crucially, who such enumeration works for, and which entities human and otherwise are affected by such political, commodity-oriented counting.

The final work I wish to explore in terms of number narratives is that of Andrea Ballestero. Ballestero's ethnography in Brazil and Costa Rica takes the materials through which waters are materialised as an analytical tool to better understand the complex ways in which kinds of water are made, remade, contested and contrasted. Ballestero interrogates the history that inflects current conceptualisation of water not as a siloed space in the past, but as a temporally relational entity, working to understand how diagrams, numerical calculations and statistical representations are used to enact what she calls a future history of water (Ballestero 2019b). Ballestero traces conceptualisations of water as a human right and as a commodity, exploring the

contestations that arise from these positions, and the attempts of interlocutors to mediate their relationship. Ballestero notes the formulas, indexes, lists and pacts, and describes the very visceral work such forms of technology and documentation do. These technological devices ensure water is not too heavily commoditised, while also making clear that the technological infrastructures of water supply preclude this human right being free of charge. These ways of representing water construct possible futures based on historical measurements, legal precedents and so forth, showing conceptualisations of water as temporally and topographically contingent. This temporal attunement allows Ballestero to highlight that interlocutors themselves 'selectively activate certain histories' (ibid: 13) of water, while purposefully overlooking others. By following the material politics of water's conceptualisation in offices, at conferences, and at other relevant spaces which Ballestero highlights as explicitly non 'watery scenes', she reminds us to pay attention to 'how something becomes a water body in a particular time and place, and how that body is always a technopolitical entity' (ibid: 15).

Uncertainty

Waters are, as I hope the literature review so far has made clear, multiple. This multiplicity has been more poignantly reflected than ever as anthropologists engage waters in more ontologically fruitful ways, as assemblages that are multispecies, multiscalar, infrastructural, conceptual, and as actants in fractured Anthropocenes (Kelly 2018). In these fractured Anthropocenes, water's vibrant materiality has been more of a focal point than ever and the disruptions, the unruly and at times highly surprisingly materialities of water, alongside issues of scarcity and environmental degradation and climate change, are drawing ever greater attention to the ways in which waters and water-relations are infused with uncertainty. Uncertainty thus surfaces as a powerful modality through which waters are now organised and made sense of, diverging from the notion that sense is made of water through eternally reliable elements such as 'flow' (Strang 2004; Strang 2005).

Scholarship on uncertainty has grown out of, while increasingly attempting to separate itself from, notions of risk and 'risk society' popularised in the 1980s and 1990s. The structuralist account of Douglas and Wildavsky's Risk and Culture argues that 'risk is a collective construct' (Douglas and Wildavsky 1982:186), with cultures using their own criteria, honed and experienced through a particular social milieu to warrant attention to dangers and risk. A decade later, the sociologist Ulrich Beck described the emergence of a global 'risk society', demarcating a stage in which modernity reflects critically on the damaging consequences of its success, the risks it has created through its dedication to eliminating material scarcity (Beck 1992). Both of these accounts are

oversimplistic and only offer limited theoretical help as scholars work to explore notions of uncertainty which have remained underexplored contributions to the overarching rubric of risk (Samimian-Darash and Rabinow 2015). Noting that cultures are not bounded entities, but are increasingly porous in an era of global interconnection, scholars have sought to broaden the analytical potential of uncertainty, and to interrogate how peoples deal with the unknown through their 'attempt to create certainty' (Samimian-Darash and Rabinow 2015:2). Such scholars draw attention to a world that is 'increasingly being populated by forms, practices, and events of uncertainty' (Samimian-Darash and Rabinow 2015:1), which in turn elicit new forms of governance, perception and action that warrant attention.

In the anthropological collection, Modes of Uncertainty (2015), the authors 'call for conceptualizing uncertainty to better confront contemporary problems' (2015:4). Samimian-Darash and Rabinow take pains in their introduction to recognise uncertainty not as a 'thing' out there, but as a powerful 'mode' or concept through which peoples and groups are increasingly acting as they face contested predictions of what the future might like look (ibid:3). Highlighting the possibility and potentiality of uncertainty leads Samimian-Darash to interrogate uncertainty as a management strategy in the case of potential future flu-pandemics in Israel (Samimian-Darash 2013; Samimian-Darash and Rabinow 2015). Samimian-Darash describes how uncertainty appears as both a governing strategy and as a narrative that can betray governance failures. Thus uncertainty is seen not just as a part of the overarching 'risk' of flu pandemics, but is itself a powerful force in how pandemics unfold, are represented and made sense of. Writing about increasing uncertainty in the governing of urban environments, Zeiderman notes that the ontological 'truth' of whether present futures are more uncertain than futures of the past becomes irrelevant, as 'what matters here is the mounting sense in popular and scholarly discourse that we now live in a world-historic age of uncertainty' (Zeiderman 2015:182). Zeiderman argues this move towards uncertainty has material consequences, realised through anticipatory governance and practices of securitsation. This argument, inspired in part by Foucault's 2007 lecture series, agrees that "The specific space of security refers . . . to a series of possible events; it refers to the temporal and the uncertain, which have to be inserted within a given space" (Foucault 2007:20). Differing from scholars who have argued that mounting uncertainty leads to a growth of insurance based on predictive modelling (Collier 2008), Zeiderman maps 'how different forms of uncertainty are met by a range of responses that only occasionally rely on calculative predictions' (Zeiderman 2015:187).

Shortly after this collection, a similar anthology 'Environmental Futures' (Mathews and Barnes 2016) emerged, which includes works tracing what happens when environmental resources, and political uncertainty coalesce (Chowdhury 2016). Jessica Barnes traces the relationship between accountability and uncertainty, exploring the stakes for scientists modelling water futures along the Nile. For Barnes, the production of uncertainty is linked to particular forms of knowledge, expectations of particular data outcomes, and has significant impacts on water distribution for nations along the Nile. Focusing her ethnography on the way scientists both in and outside Egypt model future water, Barnes argues that Egyptian scientists under pressure from ministry officials emphasise uncertainty precisely because 'uncertainty here is linked to a scientist's position within the broader geopolitical context of a shared river basin' (Barnes 2016:62). It is ultimately, she argues, not in Egypt's interests to imply that water supply will be higher in the future as this would condone the extraction of more water from upstream nations. She therefore argues that while for scientists there may be a great deal of 'uncertainty in the signal, there is also much signaling in the uncertainty' (ibid). Outside of this collection Rebecca Bryant discusses the temporal changes wrought by 'times of crisis', coining the term 'uncanny present' to refer to 'a particular sense of present-ness produced by futures that cannot be anticipated' (Bryant 2016:20) and a temporal moment in which 'the present that I do not usually perceive as such becomes anxiously visceral to us as a moment caught between past and future' (ibid). Exploring social responses to water-related climate change Hastrup notes 'a new sense of uncertainty about the future enters into ordinary life and provokes a cultural response' (Hastrup 2009:15) encouraging us as scholars to not only focus on the uncertainty of climate change itself but also to pay attention to the diverse ways in which 'people deal with such uncertainty' (ibid).

Making space for alternate knowledge(s)

The uncertainty wrought by modernity's impact on the environment, climate, and diverse ecologies has led scholars across the social sciences to reflect on other ways of knowing and engaging with the environment (Ingold 2011). Attention to other ways of knowing has emerged in part through the ontological turn, partly as a way to respond to the Anthropocene, and also as anthropologists work to de-colonise the discipline. This means taking seriously, providing a stage for, and propagating non-Western-centric models of knowledge. Anthropologists have compared forms of environmental relating based on indigenous knowledge, understood to be more conservation oriented, with the potential to challenge nature/culture binaries (Descola 1994), to capitalist society, understood to be radically separated from modes of environmental relating (Hoover 2017; Strang 2020b; Tsing 2015). This difference is made sense of by Tim Ingold not as a

dualism of indigenous versus Western knowledge, but as a question of those who have, and have not, lost touch with a sentient environmental ecology. For Ingold, honing sentient ecologies is about unearthing perceptual skills as we develop in a historically specific environment, recognising that it is these skills, akin to a 'poetics of dwelling' (Ingold 2011:26) that 'provide a necessary grounding for any system of science or ethics that would treat the environment as an object of its concern' (ibid:25). This, for Ingold, would culminate in conservation as precisely a materialisation of dwelling in practice as opposed to the human managerial approach which is the modus operandi for environmental conservation in capitalist society.

The discourse of sustainability has become the lingua franca of water resource management, and some anthropologists have asked how the discipline might fruitfully add to this literature (Orlove and Caton 2010). Others have been wary of this discourse, which can be seen to function in a similar way to the development discourse Andrea Cornwall argues constitutes buzz and fuzz word (Cornwall 2007). Swyngedouw posits that the discourse of sustainability entrenches the illusion of there being a singular 'Nature' out there, and in imagining this 'benign and 'sustainable' Nature avoids asking the politically sensitive, but vital, question as to what kind of socio-environmental arrangements do we wish to produce, how can this be achieved, and what sort of natures do we wish to inhabit.' (Swyngedouw 2007:20). These kind of questions speak to the philosophical works of Donna Haraway, who encourages us to 'stay with the trouble' as a way to de-centre the human, forging creative formations with the critters of earth as well as thinking with radically different figures such as the cyborg (Haraway 1991). Haraway refutes an embracing of the Anthropocene as a way for humans to 'know' or 'manage' the environment and instead designates the 'Chthulucene' an epoch in which the critters of the earth are 'kin' to be lived with (Haraway 2016). Geographers have also asked how we might better relate to nature for the future through ideas of wild-life that work to break down binaries of the wild and the domestic with all their spatial inflections (Lorimer 2015; Whatmore 2002).

Social science work has increasingly provided a stage to introduce and reflect on alternate ways of knowing and relating to water. Anne Salmond notes emerging co-management modes of river governance in the case of the Whanganui River in New Zealand which, following the efforts of Whanganui Māori, has come to be recognised and entrenched in law as a 'living being'. In achieving this and conferring 'legal personhood' on the river, Whanganui Māori are able to speak and file lawsuits on its behalf in the case of environmental degradation (Salmond 2014). Picking up on this same example, Veronica Strang has noted that 'for many indigenous communities… water bodies and entire landscapes may be animated by ancestral or spiritual forces which, in

local cosmological terms, render them 'alive' and sentient' (Strang 2020b:113). Indigenous knowledge and practice, being intimately related to such understandings of nature has, Strang argues, often facilitated more egalitarian relations between humans and non-humans/environment and thus it is no surprise that indigenous knowledge has 'long provided inspiration to conservationists' efforts to promote the interests of non-human beings and 'nature' more generally (ibid:110). Elizabeth Hoover aptly demonstrates the dynamic nature of indigenous Mohawk knowledge and practice, through the relations of communities along the Saint Lawrence River to the river, to governing authorities, and to histories of cultural practice, land grabbing, and forced displacement. Mohawks, she argues, have a deep connection to this river for a multitude of reasons. The river speaks to the Mohawk creation story, has been a source of livelihood and food staples such as fish for generations, and is the backdrop to many people's gardens, which again hold a cherished place in Mohawk culture given the importance placed on growing foods and connecting to the environment. These ways in which the river is experienced as 'in' Mohawks' very being, has been fundamentally altered, Hoover argues, as do the Mohawks themselves, by the placement of large manufacturing plants along the Saint Lawrence River. Now, Mohawks experience the river as being 'in them', in terms of their bodies carrying the same pollutants as the river itself, or through the ingestion of contaminated fish. As Mohawks' bodies come to feel less and less healthy, and as Mohawks have been encouraged to stop eating fish and planting gardens to avoid ingesting pollutants, Mohawks have had their connections to heritage, culture and belief severed and contaminated too. Thus, Hoover states 'community perceptions of health reflect an understanding of the embodiment of environmental and social turmoil in the community' (Hoover 2017:249). This is precisely because for the Mohawks, as stated by a community member, 'Health is spiritual. Health is rooted in the heart of the culture. Health is based on peaceful, sustainable relationships with other people, including family, community… the natural world, and spiritual beings' (ibid).

As well as the anthropology of water attending to indigenous knowledge, it has been increasingly impacted by feminist scholarship which has been both descriptive and prescriptive of eco-politically, more-than-human, and embodied ways of knowing water. Sherilyn MacGregor whose work focuses on environmental politics and gender has argued that scholarship on women's environmental knowledge often 'presents an uncritical affirmation of gendered knowledge rather than a process of consciousness-raising that involves the self-reflexive creation of new political subjectivities and new knowledges that disrupt gender constructs and gender relations' (MacGregor 2014:66). Drawing on the example of the Love Canal in America, MacGregor argues

that a feminist approach allows us to see women's knowledge and advocacy for the river as part of a call for more equal forms of citizenship, that focus on consciousness, reason and freedom. This approach does not reify the idea of women as 'nurturers' of Earth, but as those fighting for more equal environmentally sound forms of citizenship with goals of consciousness, reason, and above all freedom (ibid:73). Feminist anthropologists have asked similar questions of how feminist approaches and modes of knowledge can aid our understanding of environmental-relations in ways that challenge gender binaries. Astrida Neimanis uses a phenomenological approach, arguing for 'bodies of water' as a way to stress what is common among planetary inhabitants, reimagining 'embodiment from the perspective of our bodies' wet constitution, as inseparable from these pressing ecological questions.' (2017:1). For Neimanis such a watery form of embodiment holds rich promise in its ability to 'challenge three related humanist understandings of corporeality: discrete individualism, anthropocentrism, and phallogocentrism' (Neimanis 2017:3) since water bodies exist in a never-ending relational stasis, of 'intake, transformation, and exchange' (ibid:2). This approach to water holds the potential to challenge anthropocentric, colonially inflected world views whereby water remains 'discrete, contained, and exchangeable' (ibid:156), which preclude opportunity for more globally equitable water management, as well as inter-species and ecologically attuned planetary relations. For Neimanis 'bodies of water' is fundamentally anticolonial in its aim, attentive to global water and the plethora of planetary interconnections that form a 'more-than-human hydrocommons' (ibid:2).

This feminist approach extends beyond the theoretical and into the ethnographic and affective. Karen Throsby's autoethnography of marathon swimming, which will be discussed in greater detail later in the review, takes a feminist embodied approach to argue for the body as a vessel for knowledge, challenging mind/body dualisms and the androcentric lens through which open water swimming has often been framed (Throsby 2013). An important aspect of such a visceral form of knowledge is the propensity to be affected through engagements with water. Being affected in such a way, is for scholars of anthropology interested in the sensory, about the force or affective nature of encounters, desires, and modes of attention, the affective processes of tuning in through which worlds are made (Stewart 2008). This affective tuning in is central to forms of knowledge produced through intimacy, which can be expanded far beyond the purview of the sexual encounter (Berlant 1998; Berlant 2008b) to encompass modes of relating that even include animal intimacies, ways of being affected and of coming to know one's locality in a different more multispecies way, through everyday lived relations with non-humans (Govindrajan 2019).

Spirituality, embodiment and wellness

The alternate ways of knowing and relating to waters just discussed draw on ideas of spirituality outside the lens of world religion, and make the case for more ecologically attuned modes of connection and citizenship. Spirituality, in this non-world religious sense, has been noted as central to what Taylor coins 'aquatic nature religion', which shares some continuities with traditional religious belief and practice such as those that 'considered nature to be sacred and worthy of reverent care' but also in the case of practices as diverse as 'surfing, fly fishing and kayaking' have 'innovative dimensions' (Taylor 2007:863). In reviewing the literature on differences between 'religion' and 'nature religion', Taylor notes that the latter tends to be oriented around spirituality not as a sacred which is beyond or other worldly, but precisely as something which is immanent. This immanence means that experiences of spirituality tend to emerge at the intersections of 'nature, outdoor experience, and everyday lived practice' (ibid:866). While Taylor takes pains to keep the word 'religion' in focus, arguing that to demarcate such practices as 'secular' is to miss how peoples feel about these spiritual-nature encounters, Strang demarcates these practices as secular, in order to make an argument about why waters in particular are apt for modes of non-religious spirituality. Strang argues it is precisely water's 'quickness', in terms of the way it animates all life, that makes it central to secular modes of spirituality (Strang 2020b). This sense of spirituality is part of a long history in which waters, particularly those from springs, have been heralded as imbued with life-giving, therapeutic and healing powers (Gesler 1992; Taylor 2010).

Today, this kind of spirituality has been most commonly noted in relation to water-based immersive activities and sports such as surfing (Anderson 2013; Taylor 2007), open water diving (Straughan 2012), marathon swimming (Throsby 2013) and as part of water-based reflections and 'dips' in local water-based landscapes which enculture strong bonds of connection between persons and place (Game and Metcalfe 2011). Such waters make clear that place has an intrinsic role to play in experiences of wellness (Williams 1999). Both Anderson (2013), and Straughan (2012), stress the spiritual import of being touched by water. For Anderson's surfers in England, the spiritual experience of surfing compels surfers to orient their lives around the surf. Surfers not only seek out this engagement, tuning into the rhythm of the waves and finding in the process an experience of spiritual connection, but fiercely guard access to this sacred space, in order to protect the sanctity of the connection itself. This access is organised around both surf proficiency, but more than anything, around localism and a strong sense of who should, or should not, be allowed to access this localised space of spirituality. That place is so central to water-based

experiences of spirituality is made clear through the work of Game and Metcalfe (2011) who draw on Bachelard to make sense of the spiritually inflected wellness felt by peoples walking, running, and swimming on Bondi Beach, experienced as their 'corner of the world'. Similarly, Ronan Foley's work on open water swimming in Ireland notes the powerful histories and experiences of spiritual connection local peoples feel to their swimming spots (Foley 2015; Foley and Kistemann 2015). Foley argues that wellbeing builds up as 'accretions' over time, as peoples immerse themselves in these cherished waterscapes (Foley 2017). He uses this point to draw attention to the dearth of attention to blue space as a space for health and wellbeing, in comparison to green space which has been focal to government efforts in the UK and Ireland to increase both physical and mental health particularly in urban spaces. It is only in the last few years that other scholars have joined Foley in calling attention to the relationship between blue space and human-wellbeing, with Exeter University launching The BlueHealth Project in 2018 which uses transdisciplinary geographically diverse research to better understand human-blue space-health relations, paying particular attention to issues of access.

Anthropologists and sociologists have also taken a more embodied phenomenological approach to spirituality and wellness in relation to waterscapes. Karen Throsby's autoethnography in which she both becomes and undertakes ethnography with open water marathon swimmers, argues for a feminist embodied approach to such immersions. Such an approach, she argues, challenges the phallocentric lens through which endurance sports have long been framed and which entrench mind body dualisms, seeing swimming as a feat of 'mind over matter'. Instead, she argues, open water marathon swimming is a practice of feminist reclamation of the body, which comes to feel differently through its elongated immersions. These immersions, from her own experience, combine feelings of spiritual connectivity and wellbeing and for Throsby, challenge some dominant ideas of what kinds of bodies can move well through water (Throsby 2013). Sociologists have also embraced this embodied turn, and have used digital technologies such as Go-Pro cameras to try and get a more visceral sense of what it means in terms of wellbeing, for peoples to immerse themselves in open water (Bates and Moles 2020; Bates and Moles 2021). Crucial to all of these accounts is a sense that the kind of wellbeing found from a spiritually attuned, immersive engagement with open waters in locations with personal significance, is not a wellbeing that can be understood simply, or even at all, as 'exercise'. While swimming pools have been understood as sites of individualistic exercise, part of the body projects of modernity,(Scott 2009) where wellbeing is understood through the auspice of being healthy, and doing exercise, the sense of wellbeing, and spirituality experienced in open waters, which sometimes as scholars note, is not so

much even about swimming as 'teabag' dipping (Foley 2017:48) is about something else. It is about deep connection, and dwelling in blue spaces with spiritual significance, and a wellness then through which it is impossible to separate the mind and body and the material of water such bodies are moving in and through (Throsby 2013).

Tuning in to water – a hopeful possibility?

Across the different sections of this literature review I have offered a trajectory for the coming of age of the anthropology of water. This maturation culminates today in a landscape of anthropological works which consider the vibrant materiality of water itself, the multispecies and infrastructural networks of waterworlds, and the increasing uncertainty wrought by fractured Anthropocenes. Water has become a vessel that anthropologists pose questions of ecological justice in relation to (Strang 2020b). It has also become a vessel that anthropologists pose questions of ecological justice through, drawing attention to its multiplicity and more-than-human materiality to strive for an equitable more-than-human hydrocommons (Neimanis 2017). Reflecting a decade later on the notion of dark green religions, (Taylor 2010; Taylor 2021), many of which might be better understood as blue religions, given his own ethnographic focus on surfing (Taylor 2007), Taylor discusses the increasingly bleak futures wrought by environmental degradation, species extinctions, and other havocs of the Anthropocene. Against this uncertain backdrop, Taylor muses, 'if another world is possible… dark green spiritualities will likely have something to do with it' (Taylor 2021:506). Taylor's wonderings of how people through their own relations with environmental scapes might reimagine the world serves as the perfect provocation to wrap up this literature review. I now move towards the methods that helped me to think and ethnographically engage 'athwart theory' (Helmreich 2011) as I myself began the journey to engage with waters and the ways people relate to them.

Chapter 3: Navigating and framing

'Always follow the rhizome by rupture' (Deleuze and Guattari 1988:11)

Finding the field

To trace how people relate to water, conceptions of health, and to problematise the larger moment of uncertainty such formulations connect to, I first had to find a suitable field site. Hunting this field site felt as much an exercise in soul-searching as academic endeavour. I talked my way into a drinking water treatment plant in central Bangkok and strolled alongside the open-top tanks of churning chlorinated water pondering why the local population, as a network of friends and colleagues told me, remained so adverse to tap water. Back in England, I tried to talk my way out of a Thames Water sewage treatment plant in Oxfordshire, repelled by the cotton buds bobbing in giant vats of excrement-stained stomach turning water. I listened as local water activists questioned our guides for the day, pointing to the sewage overflow channel which was damp from what they lamented as a recent outpour into a nearby river. I scoured the internet and following the sewage plant visit my skin, searching for something under the surface, and for a field site more politically accessible.

As I trawled the internet feeling I had nothing left to lose, I found a group within the vicinity of my home, who were demonstrating concern over a local river. Given this orientation you could call them conservationists, environmentalists, activists. I choose however to avoid these terms, since in the time I spent with individuals from this group I never heard anyone refer to themselves in this way. They referred to themselves as members of the River Beane Restoration Association, or RBRA for short. On meeting with a handful of members from this group and beginning to accompany them to their own field sites along the river, I was introduced to other concerned parties. I met individuals from the local water company, the Environment Agency (EA), Countryside Management Service (CMS), politicians, local wildlife charities, private landowners, farmers, river swimmers, I even stumbled across a filmmaker for the BBC shooting the 80s popstar Feargal Sharkey for a BBC Radio Four documentary on the plight of rivers in the area. These different interlocutors appeared to hold different ideas about the river and whether its intermittent water signaled transient life or barren death. They also held different ideas about health and the relations of humans, non-humans, and the river. Some wondered how the health of all these entities might be secured in connection with each other, while others seemed assured their separation would best facilitate wellbeing. Sometimes these groups came together in an intriguing amalgamation whereby their agendas led them to overlap topographically and diverge

epistemologically. Sometimes they concerned themselves only with a particular corridor or small segment of the river, speaking to more micro-level constructions and understandings of health and wellbeing. After the many miles of the globe and corners of my brain travelled, I had to see the irony that I had found my field site in the most familiar of places. I looked at the Beane, a river I had paddled in as a child, with hungry new eyes. I was ready to do some research at last.

Framing the field

While existing literature opened my eyes to water's infinite nature, and thus to an infinite number of ways of framing it as part of anthropological research (see chapter 2), the landscape and phenomena I was engaging with didn't entirely fit with any of the academic presentations I had come across. I was interested in people's relations with the River Beane, and wanted to think about how health was reflected on through this vessel, as something potentially more-than-human with temporal inflections linked to a heightened sense of uncertainty. Thus the field to be framed was at once river, peoples, non-humans, imaginaries of health and wellbeing that settle, disperse, and rearrange themselves over this landscape and experiences of, or attunements to, a sense of uncertainty. The River Beane as that which was present and absent, above and below ground, a physical entity, a discourse, as that which was represented in statistics past, present, and in future scenario planning, and a space to some, of danger of death, and to others, of deep connective health and wellbeing made framing an ongoing challenge. All of these enactments were constantly moving, especially in the face of the pandemic uncertainty that coincided with much of the fieldwork. I needed a way of framing the River Beane that spoke to this multiplicity, but which remained concise for the sake of my own and any reader's sanity.

As anthropologists we have become more conscious in recent decades of the work framing does. My concerns about framing the field were impacted by some of my earliest anthropological training, in which McLuhan's words 'the medium is the message' (McLuhan 1964) were drilled into me. While I am taking McLuhan out of context, his words remain a powerful provocation to note that the framings of our studies are a crucial part of how they will be understood. Add this to some later insights that framings are never neutral but are inherently political, doing work for better or worse in terms of conditioning how phenomena are understood and acted upon for the future, (Cornwall 2007) I took my framing very seriously.

After much thought, the fashion I chose to align my framing with most closely was that of 'waterscapes' (Budds and Hinojosa 2012; de Micheaux et al. 2018; Swyngedouw 2004;

Swyngedouw 2015). While some social science scholars have used the notion of waterscapes as a distinguisher, denoting 'landscapes', 'waterscapes' and 'muddyscapes' to draw attention to the materiality of underattended river-entities and relations such as water-sediment society relations (de Micheaux et al. 2018:643), the scholars whose work I align with take waterscapes as a more expansive less segmented concept. Waterscapes as a framework for these authors, allow us to think about historically and geographically specific water-related places that are manipulated and/or physically manufactured in the name of politics and power. The concept provides leverage to attend to the ways in which watery phenomena, for example water governance, are plural as well as continually reconfigured and rescaled (Budds and Hinojosa 2012:119). Through this framework water-related landscapes are posited not only as emerging materially but as materialising through powerful imaginaries and narratives of the relationship between nature, society and water (Swyngedouw 2004:3). Noting this has allowed researchers to approach water in a more temporally dexterous way, to hone in on the 'multiple processes and dynamics that mediate water over space and time', avoiding 'analysing water issues according to traditional spatial scales' (Budds and Hinojosa 2012:120). Waterscapes is thus a provocation to think about water-related landscapes as temporally shifting and dynamic with material and epistemological consequences, as liminal spaces where 'the cyborg character of the transgression between socio-nature and nature's society is perpetually emptied out, filled in again, and transformed' (Swyngedouw 2004:29).

In this thesis I take existing formulations of waterscapes as a starting point for my own framing, rather than as a final commitment. I pay attention to, and further the second half of this term - 'scapes', to think more deeply about water which rather than making up the circulations of liquid power referenced in Swyngedouw work, or the water governance explored in Budd and Hinojosa's work, escape such circulations. I think about how such 'scapes' in the physical landscape of rivers and aquifers also serve to escape the conceptions and imaginaries through which meaning has traditionally been made of water (Folke 2006) and water in relation to health. This leads me to posit my field of research as people's relations to ***water(less)scapes***. Water(less)scapes allow me to problematise the geographies, topographies, imaginaries, narratives and politics, where water flows or fails to flow, where it supports or challenges existing conceptualisations of health, and encourages interlocutors to seek new forms of connection to their local environments and non-human neighbours in the face of increasing uncertainty.

Engaging absence

Observing interlocutors and their modes of relating to water(less)scapes was at times a process of attending to their engagements with forms, manifestations, periods, and places of absence. Anthropological scholarship on absence from both a theoretical and methodological vantage point is a relatively recent and small field. In terms of theoretical approaches, anthropologists have highlighted something central but also paradoxical; "the presence of absence" (Bille et al. 2010:4). Stressing presence and absence not as 'two antonymic categories. Rather, as an ambiguous interrelation between what is there and what is not' (ibid), scholars contributing to the compilation An Anthropology of Absence (2010) note not just the relational rather than dichotomous situating of presence and absence, but their existential reliance on one another. Discussing absent limbs, buildings, memories, and people, the authors remind us of absences' multiplicity and argue that recognising the way sense is made of what is materially present or absent 'brings to the fore central questions concerning cultural conceptualizations of ontological and material categories' (Bille et al. 2010:4). The way absences are constructed and perceived along the River Beane, certainly seemed to speak to these authors' argument that 'absences are cultural, physical and social phenomena that powerfully influence people's conceptualizations of themselves and the world they engage with' (ibid).

Methodologically, medical anthropologists engaging medical non-intervention as care have brought to the fore the difficulties posed by studying the 'non' or 'not' (Driessen 2020:202) and work in the 'hope of providing others with starting points for studying nothings, 'not doings', and absences'. Highlighting that much research is driven by the present-ness of the object of study, they raise the question of 'how anthropologists might research what is not seen or done' (ibid:203). It is important to note that outlining a methodological approach to absence is not to simplify, flatten, or underestimate such an endeavour, for these authors do not suggest 'that absences and 'not doings' can simply be folded into an ethnography; the key challenge is to somehow preserve some of the qualities of shadows, traces, and otherness' which are inherent of absences (ibid:209-10). This is a particularly useful provocation when thinking about how interlocutors engage and thus enact absences, how as I will explore in chapters five and six, in positing the 'dead river', interlocutors preserve shadows and traces of life and how fundamental 'otherness' emerges as barren stretches of the river's channel begin to sprout weeds and flowers, as absence and presence surface and mingle in novel ways.

Rhizomes and multiplicity

While water(less)scapes served as a useful framing for my field, I carried some nagging concerns. Would water(less)scapes end up accidentally looking like the opposite of water(full)scapes? Would I unintentionally contribute to the above/below ground dualism of river and aquifer? I took much comfort when pondering these potential pitfalls from Deleuze and Guattari who state, 'each time, mental correctives are necessary to undo the dualisms we had no wish to construct but through which we pass' (Deleuze and Guattari 1988:20). I employed an ontological commitment to the 'multiple' (Mol 2002) and paid attention to the model of the rhizome and the 'substantive multiplicity' it both embodies and demands (Deleuze and Guattari 1988) to help me move through these dualisms without becoming stuck.

Water(less)scapes as multiple

In order to get across water(less)scapes and the interlocutors relating to them, I wanted to avoid positing waters not just in binary terms, but also as dual. While Wilk tells us that bottled water functions as a commodity precisely because it embodies scientific H_2O and natural spring simultaneously (Wilk 2006) and Illich argued that waters are inherently dual (Illich 1986), my interlocutors' enactments of water(less)scapes were inherently more than this – they were multiple. Thus considering these scapes as multiple, following the ontological commitments of Annemarie Mol, seemed a more fitting way to interrogate the engagement of interlocutors with rivers, aquifers, and non-humans, and their positing of, or retort to, narratives and metaphors of health in relation to these spaces. It allowed me to consider water(less)scapes as transient rather than fixed.

In The Body Multiple (2002), Mol reflects not on the epistemology of medical definitions of disease but instead on their ontology, the way 'medicine *enacts* the objects of its concern and treatment' (Mol 2002:vii). Mol focuses on forms of attunement and interaction and the role such engagements play in shaping the object being attuned to or interacted with. For Mol, 'attending to enactment rather than knowledge has an important effect: what we think of as a single object may appear to be more than one' (ibid). Thus we begin to be able to attend to an entity not as a singular thing to be known, but as something that is inherently multiple by virtue of its various enactments. It is important to note that Mol does not see this as leading into a necessary fragmentation of the many or towards pluralism (ibid:151), but instead as reflecting the 'intricately coordinated crowd' which is 'the body multiple' (ibid:viii). This ontological politics is about theorising how 'problems are framed, bodies are shaped, and lives are pushed and pulled into one shape or another' (ibid). For this thesis then, Mol's approach helped me to pay attention to the

myriad ways in which the River Beane is enacted as a water(less)scape and to consider the ontological politics through which these scapes take form. In focusing on enactments rather than 'relative truth' of such framings, I was able to consider the purpose of such engagements, who or what they serve – human or otherwise, and how they might not only be drawing on ideas of health, but working to reframe them.

While Mol's work is fruitful, the multiple crowd she considers is coordinated, whereas the one I explore on the River Beane is characterised by rupture and uncertainty. At this point I found it useful to take the provocation of the multiple a step further. In line with the work of Deleuze and Guattari who use the concept of the rhizome to better make sense of assemblages in the world, I consider people's enactments of, and relations to water(less)scapes and health as rhizomatically sprouting outwards, demonstrative of a more radical 'substantive multiplicity' (Deleuze and Guattari 1988:8)

The rhizomatic nature of water(less)scapes

In their philosophical work A Thousand Plateaus, Deleuze and Guattari debate popular images used to make sense of the world in philosophy, linguistics, psychoanalysis and the life sciences. They argue that pervasive images such as the tree and tap root reinforce a logic of dichotomy or simply imply unambiguous relationships between consecutive circles and have thus 'never reached an understanding of multiplicity' (Deleuze and Guattari 1988:5). In order to make sense of the multiplicity that is in fact reality, they propose the rhizome as that which is uncertainty, multiplicity and potentially incarnate, explaining that unlike the image of tree or root which relies on fixity and order and is decidedly not abstract enough to comprehend the 'micropolitics of the social field' (ibid:7) the rhizome stresses connection as heterogeneity and 'ceaselessly establishes connections between semiotic chains, organizations of power, and circumstances' (ibid). It is therefore not tied to the will of any individual or sole idea but to a 'multiplicity of nerve fibers' (ibid). The rhizome is part of an assemblage, 'composed not of units but of dimensions, or rather directions in motion' (ibid:21) and 'there are no points or positions in a rhizome, such as those found in a structure, tree, or root. There are only lines…' since the rhizome is 'perpetually in construction or collapsing… prolonging itself, breaking off and starting up again.' (ibid:8)

Rupture is, then, a crucial aspect of the rhizome. And the rupture of the rhizome is not conclusive, it is in fact generative, since it is through this that the rhizome will 'start up again on one of its old lines, or on new lines' (ibid:9). These lines do not follow a linear temporal trajectory but instead constitute 'linear multiplicities' (ibid:21) allowing the rhizome to function as an 'antigenealogy'

(ibid:10). While the drawing of new lines of flight may be facilitated by ruptures both physical and temporal, there remains 'a danger that you will reencounter organizations that restratify everything, formations that restore power to a signifier' (ibid). Thus the rhizomatic nature of things may on finding expression, be re-situated into formations that challenge the reality of this multiplicity.

Along the River Beane, the rhizomatic ways in which water(less)scapes are enacted and attended to, and the ways in which notions of health are used to make sense of or to reflect on these relations, speak closely not only to this contingent and rupturing process, but also too, to the ways in which water's multiplicity or ways of thinking about relating to it differently, are in some cases foreclosed by dominant epistemologies. Thus 'the rhizome of underground and surface water flows, of streams, pipes and networks is a powerful metaphor for processes that are both social and ecological' (Swyngedouw 2004:28), making it a useful methodology to think with, and encouraging attention to the way water, and relations to it and notions of health along the River Beane, are ruptured, reemerge elsewhere, expanding outwards in various lines, collapsing and regaining momentum in relation to a wider moment of social change and uncertainty. Having traced the theoretical and methodological approaches that guided me to and through the fieldwork, I now explore what that fieldwork looked like.

Ethnography as method

The main staple of the fieldwork was ethnography. In-depth, immersive, joyful, anxiety-inducing, rewarding, frustrating ethnography. Ethnography has been an instrumental part of the anthropologist's toolbox and typically comprises an extended period of in-depth immersive engagement in order to describe, problematise, and situate modes of thought and action. These webs of cultural significance are relayed through thick description (Geertz 1975) and traditionally related to 'exotic' geographic places and peoples. Today, instead of working as a form of native stranger (Van Maanen 2011) rendering the strange familiar, through detailed accounts of daily economic social life (Malinowski 1922) and revealing the 'rationality' of unfamiliar systems of thought, belief and action (Evans-Pritchard 1976), anthropologists have increasingly conducted fieldwork closer to home, using ethnography to render the familiar strange (Van Ginkel 1994). Homegrown ethnography reflects a desire to escape anthropology's colonial roots and speaks to debates over ethnography's tendency (deliberate or not) to entrench the notion of the 'other' (Sarukkai 1997). It also reflects a shift both theoretically and practically towards more complex objects of study, which has required a move away from the single 'bounded' field site, towards multi-sited ethnography. Multi-sited ethnography situates objects and people of study both 'in' and

'of' the world system (Marcus 1995), destabilising binaries of the 'local' and 'global' and reflecting the proliferation of globalisation, migration and digital circulation which renders the notion of 'boundedness' redundant. This has often been achieved through the following of objects as they traverse boundaries of thought, space, and time and has increasingly included ethnographic attention to the assemblages of humans, non-humans and the technical/infrastructural (Jensen and Sandström 2020; Kirksey et al. 2013; Law and Lien 2012; Tsing 2015). This has extended in further interesting directions as anthropologists work to conduct ethnography not on, but with non-humans (Moore and Kosut 2014) and even chemicals (Shapiro and Kirksey 2017). Anthropologists engaging with waters and water-concerned interlocutors have undertaken diverse ethnography, from the more single-sited explorations of cultural meaning of individuals and their inscriptions in relation to waters (Féaux De La Croix 2011; Strang 2004), to multi-sited engagements of waters across cityscapes (Anand 2017; Swyngedouw 2015), through deep ocean spaces, scientific knowledge and the bodies and microbes which connect disparate spaces (Helmreich 2009; Neimanis et al. 2015) and those situated in explicitly non-watery spaces (Ballestero 2019b; Barnes 2016).

While the ethnographic potential for engagement with water and water-concerned interlocutors is clearly infinite, at some point one has to decide what kind of ethnography to do, where, and with whom (or what). While I could have given surveys to interlocutors throughout the River Beane catchment and tried to ascertain changing views on health and wellbeing from these, it has been noted that what interlocutors verbalise and what they enact are often at odds (Bernard 2006). Thus for the main body of the fieldwork I chose to use direct field observations alongside informal interviews to allow me to follow the idiosyncrasies that emerged as interlocutors navigated their agendas and activities in relation to the River Beane. Furthermore, unlike a survey which for want of a better phrase is stuck in time, ongoing ethnographic observation allowed me to problematise the temporal aspect of water(less)scapes, to be aware that things change as they move (Deleuze 1988), be they waters, discourses, people, pandemics. Ethnography is the best way then of studying and moving with, of following the rhizomatic lines over a period of time, rather than taking a snapshot which would likely conceal much of the uncertainty I so wished to illuminate.

Ethnographic attention to movement and uncertainty allowed me to take a multi-perspective approach. While the field research could arguably be described as taking place in one over-arching geographical location, (the River Beane), it is inherently multi-sited since the site is defined not so much by its geographical location as by the substantive multiplicity (Deleuze 1988) it encompasses. Ethnography, which in its contemporary use encourages interdisciplinarity, also

allowed me to attend not just to the interlocutors human and non-human that interact with waters, but to the technological objects and forms of scientific knowledge that contribute to and materialise water(less)scapes. Incorporating elements and objects of study from the discipline of STS, I was able to ethnographically attend to the measuring devices of borehole dips, the nets, waders, and magnifying glasses used for riverfly monitoring, the hydrological diagrams on water company scientists' Power Point slides and video informatics that all materialised quantities and qualities of the water(less)scapes of enquiry.

Mapping

In order to attend to the River Beane, the aquifer that feeds it, the swimming that took hold along the river during the pandemic, and articulations of health in relation to these scapes, mapping was a central ethnographic tool. This mapping followed the methodological approach of Veronica Strang. Strang's extensive work tracing river catchments in both the Stour Valley of Dorset in England and along the Mitchell River in Australia is built upon a process of in-depth ethnography and what she terms 'cultural mapping' (Strang 2010). Cultural mapping is about building a picture of a landscape through a variety of means. This includes attending to the more traditional geographical surveys like Ordinance Survey (OS) maps of which rivers are a prominent feature, it means attending to the activities of interlocutors along rivers as they 'map' features like biodiversity, water quality and quantity and also attending to the 'maps' interlocutors construct, for example, through diagrams of river-processes. Finally, it also included for me the more fluid maps of swimmers, whose routes depended on an iterative process of edge-work with the river itself (Bates and Moles 2020), attentive to the seasons, fallen trees and so forth that altered the 'paths' that could be taken. Following Strang, I also conducted informal interviews with interlocutors as they undertook activities in relation to the river or reflected on the river's history and meaning. This 'walk-about' method for Strang provides the optimum space to explore people's 'relationships with local environments' (2010:132), to acknowledge the human necessity of spatial organisation and to consider the politics and power embedded in the mapping of landscapes. In highlighting these, we may be able to unearth forms of "counter-mapping" (ibid:133) from interlocutors who may interpret the scape through a lens different to the prevailing, privileged, or dominant map. Attending to counter-mapping also speaks to the importance of foregrounding what informants think is important (ibid:142). As a tool it 'illuminates each group's particular engagements with place' (ibid:150) and Strang proceeds to remind us that,

‘in considering maps (collaborative or otherwise), it is useful to consider what elements people have chosen to include or exclude; what is prioritized; how the images express relations between things; and how places, people and events are formally represented’ (ibid:143).

I engaged Strang’s cultural mapping throughout the fieldwork, agreeing with her premise that cultural mapping should consider ‘the contextual and the particular’ (ibid:141). I used OS maps of the River Beane to both find and walk all the publicly accessible stretches of the river, to get a feel for the Beane as it were. I also used these maps with interlocutors, asking them to point out where they undertook activities along the river, where the borehole dipping points were, and where historical structures such as weirs, paper mills and pump stations were located. I observed and also took part as interlocutors undertook activities in relation to the river, riverfly monitoring and borehole dipping, noting what they were ‘mapping’ for, how they recorded this, and how such mappings inflected their notions of river, aquifer, and non-human health. I also engaged with a wider body of cultural maps, newspaper articles, reports, radio documentaries and parliamentary debate minutes, documenting how these outlets regarded issues on rivers in the country and reflected on health. I paid particular attention to the maps emerging in relation to chalk streams, of which the River Beane is one. The way chalk streams were enacted as globally rare and needing protecting was a narrative that emerged in the micro-setting of the Beane and in a more macro-setting and thus was a poignant narrative map to follow.

While Strang’s notion of cultural mapping encourages the building ‘upwards’, of placing map upon map upon map, I tried to keep Deleuze and Guattari’s figure of the rhizome in mind, since these scholars lay particular emphasis on the rhizome as that which ‘pertains to a map’ (1988:21). Using their figure alongside Strang’s methodological approach, I tried to retain the idea that the map ‘is open and connectable in all of its dimensions; it is detachable, reversible, susceptible to constant modification. It can be torn, reversed, adapted to any kind of mounting, reworked by an individual, group, or social formation’ (ibid). According to this logic, maps are not entities to be read or entered from one direction, but like the rhizome are plateaus that are ‘always in the middle, not at the beginning or the end’.

Thus to simplify my methodological approach here, I committed myself to Strang’s methodology of cultural mapping, but tried to do so with the constant provocation of the rhizome. Instead of culturally mapping and layering up, I tried to think of the River Beane and its aquifer in a more rhizomatic fashion, as water(less)scapes of substantive multiplicity in terms of relations and enactments of health that emerge at different topographical sites. Rather than tracing the Beane as a linear entity of water, I thus map the Beane across topographical lines of variation, remaining

conscious of the dominant tracings placed on top of this map and this moment of extreme change where such maps and tracings intermingle in more visibly disruptive and novel ways. Putting this into practice meant creating cultural maps and then reading them more rhizomatically. Thus the visual aesthetic of the map included below does not need to be read from river source to tributary, but can be read from any direction, as a multitude of plateaus corresponding to particular ways of enacting, or challenging, what health and wellbeing mean with space for the non-human and the temporal aspects of the River Beane as a water(less)scape. The image, even if read from source to tributary, demonstrates a lack of linear temporality since interlocutors concerned about the river's death were concerned about stretches nearer to its source, while those enacting and immersing in the most visceral and lively ways were engaging with the river where it meets its end, joining the River Lea.

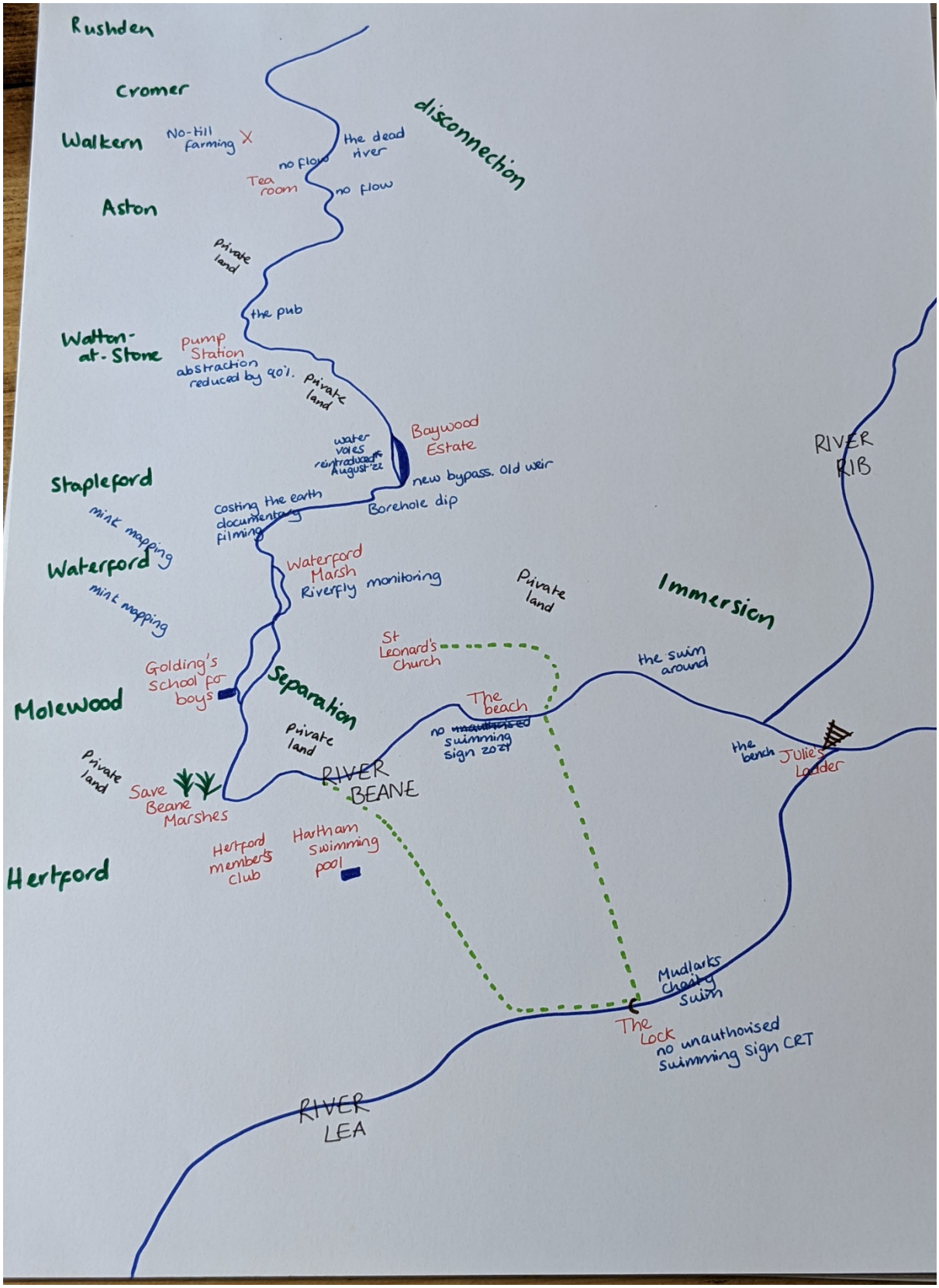


Figure 1 - Map of the River Beane including the topography of different modes of relating and of enacting health.

Reflexivity

Ethnography at home, in-home

Doing research at home in a broad geographical sense was something I had planned for. Doing research *in-home* was not. Six months into data collection I was forced to move my research in house, as a national lockdown was implemented by the UK Government in response to the coronavirus pandemic. The first month in-home was not a happy one. While the River Beane as the field of my research remained in theory intact, my research field around it had dissipated. The local group I had been observing closely had halted all of their ecological mapping, the wildlife charity had done the same, the water company offices were closed and all staff had to work from home. Even the Environment Agency were only going out to emergencies. At this juncture I fell into a melancholy sulk as I convinced myself it would be both impossible and undesirable to do research in-home. A large part of my reluctance to continue in-home was a feeling that the quality of my data would suffer. I was worried that despite my best efforts to engage deeply, reflexively, and critically, I would become a loathe-worthy relic, an armchair anthropologist.

As a month threatened to become two, I realised the period of pandemic uncertainty we had entered was likely to be long-term and thus whether I liked it or not I would have to find a way to continue researching from the space of my home. I put in an ethical amendment which allowed me to continue speaking with interlocutors by telephone, Skype or Zoom, a consideration I return to later in this chapter when I come to discuss ethics. Here I share an anecdote that led me to rethink the place of armchair anthropology in the 21st century and in particular during a pandemic where many of us were forced to remain in close proximity to just such chairs.

The first interview I conducted from the confines of my living room armchair was with the communications director for the local water company. He was jovial and charismatic and my worries that digital interviews might be awkward and unfruitful were quickly dispelled. It did feel strange to be interviewing someone in a professional capacity while having a window into their personal life, but we pressed on, and I quickly found myself relishing the information being shared. The interview took place on the 29th of May 2020, in the height of both the lockdown and an extremely warm spell of weather. The director told me that it was the driest month for 120 years in our area, and that people were, due to the pandemic, using more water than ever. I already knew that a hosepipe ban had been narrowly avoided in the Spring, however it appeared water shortage might be on the horizon again – an even more tense issue for the water company and for public health given the pandemic uncertainty it coincided with. We signed off in a hurry as he had another meeting to get to, and feeling pleased with my morning's work I walked through to

my kitchen to fetch some water before returning to transcribe the interview. I turned on my tap and nothing emerged. I walked back through my house, out into the street and knocked on my neighbour's door. "Val, have you got any water coming out of the taps?" Val pottered through to her kitchen, came back through and shook her head, "No Maddy, no cold or hot." We then continued in turn, knocking at a few more of the cottages along our small cul-de-sac. Nobody had any water.

From the conversation I had just had my mind began to reel. I felt an inappropriate desire to grin. What an ethnographic moment I thought, the drought has arrived and I'm living through it! I thought of the whole town, confined to their homes with nothing else to do but vigorously wash their hands and fill up their paddling pools, or in my case, try their hand at growing tomatoes. We had gone and done it. There was no more water, and the question of health and local environmental relations would become even more relevant. My neighbours knew my work involved something to do with water, so I was volunteered to ring the water company and ask what was going on. As I waited on hold I thought to myself, who am I when they answer? A concerned resident with no water, a researcher looking at the health of local water(less)scapes? What do I ask them first? As I continued to hold, an automated message started to play. It lamented the drought, it asked customers to save water, and it then asked them to continue to follow government guidelines and wash their hands. What a very conflicting set of messages I thought. When I got through to the water company, I decided I needed to discharge my neighbourly duties first and so asked if there were any disruptions to supply in our postcode. The man on the end of the line took a few moments to check and then confirmed there were no issues currently reported. At this moment, a neighbour from the first cottage ran outside apologising profusely. They had had a leak and the plumber, thinking he had turned off the stop tap to their cottage, had in fact turned it off for the entire street. Crisis averted we all laughed and returned to our homes. In a pandemic lockdown, excitements like this were few and far between and we all lived off the story for a good week.

This anecdote forced me to accept that I had committed an anthropological faux pas, par excellence. It made me realise that a huge part of my reluctance for conducting armchair anthropology was my hopeless devotion to the binary of home and field. Part of making the familiar strange for me had been about making Hertfordshire and the landscapes found therein less known. It turns out I had achieved this by utilising more strongly than ever the idea of the field. In doing so, I had entrenched this landscape as a binary that existed both outside of, and in antithesis to, my home. However, the field did not stop at my front door, it seeped in. My house was the field, the field was my home, and at a bizarre juncture where everyone was continuing their lives in-home, it was in fact the most apt field site for that particular moment in time. Moving my research in home made me more committed to dia-ethnography than ever (description of dia-ethnography later in this chapter p. 67), as I was forced to think about how I related to my interlocutors at a moment in which we all had to move in house as pandemic uncertainty raged around us. How I thought about the armchair shifted at this time. It was no longer a space of disconnection but felt like something we had in common. As we sat in our respective armchairs, in our respective homes, sharing stories over telephone and Skype not just of water and health, but of our families, our anxieties and of our very mortality, the armchair came to feel like a space where I truly connected with interlocutors.

Photograph 1 - The author's dog Chip sitting on the armchair from which interviews were conducted by telephone and Skype during the coronavirus lockdown.

Making a splash: immersive ethnography

As lockdown measures eased in the summer of 2020, I was able to resume fieldwork. The fieldwork I returned to, or more accurately, began at this point, was different in many ways from where I had left off in March. For all that the pandemic was a liminal period during which much of life felt paused, as I resumed my ethnography, I was reminded that nothing in the world is ever truly still. Over the months that had passed, even in the microcosm of Hertfordshire a myriad of changes had occurred. These changes would impact and enrich both my fieldwork, and life, forever.

My ethnographic mapping up until this point had led me to walk the publicly accessible stretches of the Beane as well as the private sections I could access through willing landowners. I had walked in the empty corridors of the river, and paddled in the shallow water of the marshes. As a teenager I had swum, or more accurately cannonballed into the Beane at Hartham Common, an activity that remains popular with teenagers of the area on very hot days. However, what I noticed as I walked to Hartham Common daily during the lockdown, were the increasing number of adults choosing to swim here. Morning frost, afternoon sunshine, rain, blistering heat. Whatever the weather the numbers continued to grow. A new dimension of the relation between water and health appeared to be emerging and I knew I had to follow it. I observed the swimmers from the riverbank a few times, but of course, in doing so I remained on the outside. I had to concede to what a number of them told me as they shivered merrily and threw on their clothes on the bank afterwards, I wouldn't understand it until I tried it. Thus in July of 2020 I began the first of seven months of truly immersive ethnography.

Immersive ethnography is one way to resolve the methodological issue of investigating water-based activities. Recently, sociologists interested in the embodied experiences of open water swimmers have begun to employ creative digital technologies, using GoPro cameras to allow swimmers to video their swims and to record video diaries before and after swimming (Bates and Moles 2020) This gives a closer insight to the practice, allowing the researcher an insight beyond what swimmers say about their swimming, and into the voice of swimming itself; to the subtle differences in breath, the quiet murmurs to oneself, the noise of water colliding with skin, and rock, and even in some cases, the cathartic outburst of emotion that is brought on by immersion in cold open water (Bates and Moles 2021). While these technologies are no doubt illuminating, they come with a price tag, require willingness and engagement from interlocutors, digital literacy, patience, and compromise from the researcher (see Bates and Moles discussion about GoPro camera limitations (2021:10). Given that my period of immersive ethnography was ostensibly not

planned for, but arose unexpectedly due to a pandemic, alongside the fact that such creative solutions were emerging alongside my period of data collection, I instead followed the example of ethnographers who physically immersed themselves in open waters to conduct such research.

Immersive ethnography, as it is posited by scholars of open-water swimming and sports, means taking part in an activity with interlocutors so that one truly, viscerally *feels*, as well as observes and listens (Throsby 2013). This of course comes with a myriad of methodological issues. Firstly, this kind of immersive ethnography is a form of autoethnography. There is thus always the danger that the researcher focuses intently on their own experience, producing autoethnography akin to biography, rather than ethnographically, theoretically rich data. In response to this potential criticism, Karen Throsby defends immersive ethnography as a bracketed (auto)ethnography, since it produces 'an embodied account of that process as well as observing participation inaccessible without joining in' (ibid:9). For Throsby this kind of ethnography allows one to produce rich observations but also to produce personal narratives that also constitute valid data, since they speak to the embodied 'shifted sensorium' (Potter 2008:459 cited in Throsby 2013:8) that quite literally 'makes up' what it is to swim in open waters. Throsby's defending of (auto)ethnography is supported by other scholars, who have conducted similar immersive ethnographies in windsurfing (Humberstone 2011), scuba-diving (Straughan 2012) and open-water swimming (Watson 2019). Humberstone states 'To 'know', understand and research the practices, values and relations constituting a nature-based sport, one arguably needs to experience the activity reflexively' (Humberstone 2011:498), which she argues can be achieved by taking part in the practice and not just asking, but feeling for oneself 'how the body learns to be in the world' (ibid:496).

Thus drawing inspiration from these works, I immersed myself in the River Beane with swimmers through the seasons of summer, autumn and winter. I wrote ethnographic notes and observations on my own personal experience and *feel* of swimming as well as undertaking many observations and engaging in conversations with other river swimmers. I thus worked to build up a picture of both the embodied visceral sensation of what it means to connect in and through a body of water like the River Beane, but also, following the methodology of Ronan Foley who has undertaken numerous ethnographies with open water swimmers in Ireland, I also sought to understand the personal histories, influences and impacts such swims have on the wellbeing of those who swim. To do this I allowed swimmers to speak freely to me as we conversed along the river's banks and as we swam through its waters (Foley 2015; Foley 2017).

Dia-ethnography and fieldwork shadows

Having introduced a variety of ethnographic methods and moments, I pause to think about some of the shadows that emerge in ethnography. In their own ways, Deleuze and Guattari, Mol and Strang, all encourage attention to the shadows of the field of research. However, it is crucial to recognise that shadows do not just live in the field of research, but are actively produced through the act of ethnography. To capture these dual shadows, Paul Rabinow encourages a practice of "dia-ethnography", which means acknowledging that ethnographies are about both relation and motion (Rabinow 1996). Taking Rabinow's provocation further, McLean and Leibing advise attention to our personal shadows as ethnographers, as well as to the shadows we encounter and negotiate in the field (McLean and Leibing 2008:3). For them this delicate balance involves including personal information about ourselves as ethnographers only where it illuminates the ethnographic process or something relevant in the field, and thus adopting a 'measured *economy of disclosure'* (ibid:13). These insights were particularly helpful to me as I navigated conducting fieldwork in Hertford, Hertfordshire, which is the county town I have periodically lived in for the majority of my life, and where I returned to live and conduct my fieldwork. I agree strongly with McLean and Leibing that while no ethnographic endeavour can entirely segregate the ethnographic from the personal, some research blurs it more than others. Doing research in my hometown on the River Beane made attending to the shadows more important than ever.

Being reflexive, acknowledging the shadows of the field, myself, and of all that moved around me during a turbulent sixteen months of fieldwork, was an ongoing process. It meant different things as the months of data collection progressed, and continued to take on new meaning as I wrote the thesis and re-engaged with the interlocutors who had helped me reach certain themes and tentative conclusions. The first and very obvious moment of being reflexive was looking at the familiar space of Hertford with inquisitive eyes. It meant challenging my own preconceptions about water-related issues in Hertfordshire, about the landscape of the area, the demography of its interlocutors, its politics, governance and so on. It meant attending to what I had brought into the field, the shadow that was my pre-existing 'knowledge' (Corin 2007), and where it reared its head, continually questioning it. It meant beginning from what Ballestero calls a position of 'wonder', which is not about the fantastic or magical, but about the confusing and the ill-aligned (Ballestero 2019b). It meant engaging epistemologically and ontologically with the water(less)scapes of the research through the insights of my interlocutors and trying to situate myself alongside rather than above or separately from the landscapes and interlocutors I was attending to.

This was no mean feat. While rendering the familiar strange in one's home locale can be easier in some senses, one tends to know the area well geographically and have access to a larger network of interlocutors from the get-go, it can also be difficult. My preconceptions of the area had been cemented over an elongated period of time, through the homes I had dwelled in, the leisure pursuits I had undertaken, the friends, family and networks I existed within. They were sometimes hard to chisel away at or sideline and doing so took ongoing work. Reflexivity also had emotional impacts that I certainly had not considered before embarking on the research. Until tackling the ethnography, I really thought I knew Hertford as a place. Realising how strange it was and, in some senses, how little I really knew was interesting but also unsettling. It made me feel ignorant and naïve. When interlocutors said things like "you know about that right?" or mentioned acronyms of public bodies they assumed I knew, I felt like an imposter as I listened to the sound of my own "no", "erm no", "oh, erm, no actually." I was convinced that the next question would be "what have you been doing in Hertfordshire for the last 25 years then?" In this hypothetical situation I would always have to answer honestly with, "going to school or to the pub" which did not make me feel much better. Being reflexive thus forced me to wonder how well any of us knows the places in which we reside, what it means to know them, and if in the comfort of home we are most readily blinkered.

Another aspect of reflexivity brought to the fore by conducting research at home was that of my position. As has been discussed by George Marcus, assuming different positions is an inherent part of multi-sited fieldwork, and this conditions the researcher as a kind of circumstantial ethnographic activist (Marcus 1995:113), not in the sense of a left-wing liberal political commitment, but by virtue of negotiating identities and being reflexive about the different subject positions taken. This was a particularly important consideration for me. While observing and undertaking ecological mapping with members of the RBRA I felt myself an environmentally concerned local resident; while swimming with river swimmers I felt myself a nature-intrigued health seeker; while interviewing professionals from the water company I was aware of myself as interested researcher but also customer and when meeting with local councilors and staff of the EA I felt like a resident under particular jurisdictions. Across all these positions I was a researcher undertaking ethnography, but it was important to reflect continually on how my status as a local resident made me feel and see myself as I undertook research activities, and also importantly how my interlocutors saw me because of this fact. Many times interlocutors felt comfortable with my presence and willed me to take active part in activities precisely because I could be framed as another concerned resident. I was to many of these people not an outsider, but a kind of once-

removed insider. When river swimmers bemoaned the collapsed riverbank from 'tourists' travelling from London during the coronavirus lockdown to swim in the river, they never, or at least not to my face, complained that I should not have been there as a researcher. I was from Hertford and thus to them was deserving of a place.

As I have already said, being reflexive was a commitment and a point of surprise. The group I travelled to the Thames Water sewage treatment plant with makes a nice point of comparison here. Having met with them a handful of times, I wondered if I might do some comparative ethnography between their group and the RBRA. I felt we had got on very well during my informal visits. On asking about this possibility I received an email that they did not feel allowing a third party to study what they were looking into would benefit their campaign and thus I would not be welcome to do so. Accepting this, while of course disheartened, I reflected later that none of the interlocutors I met in Hertford ever positioned me as a third party, nor necessarily did they feel my position relied on me bringing benefit to their activities. Reflexivity is thus also sometimes as interesting a thought in relation to the field sites and interlocutors that don't come to be, as the ones that do.

'Ex-citement'

Having noted the moments of reflexivity that arose during fieldwork, I want to return now to a point I made earlier. Reflexivity continues far beyond the period of data collection. It was only when I began writing up my thesis that I realised none of the literature I had read to prepare myself for ethnography, and being reflexive about that ethnography, encompassed how doing ethnography made me feel. As I began writing up the thesis, I came across a book chapter by Dimitris Papageorgiou on the subject of shadows in ethnography. In his chapter I found a kindred spirit and brutal honesty about the physical and emotional extremes of collecting 'good data', and what the expected journey of translating that data into a thesis can do to us as researchers. Using examples from his own research Papageorgiou explains that ethnography embodies the problem of 'ex-citement'. In the field we are cut off from our pre-existing experiences, thrown into new ones that change our perspectives forever, and we spend months navigating these moments of 'terror and almost limitless freedom' (Papageorgiou 2008:223). For Papageorgiou it is this subjective interaction with people in the field, quite literally becoming one of the group, that gives us the direct experiences that create good quality data. This is not easy though as in doing it we are liable to lose ourselves in the ex-citement. One anecdote from the chapter that stayed with me and instantly took my mind back to an ethnographic encounter of my own, was Papageorgiou's experience of an overnight trip with football fans in Greece. Papageorgiou found himself in the

midst of a violent scuffle, screaming chants alongside his interlocutors, pursued by the police. He returned to his home city dazed and confused, arriving at a friend's house he 'stood there speechless, unable to transform… experience into words' (ibid:228). After this when he came to write his thesis, he found himself torn by a common predicament, 'experiences from the field research squeezing to be expressed versus professional obligations and expectations restricting their expression' (ibid:229). These insights resonated with me in particular relation to my months of river swimming with interlocutors. River swimming as I discuss in greater detail in chapter seven was immersive. It made me feel things strongly, and aroused in me precisely the kind of 'ex-citement' Papageorgiou proposes. When an unknown party removed Julie's ladder (see chapter seven), I was in no way a passive observer to the swimmers' responses. I was part of that response. I was angry. I continued swimming with these interlocutors when my period of fieldwork ended, but as Papageorgiou himself found, when I started writing something about this, the relationship changed. Immersing myself so deeply in the field gave me something, it was exciting. When I moved on with my research I pined desperately to be back in that place, knowing I never would be. Something had been withdrawn, something had changed. To this day I don't quite know what that was, but in Papageorgiou's work I found a hint that I am not alone in this feeling, and it is something I hope more ethnographic reflections will come to highlight. In terms of writing chapter seven I found it hard to know how to communicate the experiences I had with swimmers. So much of it was a wordless feeling and unless the reader decides to go to the River Beane one afternoon and join the swimmers there, I'm afraid my account will never allow you to know what that experience truly is.

Participant observation

Having presented an overarching picture of the cultural mapping and ethnography I undertook, here I describe in a little more detail the spaces and interlocutors I engaged with. I began fieldwork with members of the RBRA. I drank tea and ate biscuits in the homes of the secretary and two of their most active members. From here I accompanied these members on their riverfly monitoring trips to Waterford Marsh, and to their borehole dips along the river. I observed their practice, the utensils they used, their methods for recording the information, and became part of the email list receiving this data at the end of each month. Thus I saw and engaged with the different stages of this process. From the visceral engagement of the riverfly monitors, kicking the stones of the riverbed towards an open net to collect species samples, counting and ordering them neatly into Petri dishes, to the Excel spreadsheets where these samples were collapsed and

compressed into numerical form to be compared to months and years gone by. This was the same for the borehole dipping, where I watched the long tape measure be lowered gradually into the abyss, beeping when it hit the groundwater and then the measurement taken. I accompanied the group on a day out at the Baywood Estate, where a weir had backed up so badly that the riverbank collapsed. The water company had invested over £1 million to construct a bypass (more details in chapter four). I listened as agendas from land ownership, history, health, biodiversity, water quantity and quality all intermingled. From here I began conversations with more individuals from the water company and EA, travelling to the water company's head office to talk with the biodiversity team, and later over the phone to its hydrologic specialist about the aquifer and its health. I went to annual general meetings of the RBRA, of angling societies, I went to the meeting of the newly formed Chalk Aquifer Alliance, I had coffees with the Living Rivers Officer from a local wildlife charity which owns some land housing stretches of the River Beane and is tasked with improving its health. I went to the Houses of Parliament and spoke with a local MP for the area who had taken these river concerns to MPs for debate, and who as an avid fisherman spoke of his despair at the river's declining health. I went to fundraisers organised by local residents who were crowdfunding to buy a marshland the Beane ran through, in order to gift it to the aforementioned wildlife charity. I collected materials produced by all of these groups, flyers, newsletters, presentations, informatic videos, tables of statistical data, transcripts of debates, and automated voicemail messages. Water(less)scapes thus materialised along the banks of the river, over cups of steaming hot tea, in pubs, in people's homes, gardens, offices, farms, in village town halls, on Zoom, Skype, by telephone, in archive libraries, online. When fieldwork resumed during the pandemic, I spent at least three afternoons a week for seven months at the River Beane, swimming with and observing river swimmers, conversing with them on the banks before and after swims. I also continued to follow up with some of my earlier informants, returning to riverfly monitoring and learning more about invasive species monitoring. Alongside these observations, I undertook some less spontaneous more organised ethnography, conducting in-depth unstructured discussions with interlocutors (see appendix 5 for list of interlocutors).

Analysis

I reflected on the data I collected throughout the fieldwork in real time. Where I recorded interviews and observations I transcribed them the same working week. Where I was observing, I sometimes took written notes, photographs and drew sketches concurrently, but I often waited until I returned home to frantically scribble down what I had observed. Many of the observations I did, for example cultural mapping with members of the RBRA in their field sites and immersive

ethnography of river swimming, were not conducive to simultaneous note taking. They were immersive practices that involved listening, visually attending, and at times physically practising and doing. In these cases I always wrote ethnographic notes later. In other cases where note taking was physically possible, it didn't always feel appropriate. The presence of the notepad and the sound of scribbling, particularly when observing interlocutors with differing agendas and views as they conversed, sometimes drew eyes and I felt encroached on the situation. In these cases I listened carefully, perhaps only jotting down a word here or there to prompt my memory when I returned home.

When I had transcribed interviews, written ethnographic notes and collected excerpts from newsletters, AGM proceedings, blogs, emails and statistical data I did two things. Firstly I asked what about the data collected made me curious, what was still mysterious and needed following up. I then worked out if that meant following up with the same interlocutor, with someone else in their network, from my list of potential interlocutors, or if I had highlighted a gap entirely. From here I reached out again, and again, following different ideas and agendas and building a wider network of interlocutors. This ongoing interplay between analysis and research was thus invaluable and ensured I didn't end up in a situation at the end of the fieldwork where I knew a great deal about some interlocutors' engagement with water(less)scapes, and very little about others. Secondly, this ongoing analysis allowed me to code thematically into NVivo software as I went. Many social scientists now choose to use such digital software platforms to help with their analysis, building a repository of data, neatly coded and ready to be developed into abstract meta-themes later (Ziebland and McPherson 2006). While I did this diligently throughout the fieldwork, when I came to my final analysis I found it utterly intolerable. The themes and concerns I had found didn't look lively anymore, they didn't retain any of the rhizomatic multiplicity of interlocutors engaging with water(less)scapes. They had lost their spatial and topographical meaning; they were just collapsed words and numbers. I agonised at this point, asking myself what kind of 21st century qualitative researcher I was if I wasn't Team NVivo. If I was in fact, Team "print all your data off, grab a highlighter and all the maps you've scribbled, and turn your living room into one of those police wall scenes from a television drama."

Progressing with the research process won out over digital prowess and my ego, and so I went back to my maps, diagrams and notes. I started to annotate the themes onto these papers. With this image I could retain the spatial and topographical aspect of these themes. I could demonstrate that relations to the river and the way health was enacted through such relations were not linear or straightforward but were fragmented and contested, that they were sometimes non-human,

sometimes human, and that this had not just an ideational aspect, but a geographical one too. I could demonstrate the substantive multiplicity of both interlocutors' engagements and understandings of health in relation to water(less)scapes, while also keeping the multiplicity of the scapes in central focus too. Thus the map and mapping were theoretical, methodological and analytical tools that helped me to keep water(less)scapes and the way interlocutors consider health in relation to these spaces three-dimensional and multi-perspectival throughout.

Ethics

Ethical approval for the fieldwork research was obtained from the Research Ethics Committee at the London School of Hygiene and Tropical Medicine, as was a later amendment to allow me to continue the research interviews by telephone, Skype and Zoom during the coronavirus pandemic lock-down (appendix 1). I sought agreement to conduct fieldwork with the RBRA through the secretary and chairman of the group. I wrote a short abstract of the research and this was shared with the members via email, for them to indicate their acceptance or refusal for me to join the group for ongoing observations. I received an email that the group would gladly accept my research and thus this was my entry point to fieldwork (appendix 3). From here, I was introduced to a wider network of potential interlocutors through members of the RBRA, and also highlighted individuals and groups I thought relevant through internet searches, conference attendance and field site visits. In all cases I ensured interlocutors were provided with an information sheet about the research and an informed consent sheet to sign (appendix 4). This indicated not only willingness to be involved but whether they were happy for me to record, take notes, photographs and to include anecdotes or insights obtained in the writing of the thesis. I highlighted the voluntary nature of taking part, the option to withdraw at any time and communicated the timeframe and scope of their taking part. I encouraged interlocutors to ask questions, and I committed to sharing my ongoing thoughts about research findings.

The thesis contains a mixture of interlocutors identified by their real names, job roles, and interlocutors identified through pseudonyms. This mix has been done for two reasons. Firstly, to respect the wishes of interlocutors who demonstrated not just a willingness, but in some cases an active desire to be named in the research. They were proud of what they were doing, of their engagement with the river and/or aquifer and I wanted to honour this. Where pseudonyms have been assigned this is not necessarily at the individual's request, but from careful re-reading of transcripts, attention to the sensitivity of information, the professional or personal role of the

individual, and the wider political situation in which that individual operates. In some cases an individual is identified not by their name or pseudonym but through their job role. I want to point to one particular happening which forced me to think very carefully about the use of names. While those I spoke to at the EA in 2019/20 appeared content to be named, in 2020 the EA published its report on rivers in England. The report was fairly shocking, and reported that while the number of rivers of 'good' ecological status remained at 14% from 2016, with changing parameters for measuring chemicals implemented during this period of time, the number of rivers classified as having good chemical content was now 0%. The fallout from this, both in the media and in the local context of my research, led me to rethink including the names of those at the EA I spoke to. This demonstrates the importance of not switching off when writing up data. The world of my research didn't stop just because I wasn't actively researching anymore, and I wanted to be mindful of this as I continued to make ethical decisions. I realise that this may sound very messy but I want to reflect both the political shifts as noted above, and also that one size does not fit all. Interlocutors, like the researcher, can occupy multiple positions at once, they too might be concerned residents, but also employees of a company that affects their position on the River Beane and its health. Thus I want to make clear through the selection of name, pseudonym, or job title, the 'position' of theirs I felt came through in the research most prominently, the vantage point they explicitly told me they were speaking from, or a decision made based on a shifting political landscape.

Writing and Audience

Writing, for me, has been as much a part of the methodology of this thesis as any other. I am a person who writes to think. What you are reading now is a mutation of nearly four years of thought. It is an evolved mutant to be sure, but I also like to think of it like Haraway's cyborg since it is just one possible amalgamation of words, creatures, ideas, feelings, digital typing and fleshy pulsing brain material among many other possibilities. Part of the reason the writing retained so many possibilities was that I never really wrote alone. Or not for long anyway. Writing sparked an ongoing dialogue between myself and my supervisors, my interlocutors, my family and friends, and also the geographical spaces that made up the basis of the fieldwork which I revisited continually. Writing was a constant process of verifying with myself, of returning to the spaces where conversations happened, where swims took place, of making sure that what I wrote felt true. This truth was not about what is considered factually correct in any scientific sense of the word, but was about doing justice to the peoples and places that shared with me over the period of

fieldwork. Writing about an entity as contested as rivers and the water that flows or fails to flow through made this feel like a pressing need.

In the process of writing in this way, an entire chapter that I was sure would feature was lost. I had presented much of the material for it at a conference and it gave me confidence that I had some writing in the bag. I had to see the irony when on sitting down to write the actual chapter for the thesis, I realised it didn't work at all. Writing is full of surprises in this way. Writing isn't only an ongoing methodological commitment to content, but also as I found out, to style. As I wrote my supervisors fed back to me, not just on the content but on how I phrased it. They rightfully questioned some of the choices I made, making me think more carefully and finally acquiescing to write in shorter sentences (or at least trying to).

Writing was the period and activity of the thesis that brought me the most joy, but also the most anxiety. I have loved writing for as long as I can remember. It is how my mind takes deep breaths. However, the cupboards littered with poetry on scraps of paper, and the multiple unfinished novels that fill the gigabytes of storage on my laptop, are a stark reminder that I have most often written for an audience of one: myself. Where I had authored academic work in the past, the audience had been laid out for me in advance by a project lead or by virtue of who was funding and commissioning the work. While writing this thesis, I realised for the first time that I was writing for an audience beyond myself, that no one else was defining for me. This realisation made writing an entirely different beast. From the moment I put finger to keypad I knew other people would end up reading the thesis, and not just my closest confidants. This realisation through writing saw me maintain a dialogue with interlocutors long after the period of fieldwork had ended. I wanted the writing to represent interlocutors' views fairly, and to present the tensions between different views. To do this I emailed to clarify aspects of interview transcripts I was unsure about, asked interlocutors for further details about the legalities of water abstraction along the River Beane, and sought a more thorough understanding of borehole dipping and what the numbers it produces mean. Writing presented holes that needed filing, and interlocutors, generous with their time, helped me to fill them as they emerged.

Chapter 4: Organising the River Beane

Preamble

Before exploring interlocutors' relations with their local water(less)scapes, it is worth detailing the status quo of just such a river. In this case it is useful to explore who the authorities, owners, and organisers of the River Beane are, what their roles are, and what they are legally allowed and expected to do, since water is a particularly apt example of the multi-scalar and polycentric character of natural resource governance (Ostrom and Cox 2010). When I began this research, I assumed charting the organisational landscape of a river less than 15 kilometres in length would be a couple of afternoons' work. It was not. Getting to grips with the organisation, ownership, and management of the Beane was never-ending. Every time I thought the picture was complete, a hole would appear, with more parties needing to be added, no matter how many I had already found and placed.

The landscape I present here is still incomplete. It is however comprehensive enough to give the reader a solid base from which to read and follow the arguments of the thesis. In laying out the Beane's organisation I introduce some of the parties who crop up throughout the chapters that follow. I use anecdotal stories to help situate this organisational landscape, and to demonstrate just how congested, fragmented and contested it can be. It is important to situate this organisational landscape as it exists not separately from, but as deeply connected to the agendas, practices, and immersions of local river concerned groups, residents and swimmers along the Beane. The Beane's organisation, ownership and management intersects with these voices, forming a constant conversation and at times serving as the backdrop for the debates over health that ensue.

Organising the Beane

The River Beane emerges from the ground in the hills of North Hertfordshire, in a small village called Sandon. For the first few kilometres of its journey south-east it runs through a maze of private land. As with all rivers in England, responsibility for the Beane and decisions to permit access to it (outside of the remit of pre-existing public footpaths) fall to the owner of the land the Beane runs through. This straight away means the Beane has, in a legal sense, multiple owners since its runs through multiple, separately owned, private land holdings. Open water swimmers lamenting access to waterways in England have long debated, and contested, whether private landowners own the water of rivers that pass through their land, or just the land that encases the water. Some have argued for the provision of more public access points, given the current

estimate that of 42,700 miles of river in the UK, only 1,400, which is about 4%, have a clear and undisputed right of public access. British Canoeing, the national governing body for paddle sports in the UK states that 'throughout England and Wales there is a high level of uncertainty regarding the legal rights of the public to enjoy access on water' arguing 'there is a strong case to demonstrate an existing public right of navigation (PRN) on all navigable rivers.' [3] This argument was taken up by River Access for All, as it documented the ongoing confusion between DEFRA, The Angling Trust, and the words of the UK Secretary of State for the Department of Environment, Food and Rural Affairs (DEFRA) who in 2016 agreed that "the law regarding the right of navigation on unregulated watercourses is unclear" [4]. Despite the best efforts of these groups, no laws have been clarified or made to improve access. It is worth noting that private landowners can permit access rights to those who wish to use a stretch of river on their land. Anglers make up the group of river users most often granted rights of access to private waterways. It is often argued that this is due to angling's long history. This argument is an interesting one given access for purposes of swimming is rarely ever granted, despite having been a common feature of public life throughout the eighteenth and early nineteenth century (Davies 2015; Love 2003). Public footpaths on private land often run alongside rivers. This is the case for a number of kilometres of the River Beane, where its banks, or within five metres of its banks, can be accessed via public footpaths on private land.

Much of the land the Beane runs through in its upper stretches is farmland. During my fieldwork I met two farmers whose land the Beane runs through. The Beane as it runs through these farms, one in Sandon and one a few kilometres downriver in Bennington is not accessible to the public. Farmers in this area have been encouraged by the local water company's agricultural advisor to engage strategies such as no-till farming, crop covering and crop cycling to help their soil retain rainwater and to reduce sediment and pesticide runoff. This helps, they are told, to improve recharge of the underground aquifer that feeds the River Beane, and ensures the surface water of the Beane is kept clean and healthy for the non-human life it houses and, although not necessarily a concern or something condoned by the water company, for the river swimmers swimming downstream. One of the farmers I met was the Chairman of the Hertfordshire Campaign for the Farmed Environment, finding inspiration from the annual 'Groundswell' jamboree which promotes sustainable farming practices that improve soil health. Thus it appears some farmers managing land housing sections of the river are incorporating new strategies with positive knock-

[3] https://www.britishcanoeing.org.uk/go-canoeing/access-and-environment/access-to-water
[4] http://www.riveraccessforall.co.uk/news.php#change

on effects to keep the Beane healthy. Some farmers do this solely for the viability of their farming business. In an increasingly uncertain world, climate change and variable rain patterns have made retaining soil moisture more crucial than ever to the success of annual crops. Others, such as the farmer I met in Bennington, cared deeply about the local environment and were proud to farm for both purposes.

The Beane continues on through the villages of Walkern and Aston where it is at times accessible via public footpaths, at times not as it snakes along the end of domestic back gardens and through large privately owned estates such as Frogmore Park. When the Beane reaches the village of Watton-at-Stone a new party enters the mix. The local water company has an abstraction point here, a pumping station. Here the water company is legally permitted, through an abstraction licence granted by the EA, to pump water up from the underground aquifer that feeds the Beane. This water is known as groundwater. It does this through a borehole, which is a hole drilled down into the layers of chalk, from which water can be pumped upwards. This abstraction is the first step of domestic water supply. Following this abstraction the water is piped to a water treatment plant, chlorinated, and is then piped on to homes in the local area. The Drinking Water Inspectorate (DWI) is a small independent regulatory body that ensures water companies are supplying water that meets the safe drinking water standards set out in European law. They independently audit and check the water companies' tests and intervene with their own reports and ultimately prosecution if water companies fail to meet these standards. The local water company to the River Beane benefits, I was told, in drawing water from this particular aquifer. This is because the aquifer is predominantly made up of chalk, a rock that contributes to groundwater that is naturally quite clean and pure and is thus less intensive and costly to treat. I will return to chalk in chapter five. While the water company does own a few stretches of land that the Beane runs through, it is one of the few parties along the Beane that can be said to have a direct management and ownership role in relation to the aquifer and groundwater that feeds the river. A hydrologist from the water company explained to me that:

"The water companies hold licences (granted by the EA) to abstract water from rivers and aquifers. These licences specify the volumes permitted on any given hour, day and year and also the type of use (consumptive for water companies but other uses exist for different abstractors). As such, at the point of abstraction (river intake or borehole), the water becomes the water company's property if they choose to abstract it. If however the water company chooses not to abstract the water (due to outages, low demand etc) or use only a portion of the licensed volume,

the water not abstracted will pass through the abstraction point (as surface or groundwater) and is not anyone's property as such."

In addition to the way that the water company is strictly regulated in terms of how much water it can abstract by the EA, and the standard of quality that water must meet before it can be distributed as drinking water by the DWI, it is also regulated by The Water Services Regulation Authority (Ofwat), who determine how much money it can charge for the water it distributes. OFWAT is a non-ministerial government department that acts as an economic regulator of the water industry. Given water is a basic staple of human survival, Ofwat ensures costs of water, relative to other utilities, remains cheap. This intricate dance of organisation, ownership, management and regulation between water company, EA, DWI and Ofwat is complex and can be permeated by disagreement. Water company representatives I spoke to from the biodiversity department expressed frustration that in keeping the cost of water so low, Ofwat inadvertently works to encourage domestic end users to use as much water as they can afford, rather than using it sparingly and leaving more in the environment. It is also worth noting that in the UK it is illegal for a water company to cut off water supply to a household, even where the household does not pay its bill.

Since water companies take water from underground and surface waters, they are required by law to complete an extensive report every five years. This report is called a Water Resource Management Plan and documents not only the company's strategy, but also a range of projections in relation to future customer demand and water resource availability. The most recent Water Resource Management Plan from the water company that abstracts water from the Beane, sets out:

"How we will provide a reliable, resilient, efficient and affordable water supply to customers from 2020 to 2080, whilst protecting the environment. Our Plan addresses the need to balance the availability of water supply with the demand for water from customers. We also continue to strive to help protect the environment and improve the resilience of our water supplies to droughts and other challenges."

In the last ten years water companies in England have come under increasing pressure due to concerns over untreated sewage effluent being dumped in rivers and oceans, speculation of excessive profits due to water being a monopoly industry and over-charging, and most recently concerns that ground and surface water is being over-abstracted, degrading and drying out the natural environment to satisfy ever-increasing human demand. In reaction to this, water

companies have broadened their approach to managing the water resources they abstract from, expanding into biodiversity and agricultural management, investing in expensive large-scale projects to improve the rivers they take surface water from and reducing abstraction from some underground aquifers. I witnessed first-hand an example of this new management approach from the local water company during my fieldwork. The company was involved in a re-development project at a private estate that houses a broad water of the Beane. A broad water is quite literally a wider section of the river. It can be lake-like in appearance and is often accompanied by a more obvious non-human presence than narrower sections of the river. Broad waters can serve as biodiversity hotspots and are thus a focal point for biodiversity specialists at water companies looking to demonstrate company commitments to improving the local environment. The broad water I refer to along the River Beane narrows again as it approaches an old weir. The weir is a listed structure, which means it is protected under the jurisdiction of Historic England and cannot be removed. In 2018, on inspecting stretches of the Beane, the water company noted that the weir was backing up, due most likely to its age and to build up of silt, debris, and vegetation in the river. This was preventing the flow of water downstream and was putting the banks of the broad water at risk of collapse. They advised the estate that while the weir could not be removed, the river could be by-passed around the weir through the construction of a new channel. This was a project the water company was willing to take on, manage and most importantly, finance. The company was interested to create a new channel with an opportunity for increasing the ecological health of this section of the river. This kind of river management strategy speaks to those observed by Lavau, restoring ecological health and working to undo the damage of earlier industrial infrastructures (Lavau 2010).

The estate was reluctant. They were unsure how the by-pass would fit with the existing structure and scenery and didn't want the disruption of months of work on the land. However, a few months later the water company's predictions came to fruition. The bank collapsed and some very upset and regretful estate owners rang to ask if it was too late to begin the work. The water company said not and began working on the by-pass. This was a hugely costly and time intensive project. It met hurdles along the way from other managing bodies of the river whom they had to work alongside. The EA and Countryside Management Service (CMS) had to be consulted and brought onboard. They had to liaise with Thames Water when they very nearly hit a sewage pipe which was not where the map implied it would be. They continued to work with Historic England, who accepted the proposed by-pass so long as the visible building materials of the new channel matched the old weir. This meant importing stone from Europe for the brick of the new channel, a

costly move that also led to delays in the channel's construction. Over a year after the bank's collapse, the new channel was completed and opened. It provided nearly a kilometre of new habitat for river based and dependent species and ensured the river could flow beyond the old weir once more. It was a flagship project for the company and one its biodiversity specialists and managers were hugely proud of.

Photograph 2 - Information board at Baywood Estate on the river bypass and habitat restoration.

Photograph 3 - New bypass with imported heritage brick.

Photograph 4 - New by-pass to the left, old weir structure on the right.

The EA has already been mentioned as the government body that provides abstraction licences for water companies. The agency reviews water company five year plans, alongside any documents or lobbies from local concerned parties about water abstraction levels. Every five years it can decide to increase or decrease the volume of water permitted for abstraction or in theory, rescind the licence in its entirety. It is up to the water company to demonstrate to the EA that the water it is taking balances demand from customers with the needs of the environment. The EA has emergency powers to alter licence volumes within the five year licensing period. In the case of an environmental drought for example, the EA can reduce the volume a water company can take for a defined period of time. However, the water company can push back, claiming a supply-side drought whereby customers are demanding more water than is available. This overrides the environmental drought and allows the full licensing amount to be reinstated. The EA is also responsible for checking up on landowners and farmers to ensure they are not knowingly or unknowingly distributing harmful substances into the river – for example farm waste, pesticides, and so forth. Any person in England can report what they perceive as an 'environmental incident'

to the EA, and it is their role to investigate and where necessary, prosecute those found to be causing environmental damage. All of the EA's top ten reasons for the public to call with issues relate in one way or another to water and rivers. Thus keeping rivers healthy is one of the EA's highest environmental management priorities and means they are one of the only parties to have an explicit managerial role along the entirety of the River Beane's course.

While the EA has a large role then both directly managing the River Beane and its aquifer and also checking up on other owners and managers of the river, during the course of my fieldwork, it was coming under increasing pressure from multiple angles regarding this role. As I will discuss in greater depth in chapter five, part of why the RBRA came into being was to address what they felt was a failure on the part of the EA to adequately record and act on what increasing abstraction by the water company was doing to the upper stretches of the River Beane – namely in their opinion, drying them out. It was this perceived failure that has led to the RBRA doing their own forms of measurement, and thus informally managing the Beane, for the past twenty years. This feeling of disappointment in the EA appeared from the years 2019-2021 to move for some people from frustration and disappointment to anger and betrayal. I attended a webinar in late 2020 run through a newly formed group, the Chalk Aquifer Alliance. The presenter was a local fisherman and activist, and his talk was entitled 'Seven Deadly Sins – the seven lies told to you by water companies and the Environment Agency.' His message was clear: water companies were in his view taking too much water and leaving rivers like the Beane to die, and the EA were not just standing by, but were in fact allowing water companies to do so, as well as failing to ensure pollution, pesticides and raw sewage did not end up in rivers. Part of this new-found animosity seemed to start in the autumn of 2020 when news broke that the EA's target to improve river water quality had woefully failed, and that the situation was not the same as it had been in 2016 but had in fact worsened, and not one river in England was classified as being in good status. This was for many concerned parties along the Beane a rallying call to arms. It remains to be seen how the EA as managers of English rivers work to rectify the situation they find themselves in. Their response thus far has been to point out that their budget has been cut by two-thirds by the UK Government in the last ten years, leading to a £120 million shortfall. Statistics collected in relation to these extreme shortages suggest that each farm in England is likely to be checked up on by the EA once every 200 years. Thus it is hard to disagree with concerned locals, the RBRA and swimmers when they lament the EA as not fulfilling its management role in relation to the rivers it purports to keep healthy.

Towards the end of the River Beane's course, four final sets of owners and managers are worth noting. Firstly a local wildlife charity that own Waterford Marsh, a stunning marshland through which the river runs, as well as much of the land the River Lea runs through (the river to which the Beane acts as tributary). Secondly, a private landowner, who while erecting signs in the summer of 2020 asking individuals to keep to the designated footpaths, has allowed, implicitly, river swimmers to use his land as an entry point to the River Beane for the entirety of my lifetime, and I am told, for decades before this. His land houses 'the beach' which I talk about in great depth in chapter seven. On the opposite bank to the Beane the land is public, Hartham Common, and thus in a strange way the river's channel is owned down the middle – segmented with private land on the left and public land on the right. The leisure and parks development manager and team from East Herts Council who look after the Common do regular monitoring along the Beane here, checking for and removing debris or unauthorised infrastructure, and trying to ensure that sections popular for 'paddling' are as safe as possible. They do this despite their outward declaration that no one should be paddling here at all. Finally at the point where the River Beane meets the River Lea, a liminal zone of mingling waters where many swimmers enter and exit the water via 'Julie's ladder' (chapter 7), the Canal & Rivers Trust (CRT) have jurisdiction over the canal. They have signs to remind individuals that there is 'no unauthorised swimming', and that swimming here is 'dangerous'. Their management of the river, only 400m downstream from the private, but publicly accessible beach, explicitly works to deter swimmers, demonstrating again the complex and ever-changing geography of organisation, management and access on the River Beane.

This story of formal management leads us to those who consider themselves informal managers of the River Beane. Those who for varying reasons are choosing to involve themselves as non-official managers and custodians of the River Beane. It is to their enactments and parameters of life and death on the Beane that I now turn.

Chapter 5: The dead river

My first look at relations on the River Beane was a curious one. This is because these relations were between the River Beane and those people decrying it as being dead. To begin with death is to unsettle many of the dominant paradigms through which sense and meaning have been made of waters (Strang 2004). That which flows, gives and supports life, purifies and cleanses. A dead river, as I gathered from conversations with numerous interlocutors, is not constituted by, nor can it do any of these things. So what then is a dead river? How is it enacted and attended to, by whom, and why? What remains present in the face of the absences associated with death? How are these absences 'put to work' politically, and 'responsibilised'? How do different interlocutors take on some of this responsibility? How does death and a commitment to river revival speak to a larger moment of climactic, environmental and social uncertainty? And finally how might uncertainties over life and death on a water(less)scape and the questions of (dis)connection they raise, provoke novel understandings of more-than-human relational health?

Through an extensive section of ethnography this chapter explores how the dead river was enacted, or refuted, by diverse interlocutors. These enactments included the dead river as a visual aesthetic, a number-narrative, a future potential to be insured against, and as a powerful political discourse. The chapter also speaks to more subtle expressions and philosophical interpretations of death, where absences of specific species raise questions of what a living river, and in particular, a living chalk stream should look like and be home to. I go on to explore how the dead river and species absences have been 'responsibilised' and attended or responded to, through reduction in abstraction licences, political proposals for chalk stream protections in the face of a UK wide 'chalk stream crisis', species monitoring and attempts at public awareness raising. I ask how far these responses of de-centralised 'responsibilisation' can be seen as examples of environmental/ecological citizenship and how absences of water are linked by local interlocutors to absences of environmental management by governing authorities. Importantly, I work through the chapter to make clear the lack of consensus over what the dead river means, the political co-mingling and contestation over absence and presence, connection and disconnection and how this in itself reflects a wider moment of climactic, environmental and social uncertainty. I conclude the chapter by reflecting on the ways in which debates over life and death on the Beane brought to the fore absence as akin to disconnection, and how interlocutors sought to rally around something which might restore, or reimagine what it means to be connected: chalk. For those working to restore, chalk was a political strategy of 'mattering', while for those thinking about relating to the

River Beane, it held potential to challenge bounded anthropocentric notions of health, shifting to an ontology I see as reminiscent of Fennel's work in Flint (2016), in this case, of 'We Are Chalk.'

'Seeing' the dead river: numbers and visuals

In August 2019 I accompanied the chairman of the RBRA, a fellow member, and a cameraman who was making a sequel to their previous short film 'On the Banks of the Beane,' for an afternoon. They were going to be filming a borehole dip near the Baywood Estate as well as shooting a panoramic of the Beane which, running parallel only metres from the borehole cover, had been dry for the best part of eighteen months. The chairman and his convoy collected me from Waterford Marsh where I had spent the morning with two other members of the group, observing and trying my hand at riverfly monitoring. I will return to riverfly monitoring later in the chapter, but I introduce it here to demonstrate that at the marsh, the River Beane was flowing and deep enough to house non-human life. It seemed nonsensical that I was about to travel *upriver* to what I had been told was an entirely dry stretch of the Beane.

Glimpsing the valley of the River Beane from time to time, and relishing the warm air and sense of adventure that filled my small car, I tailed the camera team along a familiar road, out of Waterford and further into the countryside. Mirroring the car in front and indicating right, away from familiarity and into the unknown, we turned sharply right down a narrow road. I followed for a minute or so longer, coming to a stop on a verge behind Dave's car, a couple of metres up from a sign that indicated where a ford to cross the River Beane would be. There was no danger of flooded engines, nor did it look like there had been for a while. A concrete measuring post stood awkwardly at the roadside. The backdrop to the measuring post was a stagnant looking pool of water, no more than three or so metres wide and long, and shallow enough that sticks and roots broke the surface. This was the only water to be found in this stretch of the river and the water remained trapped between expanses of grass and weeds. This life normally associated with the land was thriving in the mostly-dry riverbed, forming cavernous inverted green hills.

Photograph 5 - Measuring post at the ford crossing the Beane near Baywood Estate.

From the road, we climbed over a metal gate into a field to access the borehole we would be dipping from today. A borehole is a man-made hole which penetrates the layers of chalk of the aquifer. Aquifers can be made up of many layers of chalk and boreholes differ in terms of the layers of aquifer they penetrate. Depending on the purpose of the borehole, the stability of the chalk and so forth, a borehole might penetrate only the upper aquifer, sometimes the mid-aquifer, and in other cases the lower-aquifer.

As well as operating at different depths, boreholes can be understood as having multiple purposes. Not only are they a way to measure groundwater, a practice I was about to observe, but they are also the avenue through which to remove or 'abstract' such water. Before water companies began this form of abstraction, which is now premised on meticulous hydrological science in terms of chalk layer depth, and is hidden from view within pumping stations, many agricultural practices in England relied on the digging of boreholes on chalk aquifers. These boreholes, from which water often emerged without the need of pumping, acted as 'artesian springs', and were instrumental to the support of industries such as watercress. The chairman of the River Chess Association in Buckinghamshire whom I visited later in my fieldwork, shared this history of borehole digging and functions with me. He also explained to me that the contingent nature of such aquifers and boreholes had affected the industries that so relied on them. Low groundwater levels in the Chess Valley had, he stated, near enough destroyed the watercress industry. Discussing this he said

“if you go back 150 years Chesham was a huge watercress producing area… We do have one watercress farm which is just about hanging on which is just about two miles downstream from here, [but] they’ve had problems… we’ve had low groundwater levels and they have to rely on artesian water. They can’t afford to pump it because the economics just don’t make sense so they’re really struggling.”

His insights demonstrated the dynamic nature of boreholes, bringing them to life as far more than simple man-made water holes. He highlighted the network of actors human and otherwise involved in the assemblage of the borehole as part of an environmental infrastructure (Carse 2012). He pointed to the temporally contingent nature of boreholes, which have had different purposes across different historical periods, morphing with an increasingly techno-scientific water management system or ‘hydro-modernization’ (Swyngedouw 2004; Swyngedouw 2015) in which some actors can afford the costs of pumping water, others cannot. Finally he noted boreholes as conduits for the lively matter of aquifer water (Bennett 2010), which demonstrate agency (Bennett 2005) in having the power not just to support, but to determine the fate of industries such as watercress farming.

Photograph 6 - Chairman of the RBRA point out the small cover to be removed for borehole dipping.

Having situated boreholes more thoroughly, I now return to the borehole dip I observed that late summer afternoon. Having climbed the fence, I stood in the balmy afternoon heat, musing on the water(less)scape before my eyes, and trying to picture the one beneath my feet. As I busied my mind with these thoughts, the chairman busied himself lifting from the boot of his car a large measuring tape fixed into a stand. He carried it into the field we were standing in and placed it down in the grass next to the borehole cover. Crouching low, he unscrewed a small cover in the metal cover, not much wider than a hand’s width wide to allow the tape measure through. I tried to peer down alongside the tape measure, but everything was black. The chairman began to unwind the

tape and slowly, centrimetre by centrimetre, bright white tape disappeared into the black depths below. The tape measure had a heavy metal end which, on reaching groundwater, emitted a beeping sound. A light on the section of the device that remained above ground lit up in tandem to indicate that water had been reached. The chairman gradually wound the measure back up, reading the tape at 4.01 metres. A little more groundwater than his last measurement he told me, and a likely product of a fairly wet weekend. Later over email, he clarified to me exactly what was being measured during these dips, an interesting clarification which confirmed that to measure groundwater, one has to measure empty space.

"We record how far down the water level is from the top of the measuring tube which itself is located under the hatch cover and about 150mm lower than the borehole cover. The tape is lowered. When it hits the water an electronic sensor makes the gadget buzz and a light comes on. We perambulate up and down a bit to be sure we have it right, then we pinch the tape at the top of the measuring tube and we read it at that point which gives us how far down the water level is. The higher the groundwater is, the sooner the tape hits it. In a dry spell the ground water drops, sometimes a couple of metres, and the tape has to be correspondingly longer to measure it."

While none of us could see the groundwater or much at all of the empty space that separated the hatch cover from the water below, the instruments of borehole dipping allowed us to quantify that space and to take that which remained visually water-less, and to numerically quantify it into something more. Not only were the group making these spaces visible for themselves through the numerals of the tape measure, but they were also submitting these readings to the EA every month.

Just as today's measurement had been scrawled on paper, the tape measure fully rewound, and the small hatch successfully screwed back in place, we saw three people approaching us from a gravelly pathway on the other side of the river's channel. One of them was carrying camera equipment, one was wearing a full black suit, and the other was less notable. As they approached, we exchanged pleasantries and found out they were filming for a local BBC news report on the plight of chalk streams in the area. The man in the black suit was the 1980s pop icon Feargal Sharkey who appeared to have kept up his dramatic showman's appearance albeit for the slightly less rock-and-roll life of angling and chalk stream advocacy. We talked to them briefly about the efforts of the RBRA and my research. The chairman lamented his borehole dipping story for our new river comrades. When he agreed with the EA twenty years ago that his group would take borehole readings at all eight points along the Beane once a month in a response to increasingly

dry stretches of river, he didn't realise they would still be doing it two decades later. His comments were proud, but also tinged with resentment and accompanied by a subdued expression. He implied that without the RBRA's monitoring and subsequent pondering of what these numbers meant for groundwater and in turn river water levels, no governing body would bother. Thus rather than expressing a burning desire to monitor the river and aquifer in such a way, he seemed to imply that the group were working on the premise - if we won't, nobody will. Feargal spoke passionately in response. He had, from what I gathered, picked up on the chairman's gripe, and didn't hold back when claiming that chalk streams, including the Beane, were dying while the EA sat back doing nothing. While the chairman seemed despondent or perhaps just fatigued about what was going on, Feargal was visibly angry. Wishing him and his film crew well for their documentary, we edged away, passing the baton of concern to a new set of inquirers and watching from a distance. Feargal began a slow walk through the waterless river channel, the camera man walking backwards a few metres in front of him, carefully navigating the rocky weed-strewn riverbed. In his black suit this purposeful and pensive walk resembled a one-man funeral march. If the river had died, then Feargal along with the BBC's camera crew were paying (and documenting) their respects. As we left the site, the group tittered a little more excitedly. They discussed the importance of this kind of exposure for their cause, and also, rightly so, why anyone would wear an all-black suit in the countryside in 30 degree heat.

I followed the group to a pub in the village of Watton-at-Stone just a few minutes' drive further upriver. We sat in the gloriously sunny garden, took in a well-earned drink and reflected on the day's findings. A piece of paper was pulled from a rucksack, and I was shown an interesting graph. It showed the levels groundwater rose to as soon as the local water company reduced abstraction at its pump station in 2014. The chairman stated over-abstraction as a great issue, as well as the fact that water abstracted from the Beane, even after its journey through domestic spaces and back to water treatment plants, was not returned to the Beane but to the River Lea of which the Beane acts as a tributary. The chairman said all of this water-poaching was bad news for the Beane and was a large reason for prolonged periods of absent water in river channels like the one we had just seen. The term poaching stayed with me as I later drove home from the pub. While poaching can mean stealing, in the case of wildlife it often refers to the killing of animals; poaching here seemed to encompass the amalgam of stealing and death.

Photograph 7 - Barren channel of the River Beane outside the village of Walkern.

I followed up with the chairman three months later. I wanted to understand more about the RBRA, its vision, how he thought about these increasingly waterlessscapes, and the narratives of life and death I kept hearing in relation to these spaces. I had driven to the village of Walkern and before meeting him at a nearby tearoom took myself for a walk along the Beane. I walked down a residential road, through a footpath snicket and out into the fields. It took me a few minutes and a disbelieving check of my printed OS and phone-based google maps to realise I was in fact standing on a small bridge over the river. The cavern I stood above held no water or hint of dampness. The riverbed itself was not visible for what appeared to me as land-based flora. I followed this winding hollow for about 100 metres upstream, coming to a meander. The November sun was slightly warm on my face and the view over the rolling hills beside the river was truly beautiful. I had always thought about meanders as spaces for rivers to express themselves, to carve dramatic shapes into the land. Without any water this handiwork was all the more visibly impressive. However, something about this expression of architectural finesse felt off. It was desolate, quiet and painfully still. A similar spectacle to Baywood, had I again stumbled across what interlocutors such as Feargal were calling the dead river? I walked hurriedly back to the village searching for the warmth not just of the tea that awaited, but of the buzz of conversation and life that I knew would accompany it.

Photograph 8 - River Beane outside Walkern.

Photograph 9 - River Beane, meander empty of water outside the village of Walkern.

I sat down in the café and waited for the chairman to arrive. Once he did and we were settled with our steaming brews I asked him to tell me a little more about the RBRA, how it started, and why they had settled on 'restoration' as the focus of their efforts. He said that "restoration meant getting water back in it, we never thought about it too seriously but that's what it meant. Water is the first thing." In terms of the life that had emerged in the absence of water, he stated "if the water was there properly, a lot of those weeds would drown as they are land-based weeds, so that would sort it out, so while the water's not there it's not worth it." Given the elongated period of absent water in these upper stretches of the river, it turned out it had not been worth getting rid of the land-based plants now present and living there for nearly two years. It was therefore no surprise that the stretches I had just walked along were so land-like in appearance. The chairman stated the RBRA had been started up by residents of the Beane catchment who had watched the river dry up over a number of years, a phenomenon they refused to believe could be normal in the life of a chalk stream. He cited the presence of numerous water mills along the River Beane, and childhoods spent swimming in the upper stretches as proving that the river in its 'natural' state should have a continuous flow. Despite their localised focus the group soon realised that "rivers drying up was a problem all over the South of England." They connected this to three things: increased abstraction of groundwater by water companies, increased domestic usage, and climate change, with a particular focus on changing patterns of rain, or in the South-East the fact that "there's no bloody rain."

I was particularly interested in the main achievement of the RBRA that the chairman shared with me, a successful lobby that saw the local water company reduce its abstraction at its pump station by 90% in 2014. While they saw an immediate spring-back in groundwater levels, it appeared the River Beane itself did not spring back to life, but remained increasingly dry, with the waterless

stretches extending year by year. Sharing this and furrowing his brow deeply the chairman sat back in his chair and sighed before continuing, “this river isn’t flowing, and no one can understand it, because the borehole readings aren’t bad.” The chairman’s musing suggested that the Beane had somehow been severed from the aquifer, its source of life, or raised uncertainty over whether the aquifer was in fact the Beane’s source of life at all. If this was the case it was no longer surprising that he was apathetic about his twenty years of work. “I’m yesterday’s man” he told me, as alongside his implication of the disconnection between aquifer and river, he stated outright that England’s water worked through “disconnected bureaucracies… and that sums it up perfectly, Ofwat, the EA and water companies, local authorities, county councils, they all have a role to play but none of them are interested.” We finished our cups of tea and I left for home. The conversation had not cheered me, and I also left quite confused. Members of the RBRA had worked to preserve the Beane’s life source by reducing the amount of water that could be taken from the aquifer. They had achieved this reduction, and yet the Beane remained intermittently waterless. They had their theories but as embodied by the chairman, felt despondent. He might never know who or what was responsible for this increasingly waterlessscape. Everything appeared disconnected, himself to his work, the river to the aquifer, the relevant authorities to the waterlessscapes in question. Maybe, I thought, the dead river isn’t just about the severing of life, but the severing of connection?

Uncertain enactments

Absence: more than a matter of water

The observations discussed above, of borehole dipping and the BBC documentary crew filming with Feargal Sharkey, can be understood as enactments of the River Beane as a dead river (Law and Lien 2012). While different in approach, both modes of enactment worked to make absence present (Meyer 2012). From a macro, surface-level perspective these enactments are simply about making absent water on the River Beane present. And yet, through the enactment of absent water, not just in terms of how this is achieved, but why and with what possible consequences, a plethora of other absences and presences related to this water(less)scape, come into focus.

The RBRA produced borehole dipping figures every month, as ‘number-narratives’ (Brooks 2017), which they expected to betray the demise of the aquifer, and in turn, allow them to make sense of the absence of water, which they equated with the death of the River Beane. These dips, the numbers they produced, and the graphs such numbers populated, made that which was absent,

invisible, underground, into something present, visible (Ballestero 2019b), and ultimately they hoped, actionable. These numbers would materialise the scarce waters below and above ground (Muehlmann 2012), (which we saw in the case of borehole dipping also means quantifying absence in terms of empty space) and would both allow for, and constitute, their presentation to the EA. These numbers might affect the EA enough to take actions that would increase flow, and thus in the eyes of the RBRA, restore life to the River Beane. The documentaries, both the one being filmed for the RBRA as I observed the borehole dip, and the one being recorded for the BBC with Feargal Sharkey in the river channel, enacted the dead river as a visible lack of water. In the BBC documentary, the stark visual representations of barren riverbeds and a black-clothed mourner worked to reinforce for viewers the popular imaginary that an empty channel is not a river; that if sense is made of water as that which is 'living', then its absence for a river surely means death (Krause and Strang 2013; Strang 2004). In both the numerical and visual enactment of the dead river, it is fairly easy then to observe how absence of water is enacted. What isn't always so clear is why these absences are being enacted in these particular ways and what other absences or presences they bring to the surface. If we agree with McLuhan that the medium is the message (McLuhan 1964), or are at least willing to agree that the medium is central to how the message is inferred, then why absences on the River Beane are enacted in these different ways becomes a much more fruitful line of exploration.

Returning to the borehole dipping number-narratives as a way of making absent water present, it is pertinent to think about why this absence needed to be quantified numerically. The documentary filming tells us that water's absence from the River Beane could be witnessed visually. Taking photos of empty river channels like the ones I have shared above and sending these to the EA would surely have been less time and labour intensive than borehole dipping at eight points on the Beane every month, feeding these numbers into spreadsheets, and emailing them across. So why was borehole dipping the way they chose to enact this absence?

Firstly, as the chairman made very clear, measuring and numericising absences (spatial and watery) through borehole dipping did not emerge through the overwhelming desire of individual members of the RBRA, but emerged in relation to what they perceived as another absence on the River Beane – that of the EA as a responsible managing body. Over twenty years ago, when the RBRA first raised concerns about lack of flow in the River Beane (a visual concern), the EA made clear to them that they did not have the resources to do the monthly monitoring (quantifiable scientific measurement) required to investigate this. The RBRA offered to take this on. The EA agreed and went about instructing the RBRA on what was considered the scientific way to

measure these absences. If the RBRA were going to enact absent water on the River Beane, they were going to have to do it in a way that satisfied the EA. The EA figures here as a strange body – as the intended audience, the object of frustration, and ultimately the judge of the numbers the RBRA would produce.

One way we might understand the 'why' of this particular enactment, is as a practice of good environmental citizenship, since as Barry argues; 'given that the state cannot do everything, there is an increased need for citizens, both individually and in association with others, to do their bit for the environment' (Barry 1996:123). Thus undertaking citizen science to make sense of water's absence on the Beane becomes part of a process of increasingly de-centralised societal responsibility for the environment. This rise of 'responsibilised' citizenship is intimately linked to neo-liberal state practices of governance (Faulks 1998) and is particularly evident in the case of environmental management, conservation and volunteerism (Lorimer 2010). And yet members of the RBRA did not wish to fill the absence of the EA indefinitely. Yes, in a sense they responded to this absence and filled it in terms of their monthly monitoring, but they were always at pains to keep this absence, and the absence of responsibility they felt it constituted, present. The chairman volunteered this absence in every conversation he had with interested parties I observed. Thus the relative absence of the EA was what conditioned the RBRA's presence as semi-reluctant monitors of absent water on the River Beane in the first place. Absent water and absent responsibility left members of the RBRA with little option but to enact both absences through their monthly number-narratives and to hope that the authority of these numbers as scientific would lead to action. Action in this case would mean the greater involvement of the EA, and the 'restoration' of life, understood as the presence of water, to the River Beane.

In terms of the documentaries and why interlocutors wanted to visually enact the dead river, we can again think of McLuhan, and contrast visual enactments to the numerical ones explored above. The numerical enactments by the RBRA had a very specific audience. They were about making absence present to one particular governing body – the EA, through a vernacular they would respect as objectively factual – science. The visual enactments of the dead river on the other hand, can be understood as desiring a much wider audience. The RBRA wanted their documentary film to reach local people whom they felt were unaware of the River Beane's plight, to try and educate them on the intimate relationship between local people and this waterway and in turn foster a greater sense of responsibility towards it. The BBC documentary used visual footage of this local river but wanted to connect this local death to countrywide issues. Why the visual enactment of just such a local issue was deemed worthy of news coverage by the BBC indicates that happenings

along the Beane, and interest in such water(less)scapes, are part of a larger societal concern and interest in environmental and climactic uncertainty (Barnes 2016; Samimian-Darash and Rabinow 2015). The documentary was thus an attempt to visualise this death for a far larger audience, residing (potentially) far beyond those in the local area. It wanted to make the river's absence present in the comfort of people's homes. To perhaps make them uncomfortable, as they were visually prompted to connect the absence of water in this river to a potential future of absent water in rivers in all localities. While both documentaries discussed the science of depleting groundwater levels, the vernacular of science was not their main mode of communication, instead they wanted to appeal to their audiences through an emotive register of sentiment and care for the environment. They appeal to the ways in which sense of waters such as rivers are made (Strang 2004; Strang 2005) and work to install mournful sympathy, and hopefully a dose of outrage, from viewers. Accompanying these stark visuals with a narrative of over-abstraction and lack of responsibility from clearly defined perpetrators including the EA and water companies, the BBC documentary encourages the audience to connect these unsettling images to a handful of names. It makes these actors present in relation to the absence of water in these 'dead' rivers.

Despite what these enactments worked to do, it is important to remember, as the chairman made clear through his furrowed brow and perplexity at the River Beane's continual lack of flow despite reductions in aquifer abstraction levels, that these enactments of death, both visual and numerical, contain within them much uncertainty due to the spatial uncertainties of the environmental world itself (Jensen and Sandström 2020). This is particularly the case for number-narratives, as these 'numerical stories about how an environmental object works in a particular place and time' (Brooks:51) come to appear less and less as objective facts about the aquifer, and instead betray ongoing uncertainty about the causes of death of sections of the River Beane. While number-narratives in the case of the River Beane bring uncertainty to the fore, this is not to say they are in any way meaningless, for once materialised they continue to do work (Muehlmann 2012). We see this in the case of the reduction of abstraction on the River Beane's aquifer at the pumping station in 2014. This reduction was based on the number-narratives of the RBRA, who used their monitoring figures to argue that over-abstraction was causing the death of the Beane. They reported this to the EA and local water company, and the water company agreed to reduce the amount of water it was taking. While the River Beane has failed to flow in response, the local water company has not ever been given permission, nor has it sought to increase abstraction here again. Thus as Ballestero has noted, uncertainty over the sustainability of environmental infrastructures such as aquifers can be as powerful a force as certainty in facilitating, or limiting,

access to the resources they encase (Ballestero 2019c). Thus while number-narratives based on borehole measurements did not present a straightforward story of how the aquifer, water usage, river management, and River Beane water flow work in this particular place and time, they enforce an overarching sense of the absence of certainty, and the presence of uncertainty, nodding in turn to how powerful uncertainty can be (Collier 2008; Samimian-Darash and Rabinow 2015).

Parameters of life and death

On a fieldwork scoping day in July of 2019, I accompanied members of the RBRA as they joined representatives from the local water company, local landowners, the EA, CMS, and a handful of local wildlife charities on a visit to a nearly finished project to enhance a section of the River Beane. That afternoon I had heard a short presentation from the Living Rivers Officer of the local wildlife charity, a job title which held increasing intrigue for me given what I had found so far. I met with Sarah in the early months of 2020 at a coffee shop near the charity's offices. Sarah talked to me about what appeared to constitute particular parameters of life and death, not just in terms of visual aesthetics and numerical quantification but also in mineral, species, and philosophical terms. She explained that chalk streams, of which the Beane is one, were critical to the charity's work as they comprised globally rare habitats. She stated that in Hertfordshire "we don't really have any other particular environments of conservational importance" and thus these rivers were crucial. She explained that chalk streams have a specific hydrochemistry, temperature, PH, and flow rate that should be consistent all year round, and which condition an ecological niche for designated species. Sarah worried that low flow issues were being normalised in a battle where rivers are "just competing all the time and losing out in the competition against us for water which is quite interesting because our perspective is very much a river is not a river without the water in it." Sarah stated that morphology should be a natural undertaking and process of the river, and should condition "what features are there, what features are absent." However, she said that in this state of absent water and low flow the river could not conduct its own natural processes, and thus the charity had to work ever harder to do morphology work for it, to act it appeared to me, as a prosthesis for the river.

For Sarah, death along the river came as a result of continual drought, pressure and competition. She stressed that the river was left '"no time to ever recover" and that this was reflected in the species monitoring on these rivers where even when water returned "there's barely anything living in it because that stretch was dry for the whole summer." For Sarah this flux was an issue

for life and ruined what should have been a flowing "dynamic space… but there isn't dynamism, there isn't the wildlife there to create it anymore." These observations led her to reflect in a more philosophical sense:

> "If a river's dried out for two years and then the water comes back but none of the life associated with a chalk river does, is that a chalk river anymore? Because wildlife is part of what makes a chalk river so special, and you know, so again, it's like the changing baseline of what is this river. So technically it's a chalk river, but it doesn't have any of the features or wildlife that designates it as such. You know, it's worrying."

While the picture Sarah painted sounded bleak, her voice was filled with perseverance. She was fighting with the charity for change not just for the state of these rivers, but crucially she said, for the baselines by which their health was measured. She said they were imploring a move towards "ecological target flows", rather than a continual lowering of baseline flows, "which may be normal for the current context but it's not normal in terms of supporting life." She gave the example of a brown trout, heralded as one of the figure-head species of a chalk stream and so asked "what does a wild brown trout that's native to this river need as a volume of flow going through the river every day to support that kind of life?" Thus for the charity this was a time for changing the parameters of life and death as Sarah made clear when she said to me, "without a shift in the way that these flows are calculated we might just see the baseline get lower and lower, and this creates this sort of dead river."

Parameters of life and death also emerged through the riverfly monitoring efforts of the RBRA, mentioned briefly earlier. Riverfly monitoring is a practice through which non-human species living in different corridors of the river are mapped. I joined Anthea and Bob of the RBRA three times during the fieldwork for riverfly monitoring in the August of 2019, and once in February and August of 2020. On our first August meet we planned to arrive at 9.30 in the morning. It was going to be a warm day and we would be exposed on the marshes. I arrived on the marsh and saw Anthea and Bob pottering around what looked like a wooden fold-up painting table. On the table was a small plastic container, comparable to a primary school children's drawer and a second plastic container with roughly eight separated segments. Alongside these containers were two microscopes, some latex gloves, a number of white plastic single use spoons and a laminated card with blown-up images of water-based invertebrates, larvae, small fish and so forth, all annotated with descriptions. A large bucket and a net lay on the floor beside the table. Two rather regal horses grazed to the right-hand side of the table and the shallow waters of the Beane flowed a few metres behind the table.

Anthea, in a knee length denim skirt, summer top and wellington boots, took the large empty bucket and walked carefully into the river, bending to scoop and fill the bucket. She carried the heavy load back to the bank and passed it to Bob, who hurriedly walked it back to the table and left it to one side. He then passed Anthea the net, and in his other hand took up a stopwatch. Anthea walked into the river purposefully, telling me that they had to monitor in the same spots every time. She used the trees on the far bank as a directory, telling me "the first dip should be in line with this tree here." She stopped at this point, where the water nearly topped her wellington boots and placed the net into the water with the opening facing towards her feet. She looked at Bob and called in a merry voice "ready." Bob said "okay, and... GO." As Bob said go and pressed the stop-watch Anthea began frantically kicking her wellington boots into the gravelly bed of the River Beane, using the pole of the net to stabilise as she kicked. The water instantly clouded as she dislodged the stones and silt of the riverbed and dispersed it in dark swirling waves around the net. After thirty seconds Bob told her to stop, and she turned the net carefully ninety degrees, keeping it under the water, but ensuring whatever had been caught in the net would not be lost. She moved around ten metres up-river, again checking the bank to ensure her positioning. Bob shouted "go" again and Anthea carefully turned the net back the same ninety degrees and repeated her riverbed jive. She did this at six different points before returning to the nearside bank with her now heavily weighted net. I asked Bob why the monitor needed to kick samples from so many different positions in the same stretch of river. He told me that some of the species prefer the sandier parts of the river while others are more at home in and under the gravels. Thus to get an accurate sample Anthea had to do kick samples at different depths and locations in this cross-section of the river otherwise certain species might appear falsely lacking. Only removing the net from the water at the last moment, she rushed to unload around a third of its contents into the plain plastic drawer, before placing the net face up in the bucket to the side of the table. I now realised that this bucket was temporary housing for the non-human life that would be counted shortly.

Peering into the plastic tray on the table, it looked as though Anthea and Bob had been timing and kicking for nothing. A grey-brown heap of debris sat in a small pile at the bottom of the tray. Bob looked at me with a slight smile and told me to put on some gloves and pick up a spoon. I did so, as he gently placed a spoon into the brown heap and swirled it outwards. Suddenly the pile sprang into life. Tiny forms of different kinds swam outwards, leaving the safety of the pile and exploring the contours of the tray. Bob held up the laminated sheet and told me I could use it to identify what was swimming before me. He pointed out two or three of the most commonly found species

and told me to start there. The plastic container with the separate sections was where we would place these little creatures, a section for each species, to be counted up at the end. This final count would give a picture of life, or its absence, in the Beane. Today's numbers would be added to a spreadsheet Bob and Anthea kept, which compiled their monthly mappings of changes in invertebrate and fish life and was used as a point of comparison between different months, years, and against other stretches of the River Beane.

Photographs 10 and 11 - Riverfly monitors with plastic spoons, trays, gloves, invertebrates ready for sorting, and a horse grazing nearby on Waterford Marsh.

Using the small plastic spoon to fish out invertebrates turned out to be a delicate skill. I lost the first few winged olives I scooped, the tiny contents waterfalling outwards as I lifted the spoon. Gradually though I started to get a feel for the movement, observing Bob and Anthea as they hooked and decanted invertebrates with skill and patience. We used the microscopes both to determine species but also to marvel at these intricate beings. They moved in species-specific ways, some flicking their small tails, others rocking from side to side. Even within the same species there was great variety in size and appearance, forcing us to keep concentration lest one was placed in the wrong sorting segment. Despite the simplicity of the equipment and the sorting of life forms often considered lacking in charm or charisma, it was a mesmerically engaging activity. Later in the fieldwork when I would come to spend many months with wild swimmers who often pondered what might be under their feet, I thought of these inconspicuous invertebrates, hidden in the debris, only clearly visible to the human eye against the bright white of a small plastic spoon.

Photograph 12 - Winged olive on the author's plastic sorting spoon.

Bob and Anthea told me they had noted a significant drop in invertebrate life in the river since their July sample a month ago. While some changes in the life they found was explained by seasonal variation, (for example we found next to no Mayfly larvae, but if we had sampled in April, the month before they hatch, we would likely have found hundreds), they said huge decreases or lack of particular species in their entirety were always a cause for concern and could be attributed to issues such as lower flows or pollution. Thus they appeared to be mapping something that spoke to the concerns of the living rivers officer I had interviewed. They were quantifying the health of the River Beane through the non-human life it was able to house. Where the non-human life they expected was missing, something, they believed, was ultimately wrong with the river.

While Anthea and Bob never talked about death, they talked at great lengths about life, change and absence in terms of the species along and within the Beane. They told me that water voles used to be prominent inhabitants, as did otters and trout. They lamented the rise of invasive species in the area, such as American mink and crayfish as well as unruly plant life such as Himalayan balsam, which they were trained to weed out (see Chapter 7.) Thus while the River Beane appeared to be teeming with life as it flowed through Waterford Marsh, this was not necessarily the life associated with a chalk stream, and thus spoke to the living river's officers philosophical question of whether this could be considered a chalk stream at all anymore, or if it was, as a chalk stream, dead.

Temporal questions: the who, what, how long, of absence

Parameters of life and death and the way absences along the Beane were enacted and made sense of included not only the visual, numerical, spatial, mineral and philosophical, but were intimately linked to notions of the temporal. In October of 2019, I had arranged to spend a full afternoon at the local water company's head office. The office was situated on an estate of other large corporate head offices, opposite a number of exclusive car garages about a fifteen minute drive from the River Beane. The building itself was shiny and modern looking. Apart from the woeful lack of parking spaces it appeared to have been constructed with no expense spared. At the reception desk I was told I would need to have my photo taken for a visitor's pass. Smiling awkwardly at a small webcam, a very professional pass was quickly printed for the day and slotted into a small plastic card holder on a lanyard. I was instructed to wear this at all times while in the building. There was something odd about this piece of plastic. It made me feel both unnecessarily surveilled, and proudly important.

Photograph 13 - The author's water company visitor's pass. Names of the water company and employee have been obscured.

I spent the first hour of that afternoon in a glass meeting room in the middle of a large room of office desks a few floors above ground level. I was sat across a large conference desk from Toby,

an agricultural advisor to local farmers. I will return to this encounter later in the chapter. For now I focus on the second meeting I had that day, which also took place in the glass meeting room. Toby left me there to fetch some members of the biodiversity team. Sitting alone for five minutes, I felt painfully visible. I wondered if the glass meeting room was to avoid any meetings getting too passionate. After all, there would be no such thing as a meeting here happening behind closed doors. It felt like being encased under a microscope.

Three women joined me a few minutes later. They were talking jovially between themselves as they entered the meeting room. We did some introductions and I tried to communicate what my research was about. I told them that I had met with local river concerned groups and charities who were rallying to highlight what they saw as the death of stretches of the River Beane. I asked the women if they could tell me about their views on this, or how they thought about the issues facing this local river. As the three women from the biodiversity team spoke, I was struck by their conviction that the river, despite being absent of water in many stretches, was not dead. Instead they stressed two things. Firstly, the temporality of absences along the River Beane, and secondly the impact of what they saw as nostalgic or sentimental local histories that conditioned perceptions of the river, and in turn, what it meant for it to be 'dead'. In the words of the youngest woman of the group, "dead is a bit of an extreme term for rivers, they withdraw depending on seasons, obviously everything fluctuates depending on their environment, dead… definitely not." Her two colleagues offered different interpretations on the question of death. One more scientific, one more philosophical, both inherently temporal. For Sal, the eldest of the group who had spent thirty years working on rivers, her experience led her to state

> "I know that they recover… they may take a while to recover, and it depends what's happened to them, so if a river dries up, for miles and miles, yes you will get death of the plants and the macroinvertebrates, but they will recover… I always think about the river as being a living thing… just because you can't see anything in it doesn't mean to say it's not there. The river might be a dry bed covered in grass but as soon as the flow comes back you'd be surprised how quickly even aquatic plants reappear because some of those roots were just dormant in the damper sediments."

Rachel, the member of the group I had met a few times before sat nodding along and I could see her eyes darting upwards, as if piecing together thoughts to share. She began to speak about the importance of the "ideology of a river, actually when you're looking at the rivers that people are connected to, and they think are excellent examples of chalk stream, actually they're not, it isn't actually how they should be in the first place." A little confused by her comments I asked her to

clarify. She went on to say, “when you look at it from a very scientific [perspective]… what would we ideally have in terms of life in a chalk stream, you might find that actually just because it’s wet, it’s not functioning as a chalk stream. If you’re looking at different metrics you might consider some wet sections of chalk streams dead anyway.” She felt that it was “only dryness that people are considering as bad” whereas in fact due to over-straightening, dredging, weirs, and invasive species, many chalk streams with flow were in poor condition.

Rachel exemplified her point with an anecdote from a recent project a colleague of theirs had completed. A backed-up weir structure on a private farm estate meant the river above the weir was silted up and overly wide. Owing to this, while not housing much non-human life it retained a large volume of water. The water company notched the weir to let more water flow downstream, leading to the river scouring itself of silt. They narrowed the channels, and found that even water voles had returned to the area. However the locals were unhappy that the river levels were much lower now. And thus “what Toby had to kind of explain to them is, this is what the chalk stream should have looked like actually, and what you had before may have been what you were used to, but it wasn’t a good healthy chalk stream.”

Rachel went on to an interesting discussion of absence and presence, asking why particular species or historical landmarks matter in relation to rivers like the Beane and how their existence can open or foreclose different possibilities for life, challenging the idea that there can be any one straightforward way of thinking about the river living or dying. She told me that a woman from the EA had been working on bat populations and had found that

> “standing water behind weirs in terms of bat foraging, are really good for bat populations, so then you’re getting into that are we preserving the current status quo for the current species that are using that space or are we trying to go back to, you know, another point in time when somebody else has decided that this is what it should be like.”

Thus while the RBRA, local wildlife charity and anglers raised concerns over the loss of flagship chalk stream species, Rachel raised an interesting question of how manipulating the river to restore such species threatened the lives of species that had more recently colonised the river. The two anecdotes Rachel shared also led her to reflect on the historic uses of the river and man-made structures that remain today. She told me

> “a lot of these weir structures are listed because they are historically important, would people rather have a lovely flowing chalk stream that is connected and possibly is flowing upstream because it’s not been cut off, or would they still like to visit parkland that is

historically set in time, because it's a listed structure, and they like to visually see the weir and how it would have looked, you know, a hundred years ago."

She said "you often have to prioritise the river or you prioritise the structure. So it depends again on who you're speaking to, what is their priority, are they historians or are they environmentalists, because often actually they're kind of one and the same group."

The discussion of structures also led the two older women to reflect on a current narrative often used to decry the death of chalk streams, and one the chairman of the RBRA had shared with me already – that of childhoods spent swimming in the River Beane. When I asked about this, the two women looked at one another and Rachel started "the idea of swimming in a chalk stream, Sal you'll agree, is actually a bit ridiculous because a chalk stream should never be deep enough to swim in so the reality is that if people were swimming in chalk streams they were probably swimming in pools and by mills that were held up by a big weir structure." Sal nodded and Rachel went on "so yeah again it's, that's interesting, what they imagined was swimming in a chalk river was not actually swimming in a chalk river, but to convince them of that is really difficult, because if that's what you remember, and where your emotions are."

Philosophising life and death: whose parameters count?

As the excerpts of ethnography above make clear, different interlocutors enact different parameters of life and death. These enactments relate to the presence and absence of different species, mineral, philosophical and sentimental questions over what a chalk stream is, or should be, and contestation over the temporality of water and life's absence on the River Beane.

Across the three sets of interlocutors, the most overlap in terms of parameters of life and death relates to that of non-human species found in and along the River Beane. In terms of its ability to constitute a healthy or 'living' chalk stream, there was agreement across interlocutors from the local wildlife charity, RBRA and water company, about the flagship species or life forms one would expect, or hope to find in a River like the Beane. This included particular invertebrates such as winged olives and cased caddis, fish such as the brown trout, and riverside dwellers such as otters and water voles. In this sense, all of these interlocutors approached the conservation of the River Beane through what has been identified as the standard par excellence of modern conservation: environmental health as synonymous with presence of biodiversity (Brockington and Duffy 2010; Ellis and Waterton 2005). Thus for the River Beane to be a healthy or 'living' chalk stream, it needed to be able to, as Sarah made clear, support these very particular forms of non-human life. This was a large part of the charity's argument for establishing 'ecological target flows'. The

monitoring Bob and Anthea undertook certainly understood the health and life of the River Beane as contingent on biodiversity. Through their inexpensive buckets, make-shift table and sorting trays they quantified species producing number-narratives of a different kind to that of the borehole dips, but numbers nonetheless that told a story of life and death. The numbers they produced added not only lack of water to the list of concerns over the River Beane's 'death' but also water quality, showing the multi-faceted nature of number-narratives produced by the RBRA. They also speak to the kinds of politics of belonging and boundary work that conservation work does, in only monitoring for species deemed 'native' to chalk streams (Lavau 2010; Lien 2005; Milton 2000). Thus riverfly monitoring performed the River Beane as an authentic chalk stream (Lavau 2010) equating authentic chalk species as 'life', and not even counting other creatures, who were left wriggling for attention in the plastic sorting tray.

Alongside the seemingly non-problematic 'scientific' parameters of life and death enacted through practices such as riverfly monitoring, and larger projects of flagship species monitoring undertaken by the local wildlife charity, Sarah of the wildlife charity and, in particular, Rachel of the water company biodiversity team, noted the historical, temporally contingent nature of these quantifications of chalk stream health. In terms of flagship species presence or absence as an indication of river health, these interlocutors did not just contribute to a particular politics of species belonging (Lien 2005), but were also aware of this *as a construction*. Awareness of this led them to reflect in both a more philosophically abstract, and historically specific way, on whether the River Beane was in fact dead or alive. While Sarah questioned presence of water as a good measure of river health, given the River Beane might be in places 'full of water', but 'empty of non-human life', Rachel's anecdote about backed up weirs colonised by newly-visiting species such as bats raised questions about the politics of prioritisation, and the active decisions that go into supporting some lives, while disallowing others (Lavau 2010), a point I return to in chapter seven when I look at degrees of separation and 'invasive' species on the River Beane. It also showed the inextricable link between non-human life and historic infrastructures such as weirs, blurring the boundaries between 'nature' and 'culture' and demonstrating the dynamism, creativity and resilience of life on the Beane, rather than its fragility.

Drawing together the visual and numerical enactments and these parameters of life and death it is interesting that the visual and numerical representations of death from borehole dipping and BBC documentary film making stand not necessarily at odds with, but certainly not perfectly in line with, those thinking about river life and death in terms of non-human species, chalk, philosophy and temporality. While the absence of water was a concern to Sarah in questions of life and death,

it was only the tip of the iceberg in a situation where river water without non-human life might still be considered as a dead river. Alternatively for the biodiversity specialists from the water company, in thinking about the temporal history of chalk streams, lower flow in a chalk stream might be considered 'healthier' than the higher flows facilitated by human infrastructures of weirs and water mills. Thus they believed that while concerned local parties thought themselves to be talking scientifically about parameters of life and death, they were instead enacting the river through a parameter of emotional nostalgia, thinking about the River Beane they wanted, equating memory with life, and falsely understanding the Beane's dynamic changing reality as death.

Making absence count: chalk streams in crisis

The lack of clear consensus on the meaning or finality of absences along the River Beane, and whether death was considered by diverse interlocutors as an accurate narrative through which to communicate them, had become increasingly apparent. These absences were contested. They were visual, numerical, spatial, temporal, sentient, and sentimental. For some they appeared to be liminal, for others they signified something more prolonged, and deathly. For some they were about lack of water, for some lack of species, for some both, for some neither. This lack of consensus did not however prevent interlocutors most concerned about such absences work to make the absences they believed in count. In fact, perhaps because of this contestation, it made them work even harder.

Interlocutors worked hard then to home in on an overarching, less contested narrative through which they could communicate or enact absences along the Beane, make them count, while also, crucially, holding to account those they believed were responsible for, if not causing the absences, at least rectifying them. Somehow the absence of water, of particular species, and of certain or 'good' futures, needed to be brought together in a convincing way that could sit above the disagreements at ground level. Interlocutors had to convincingly situate this micro-local context in a much larger global context of environmental, climactic, and social uncertainty if it was going to garner support. Here making absence count became inextricably linked to responsibility, politics, and a mineral already touched upon, chalk.

To make the absences of the River Beane present, topical, and to lobby for the importance of addressing them, interlocutors increasingly talked about the River Beane in the context of chalk streams, and of a global chalk stream crisis. Communicating absences on the River Beane through this wider narrative of chalk streams in crisis was a strategy in making these rivers worth saving.

This narrative compared chalk streams to endangered species or globally well-known protected habitats. This narrative was surprisingly uniform across the different interlocutors I met. The RBRA, local wildlife charities, the EA, anglers, and politicians, gave almost word for word the same information about chalk streams in crisis. Even representatives of the water company broadly propagated this narrative, although they added to it in ways that diminished their role of responsibility. I will return to water company reflections on chalk and responsibility for absent water shortly but here I bullet point the main features of the chalk narrative I frequently heard. I also want to clarify that while the Beane is a river, it is also classified as a chalk stream. Interlocutors often used chalk river and chalk stream interchangeably. However most of the literature uses chalk streams to classify watercourses (including rivers) that sit above chalk aquifers. Thus I refer to the River Beane as a chalk stream in the context of the chalk stream crisis narrative but have kept interlocutors' words exact where they refer to the Beane as a chalk river.

In terms of the 'chalk talk' I heard, read, and engaged with repeatedly throughout the fieldwork, the following statements sum up its main facets:

- There are only 255 chalk streams globally and 85% of them are in the United Kingdom.
- Chalk streams are fed by chalk aquifers and so have naturally cleaner and clearer water than other watercourses.
- Chalk streams are the optimum habitat for species including the brown trout, water vole, and otter.
- No chalk stream in England is in good ecological condition and many have low or no flow.
- Chalk streams and flagship chalk stream species are under threat.

By the end of my period of fieldwork, I could judge in conversations when this passage of chalk talk was coming, and could nearly mouth along the words it was so consistent. The only time this narrative changed was when I spoke with the three women from the biodiversity department at the local water company. They introduced an aspect, or perhaps what could be considered a caveat to this narrative of consensus and certainty. They introduced the hyporheic zone, which I will argue constitutes a zone of uncertainty.

The hyporheic zone, I was told, is a zone that sits beneath the riverbed. This zone is a kind of connection zone between aquifer and river and is specific to rivers such as chalk streams which are fed from a groundwater source. A dry riverbed above ground can, Sal explained to me, mask that just below its surface sits a more amphibious landscape of moist sludge. For Sal, the hyporheic zone was a space invisible to the human eye that challenged the notion of a waterless

river as a dead river, since she stated many non-human lifeforms can burrow into the zone, surviving comfortably here while they await the return of flowing water. For Sal, where stretches of the river stood stubbornly dry, it was likely the river had been rechanneled to serve human infrastructures of weirs and paper mills. To her this rechanneling was a process of disconnecting, of severing the river from the hyporheic zone below, and thus from the aquifer that feeds it. Sal, along with a geomorphology specialist for the water company had presented this to some of the local concerned parties I had met with, and they had not warmed to it. This was particularly interesting, given that the RBRA's chairman had expressed confusion to me at the reduction in abstraction not returning water to the River Beane at the levels expected. The hyporheic zone hypothesis would seem to provide an explanation for this continued absence of water, and yet many interlocutors from the RBRA and anglers believed it to be the water company using their own concocted science and geography to excuse their role in the river's demise. They were not convinced by the hyporheic zone, and instead continued with renewed impetus their push to align the River Beane with a UK wide chalk stream crisis.

Putting absence, or at its extreme, death, on the River Beane to work as part of a chalk stream crisis was decidedly political. Thus to explore this putting to work, I had to travel to some geographically distant, decidedly less-wateryscapes where the future-histories of water are constructed (Ballestero 2019b). On an afternoon in mid-January of 2020, I met with a local MP from Hertfordshire at his office in Westminster. I sat among a throng of visitors and after completing an airport style security check a polite aide walked me briskly through the high-ceilinged corridors until we reached the outer office. Here the aide left me with the MP's secretary who greeted me warmly and showed me through another door into the office itself where I was left alone to wait. A few minutes later the door flew open, slammed shut, and Charles Walker firmly shook my hand while apologising profusely for being late. Charles dived straight into talking, describing himself as an avid angler and political lobbyist for chalk streams. He spoke passionately and quickly as he perched on the edge of a chair beside the large table we were sat around, tapping his pen. He then excitedly ushered me across the room to a framed photo of himself in full fishing regalia holding a prized trout.

Charles talked to me about the changes he had personally seen along the Beane before embedding them within a wider global narrative of environmental crisis and conservation. Describing a fishing trip on a chalk stream in 2014 he told me "It was absolutely spiritual, and then you've seen four years of drought and you've seen this river, to a point where it can't cope anymore. It's genuinely distressing. It's our heritage, it's our natural heritage." He went on to say, 'I find it so

irritating that we have the audacity to lecture Brazil on rainforests when we have 85% of the chalk rivers and what we do is disgraceful, it's so disgraceful and that our own record won't come under scrutiny." I asked him why this record wasn't coming under scrutiny, why it garnered less attention than other global habitats and he said, "I get asked what are you doing to save the world and I say what I'm doing to save your chalk streams, and it's as if it's too boring, it's not glamorous." While chalk streams might not have been considered as interesting or glamorous to champion as say the Amazon, Charles had managed to garner enough support for a parliamentary debate in the House of Commons titled "Degraded Chalk Stream Environments." While the debate occurred at the end of session and turn-out was fairly low, the general rhetoric among those who turned up was the same: chalk streams across different constituencies were under threat and needed saving. While some of my interlocutors at the RBRA and local wildlife charity were pleased to see the topic receiving attention, the former being particularly proud to have received a mention in Parliament, as the dust of the debate settled, there was a sense of frustration. If absence was being put to work, this work appeared to be lip-service based. The work of saving was being talked, but it wasn't at a high political level being done.

Around this period of time, other interlocutors outside the sphere of government were putting absence to work in non-watery spaces. These individuals and groups increasingly rallied around the idea of catastrophe. They began to take an increasingly political stance, pointing the finger of blame at those they felt both responsible for the absences of water, species, and certain futures on chalk streams, and as being responsible for rectifying them. A plethora of damning material and new activist style groups began to emerge. Local angling and conservation charities co-authored a dossier "Chalk Streams in Crisis", Feargal Sharkey appeared on a Radio Four talk with famous environmental journalist Tom Heap, titled "Costing the Earth: Dry me a River", the WWF had also written a report "The State of England's Chalk Streams", and a further one in which the Beane was highlighted as a "Cinderella River". Local groups formed a "Chalk Aquifer Alliance", and began running a webinar series with special guests presenting on titles such as "Seven Deadly Sins: The Seven Lies Told to You by Water Companies and The Environment Agency" in which the plight of chalk streams featured heavily. These diverse groups and media all worked to situate rivers like the Beane in a wider narrative of environmental degradation and chalk stream crisis, to make these rivers globally relevant, and to demand a more collective approach to saving such rivers from the absences of water, life, and responsibility. Chalk emerges then as a powerful mineral and mode through which interlocutors sought to make absence and presence along the River Beane

matter, even while opinions on absences of water and species in terms of signaling life or death remained highly contested and uncertain.

Death as disconnection

Early in this chapter I shared a question that emerged for me during fieldwork. I asked whether the dead river was not so much about, or just about, death understood as the antithesis of visceral pulsing life and health, but whether death was also being used to exemplify a state of almost complete disconnection; if the dead river was about uncertainty over the causes of disconnection, and uncertainty over the possibility of reconnection. To conclude the chapter I think about this as I draw together the enactments of absence, presence, connection, disconnection, life and death on the River Beane for different interlocutors. Finally I turn to a novel notion of chalk as connection shared with me by the agricultural advisor of the local water company, noting his appeal to a shared multispecies 'we' through water (Fennell 2016).

For the chairman of the RBRA, death on the River Beane, understood primarily as the absence of water, stemmed from a number of disconnections and related absences. He decried the absence of responsibility for managing the river by the EA, which he saw as part of a landscape of 'disconnected bureaucracies' responsible in name, but not in action for the River Beane. He also related death to climactic disconnections and absences, with the absence of steady rain disconnecting the aquifer from an imagined hydrologic cycle of consistent replenishment (Linton 2010; Linton and Budds 2014). This uncertain weather of intermittent drought and deluge meant absent water, or too much water. Neither of these scenarios could help to recharge the aquifer or in turn feed and give life to the River Beane. Finally there was disconnect for the chairman in terms of poaching, a spatial, infrastructural disconnection leading to absent water. The River Beane served as an environmental infrastructure of domestic water supply and yet did not see its water cleaned and returned. Instead its water was treated at sewage treatment plants on the River Lea, to which it served as a tributary now both in a 'natural' geographic sense, and also in a hydro-modern sense (Swyngedouw 2015) as a result of sewage infrastructure positioning.

For other members of the RBRA, such as the riverfly monitors Anthea and Bob, absence of particular species signaled death on the River Beane and spoke to unfortunate, undesirable connections, between pollutants, human sewage, farm pesticides and effluent, and the River Beane. The presence of these toxins in the river, alongside low or no flow of water, were leading to the absence and death of chalk stream species. The absence of such species led Sarah of the local

wildlife charity to wonder whether even where water did flow, the River Beane might be considered dead as a chalk stream. Death here signals the disconnection of the River Beane from its identity as a chalk stream, quantified through species monitoring as a chalk-inflected politics of belonging (Lien 2005). For the chairman of the River Chess association, lowering groundwater levels reflected the unruliness of environmental infrastructures, the way aquifers 'evade infrastructuralisation' (Ballestero 2019c), in turn disconnecting watercress farmers from a feasible livelihood.

For water company workers I met, problems of flow on the River Beane did not mean death, but were certainly about disconnections. Disconnections made in the name of industrial progress and agriculture which over the years had dredged, re-channeled, and ultimately moved the Beane, separating its above ground position from its underground source of water. The hyporheic zone of uncertainty served for Sal as a point of contest to narratives equating life and death to wet or dry river, offering a more amphibious possibility beyond such binaries (Gagné and Rasmussen 2016; Krause 2017). This being said, the hyporheic zone still supported notions of disconnection, but situated them temporally in a landscape of historic industrial change, rather than as the sole 'responsibility' of interlocutors alive today. Rachel's discussion of bat populations along the River Beane also spoke to the intermingling of historic industry and current presence and absences along the Beane. She asked whether connecting to the Beane as a dynamic river for the future meant disconnecting from historic structures and sentimental memories of swimming in the pools created by weirs and paper mills.

Despite having to rearrange multiple times due to the spatial disconnections the coronavirus pandemic wrought over meetings in 2020, I managed to eventually speak to the EA's catchment coordinator. We spoke from our separate homes, connected by the internet and web cameras. I had met Ray briefly a year earlier, at a catchment annual review where he spoke about the EA's latest consultation. During the talk he found himself amongst much quiet eye rolling from the audience, heckled loudly by Feargal Sharkey until he was in fact forced to stop his speech and ask Feargal to sit down. Ray did not embody the disengaged, remote figure that many interlocutors had led me to believe made up the EA. He was passionate in how he spoke, yet also a little shy, and appeared himself to be deeply troubled by the degradation of rivers like the Beane. He admitted large challenges for the EA as the organisation which has to be "responsible for triaging the environment" while also acting under an increasingly reduced budget and an "unsaid mantra of no new burdens." He was gravely concerned that the coronavirus pandemic, while of course needing much attention, would lead to delayed impetus to tackle increasingly uncertain climactic futures

which he believed were already impacting local rivers like the Beane. In terms of disconnection, Ray was resolute that the right sentiment was present in the EA's 25 year Environment Plan, but he acquiesced that trying to bring together disparate responsible parties, to work out "how to get there" in terms of securing the future health of water(less)scapes like the River Beane was far from certain. Thus, he levelled with me, "even if you're optimistic, none of this is going to, kind of, happen any time particularly soon." There was a disconnection that did concern Ray, one he felt could be easily identified and addressed, that of local people who he claimed, "are so disconnected from the environment", using domestic water with a ferocious appetite and not realising that "water in the environment is essential." Ray was not the only person I met of this opinion, and in fact despite much disagreement on life and death on the River Beane between different interlocutors, most people I met were concerned that domestic water users remain disconnected or ignorant of the issues facing their local water environments, and have no idea of their own intimate dependence and relationality to these landscapes. Thus how to get more people to relate to their local water(less)scape, and in doing so choose to use less water was a focal point for most of the interlocutors I met. It is this that brings me to conclude the chapter with a final reflection on chalk.

Chalk: living river as connection

In the face of so much disconnection then, chalk had become a rallying cry. It was being enlisted as that which might make these spaces 'worth saving', even if their 'death' was highly contested and uncertain. It was an attempt to draw public attention to chalk streams as 'rare' and ecologically valuable, a strategy seen across conservation practices (Milton 2000) and particularly helpful in the case of a local, or as Charles Walker said 'not glamorous enough' river whose inhabitants might be seen to lack the 'charisma' that public conservation and volunteerism tend to mobilise around (Lorimer 2010).

There was however, another sense in which chalk was discussed with me, as that which might foster connection in the face of so much disconnection and uncertainty; in a vein reminiscent of Astrida Neimanis' bodies of water which reminds us that our bodies are not 'our own', but are an assemblage of multiple bodies, all connected and constituted through the waters that sustain, and flow through and around us (Neimanis 2017). Toby, an agricultural advisor at the local water company, employed chalk not just as a narrative, as a way of warranting attention to the Beane as

that which might be 'rare' and need its future health securing, but employed chalk, the mineral, the sediment itself, as that of connection. Thus he said to me in an interview:

"I keep thinking the chalk is the key thing in all of this and it kind of binds us, it's important for the water, the chalk geology has created this scenario where it filters out the water and creates this supply of really clean water, which we've obviously utilised, perhaps too much, but it's also created these unique ecologies of the river, but it's also part of us, the chalk, if you drink water in this part of the country it's in you, it is literally part of your bones and to me that really connects people to their landscape, it's the chalk, but I think, maybe, I suppose most people don't even know they live on top of chalk."

For him chalk held potential and I would like to think through this potential here as I conclude the chapter. Chalk, as I have discussed so far, has been enacted by interlocutors from various personal and professional standpoints as a powerful narrative. It has been used as a lobby, and to encourage the 'saving' of a river whose status as being alive or dead remains highly contested and uncertain. As I have shown, this uncertainty relates to the specific parameters of life and death presented by different interlocutors, to the visual, numerical, the species-centred, the temporal, the sentimental, and the scientific. Across these parameters, issues of connection and disconnection surfaced frequently. And yet, despite differences in opinions on parameters of life and death, and which connections and/or disconnections mattered most in relation to the river's potentially compromised, lost, or dormant vitality, chalk emerged across disparate interlocutors as a powerful narrative, a valid scientific 'fact', and a discourse to motivate conservation style action in both the local public, the wider general public, and in those deemed responsible for rivers like the Beane in the UK. Chalk talk brought some certainty to a water(less)scape whose empty channels had become "battlefields of knowledge", all vying to make sense of complexities (Buytaert et al. 2014) encompassed in debates over what constitutes life and what constitutes death of a river such as the River Beane.

Chalk, for the agricultural advisor I spoke with, also had the potential to do something altogether different in terms of framing issues of life and death along the River Beane. This potential was not just about the political consensus that chalk streams matter and need protecting, about calls for more robust litigation, for different abstraction rights, or limitations on public water usage. This potential was a rallying cry of an entirely different kind. Not shrill, but soft. Not about avoiding the apocalypse of such environmental landscapes, but about the potential of engaging them through an entirely different register and on a different scale. Thus, this way of framing chalk was about stimulating a shift in how everyday people think about their connection to the River Beane

as part of a distinct, mineral, local environment, as being part of this lively matter (Bennett 2010). Chalk could Toby thought, if people only knew about it, bring about connection by virtue of its existence within those landscapes and bodies, (human and otherwise), living disparate but proximal lives. If chalk could figure not just as an emblem for connection, but be understood in a visceral connective sense of 'We Are Chalk' ' (Fennell 2016), then might it lead to renewed understandings of life and death along the River Beane? Could it be a powerful move towards 'living with', moving away from an anthropocentric conservation management, towards an understanding of health premised on the intimate relationality of all the hybrid critters of the Beane, as chalk-boned, chalk-laced kin (Haraway 2016)? In this imagined ontological post-human commons (Neimanis 2017) saving the River Beane and the species that live there becomes not an external environmental health question to be debated and managed, but an experience of living in such a way that all chalk bodies, including one's own, remain in health – remain sufficiently watered.

Chapter 6: Mobilising boundaries: the politics of health and belonging

The previous chapter interrogated enactments of death and their rebuttal, along the River Beane. It noted how such enactments bring to the fore a number of related absences and presences, and speak to larger concerns with disconnection in an era of increasing environmental, climactic and pandemic uncertainty. It also noted some more hopeful modes of relating, ones that stress localised forms of connection between chalk-laced humans, non-humans, and the water(less)scapes of both aquifer and River Beane.

This chapter leads on from the previous chapter and works to demonstrate that if the River Beane's decline and death are for some interlocutors understood as part of a wider process of disconnection, for others, the possibility of the river and of all the life forms it supports, human and otherwise, being healthy, well, and living, is in fact premised on particular disconnections or separations. Thus the wellbeing of the river and its dependent life forms are not necessarily understood through a simplistic or totalising form of connection. Instead the notion of health as connection which I explore through this chapter, relies in different ways, for different interlocutors, on the mobilising of boundaries. These boundaries help to both create and uphold an understanding of health as specifically (often scientifically) defined connections, achievable by keeping particular bodies, human, non-human, and watery, separate. This chapter thus works to demonstrate that for different interlocutors, groups, and authorities, not all connections are made equal, some connections are prioritised and actively encouraged in the name of health, while others are actively discouraged and severed through the mobilising and policing of species-specific, spatial boundaries. Thus in the same way that absence relies on a notion of presence for its very existence (Bille et al. 2010; Scott 2017), connection as health is similarly made real and meaningful, by the separations it is distinguished from.

This chapter traces three instances in which boundaries are mobilised to facilitate health, connecting clearly defined species and peoples to the water(less)scape of the River Beane, those 'native' species, scientists, and 'authorised' swimmers, while keeping others, those 'invasive' species, 'ordinary' people, and 'unauthorised' swimmers, separate. Firstly, I return to the RBRA and their work to eradicate invasive species along the River Beane. In order to re-connect no longer present native species such as water voles to the river, mobilised as powerful symbols of what constitutes a healthy chalk stream, the group drew on biodiversity policy to justify the monitoring and removal of invasive species. The health of this chalk stream was understood as

dependent on the continual separation of these foreign, colonising, 'matter[s] out of place' (Douglas 1966). Next, I turn to the efforts of a newly established crowdfunding effort, Save Beane Marshes, who in 2019 raised £165,000 to buy a portion of marshland housing the River Beane. The success of this effort depended on their ability to connect local peoples, their emotions and wallets, to this area of marshland which had been framed as land that needed saving from a potentially sorry (albeit unknown) future. Interestingly while they wanted to secure a future of healthy connection for the river as a whole, gifting it to the wildlife charity that owned the stretch of river preceding and following this marsh, the group stated the land would be for the health of the environment and never publicly accessible. Environmental scientists however would be allowed to access the land, as stewards of its health, while the 'ordinary' people who had helped save the land in the first place would have their access "monitored and controlled." They would be kept separate in the name of the land's health. Finally I turn to the rise of outdoor swimming during the coronavirus pandemic. I save the in-depth ethnography of my immersive encounters for chapter seven, here focusing less on the practices and insights of swimmers themselves, than on the boundaries mobilised by local landowners and river authorities in order to try and keep swimmers out of these rivers. I trace the ways in which authorities and local folk tales mobilised Weil's disease as a powerful deterrent to swimmers. This zoonotic infection, though rare in prevalence, animated fears of infection from rats, long situated as reservoirs of disease and put this to action to prevent humans crossing the boundary of land and river water. In noting the mobilisation of such a boundary, I also note the inherent contradictions given that in particular cases swimmers were classified as authorised despite the possibility of contracting Weil's disease remaining the same. This distinguishing of authorised and unauthorised swimmers (those who signed a waiver taking responsibility for contracting Weil's disease, and those who did not), demonstrates that the mobilising of boundaries such as Weil's disease in the name of health do not necessarily serve to secure the health of swimmers, as much as to protect local landowners and river authorities from the threat of health and safety litigation.

The three disparate sets of ethnography included in the chapter demonstrate connection in the name of health for peoples, non-humans, land, and the River Beane itself, as a set of complex mobilised boundaries, that work to establish who or what belongs where, and to foreground this politics of belonging (Lien 2005) as a question of health. This renders less visible the histories, temporalities, and legalities of just such a politics (Lavau 2010; Sayer 2019), as well as how the maintaining and policing of such boundaries comes to be challenged by some interlocutors in a

moment of extreme pandemic uncertainty through which people come to understand their relations to non-humans and the environment in novel ways (Lynteris 2020).

Invasive species and the ghost of water-voles-past

In August of 2020 I returned to Waterford Marsh to meet Anthea and Bob for another morning of riverfly monitoring. Alongside this monitoring, I wanted to discuss with them some of the other non-human monitoring they were doing, that of invasive species. The RBRA take part in invasive species monitoring, both charting and physically removing invasive species. I was told jovially about 'balsam bashes', volunteer days carefully organised around the seasons, to weed out and destroy young Himalayan balsam plants along the River Beane. Bob was key to the group's invasive species removal program, and both undertook and trained volunteers to remove invasive flora. Himalayan balsam, Japanese knotweed and giant hogweed were the three main plants that grew along the River Beane which were physically separated out in order to allow native flora to grow and to protect the riverbank from erosion which I was told happened in the winter when this nonnative flora receded. I was told that a large problem with these invasive species was their propensity to seed quickly, with the seeds flowing downriver and taking root along further stretches of the bank. Only through continued removal over a number of years could the unruly rhizome of these plants be broken, and full and lasting separation in the name of a healthy chalk stream be achieved.

While the group were not involved in the physical culling of invasive nonnative animal species, they did monitor sightings of such species and reported them to local landowners. In the case of the River Beane, the invasive animal of most concern is American mink. American minks were brought to the UK from North America in the 1920s to populate fur farms. Multiple escapes from farms during the 80 years in which mink farming was legal in the UK, have led to a self-sustaining mink population in the wild. While the UK does not have its own native breed of mink, American mink are still considered a particularly invasive species. This is because, as members of the RBRA, local wildlife charity, and water company told me, mink is an adept predator of a flagship chalk stream species, the water vole. While the River Beane is no longer home to any water voles, one of the species deaths that might signal the River Beane as a dead river in terms of its status as a chalk stream, the RBRA and wildlife charity were during my fieldwork working on a project to facilitate their reintroduction in 2020. With this in mind, the RBRA were busily surveying the Beane valley for mink during the first half of my fieldwork in 2019. If no mink were present the project could

go ahead. If any were found, they would need to be separated through culling before voles could be safely returned to the area. Thus for the water voles to be re-connected to the River Beane, and the River Beane in turn re-connected to its status as a healthy chalk stream, mink would have to be separated out for good.

Momentum for this project ground to a halt in 2020. This related to two events. Firstly, the bank collapse at Baywood Estate discussed in chapter four which had been affecting flow of water downstream posed a problem. It both drew attention away from invasive species monitoring and vole reintroduction, but also challenged the suitability of the River Beane for newly introduced voles. Until the Beane had a more consistent flow of water, it did not seem like good management to introduce voles to the area. The Beane itself needed to be better connected, corridor to corridor, before voles could make a home there again. Secondly, the coronavirus pandemic disrupted invasive species monitoring, and in fact all activities of the RBRA, local wildlife charity, and all but 'essential works' by the EA and water company from March to July of 2020. While my human interlocutors found themselves separated from their river monitoring activities in the name of human health and the legal spatial boundaries effected by a national lockdown, the invasive species of the River Beane unmapped themselves. By the time the groups took up their monitoring again, it appeared to be the balsam doing the bashing, and not the other way around. Alongside this stubbornly vibrant matter (Bennett 2010), much funding, impetus, time ,and human-power for mink monitoring and vole reintroduction had been lost to the pandemic.

The invasive flora and non-human animal species of interest to these local groups were in nearly all cases attributed a geographic identity outside not just the locality but the country. This allowed such species to be mobilised as invasive through their situating within Section 51 of the UK's Natural Environment and Rural Communities Act of 2006 (NERC Act) which makes it the provision of landowners to manage animals and plants which "are not ordinarily resident in and are not regular visitors to Great Britain in a wild state" (NERC 2006:Section 51). Another government document, Schedule 9 of the Wildlife and Countryside Act of 1981 outlines a list of invasive plants that it is illegal to plant or "cause to grow." Despite this set of rulings, no legal sanctions can be brought against a landowner who fails to appropriately manage invasive nonnative species already present. It is only their introduction or specific cultivation that can be prosecuted. In a not dissimilar vein to their motivation to conduct borehole dips to measure groundwater, in monitoring invasive species, the RBRA were responding to what appeared to be the absence of responsible landowners. The RBRA owns no land, it is in a legal sense not responsible for managing invasive species, and yet members of the group took on invasive species

monitoring across the entirety of the River Beane valley. As responsible managers of invasive species, RBRA monitors used the legal decrees noted above and photographs of these invasive flora to allow them to physically identify these species along the River Beane, to visually distinguish them from the native flora that they felt should be connected to the River Beane as a healthy chalk stream, and finally to actively separate them, cutting them down and turfing out their roots, removing them by the carload as matter considered to be waste. It was this practice of physical separation that would allow the River Beane to remain connected to native flora, and thus to what was considered by invasive species monitors, as its 'natural' state as a healthy chalk stream.

The RBRA were not alone in their understanding that health for the River Beane meant connection to particular native flora and species. A biodiversity team member at the water company also told me about the importance of the NERC Act and how as a landowner the water company responded to the responsibilities it bestowed on them and thus "obviously we do invasive nonnative species management… we do surveying so we can see exactly what is on our land and what has been there previously and hopefully bring them back or enhance them a bit more." The water company's stance on invasive species monitoring was particularly interesting, given some of the reflections the same interlocutors shared with me in relation to refuting the River Beane as a dead river (see chapter five). While they argued the River Beane was only perceived as dead by those equating its 'natural' state to sentimental personal histories, and that its life could be seen through its hyporheic zone, and colonisation by species such as bats, the company, through its invasive species monitoring, seemed to be going against its own view of dynamism as life. This might itself be explained by the NERC Act in general, which places legal responsibility on landowners to protect biodiversity as defined in a very particular way. I was told that the NERC Act, in tandem with another legal decree, The Countryside and Rights of Way Act mean "water companies [are] required to protect and enhance biodiversity, particularly priority species." It thus appears that biodiversity specialists at the water company were posed an interesting conundrum by legal decrees that situate health as biodiversity, but define biodiversity narrowly in terms of connection between native species and landscapes. This notion of biodiversity did not sit neatly with the views of individuals within the team, for whom proof of the River Beane's health and life was in fact its dynamism, exemplified by those animals colonising or thriving in the amphibious spaces that do not neatly fit with the legal categories of the NERC Act. And yet as a landowner the water company had to act on this legal decree, even where its notion of health and life might go against its employees own personal understandings of what health and life on a river like the River Beane means.

Expertise and the 'ordinaries'

Save Beane Marshes

While the RBRA were busily trying to restore the species they felt should be present in and along a healthy chalk stream, and remove or highlight the ones they felt should not, another group of concerned local residents were busy trying to guarantee a healthy future for a portion of marshland housing the River Beane. I had been entirely unaware of this group until a happenstance meeting. It was a Saturday night and I had been in London at a cousin's 30th birthday party. Ever so slightly inebriated from lunch, I had got the train back to Hertford and had made my way to the local Sainsburys for the missing essential of my survivor's supper – a jar of tartare sauce to accompany my fish finger sandwich. I walked home through the town, pausing outside The Hertford Club, a private members' club which appeared to be having a raucous party, and which according to the signage, was in fact open to the general public. I read the small-printed sign on the black iron gate and couldn't believe my eyes. I had stumbled across a fundraiser for something called 'Save Beane Marshes.' I rocked side to side, weighing the allure of dinner on the sofa against the sure regret I would feel waking up the next morning having chosen to ignore a fieldwork opportunity. Holding on to this thought I slipped the jar of tartare sauce into my coat pocket and made my way into the club.

A band of middle-aged men were playing a tasteful mix of folk and rock music, a table with a raffle sat in a corner near the bar, and the room buzzed as people worked to keep conversation afloat above the live music. I got myself a beer and perched as unassumingly as possible near the raffle table, trying to work out who I might best approach to find out what Beane Marshes was and why it needed saving. I decided on the raffle table and asked a friendly faced elderly women sitting there a little more about the fundraiser. Clearly a little overwhelmed, she quickly pointed to a woman beside her who I was told knew much more about the cause than the woman who confessed herself as "just the raffle lady." The woman next to her shot me a matter of fact "hello." I greeted her and continued with a less than eloquent summary of my research. I was relieved to see her face soften at this and between answering calls from other organisers and questions from other guests, she fed me fragments of Save Beane Marshes story. I asked her if we could meet up and talk about it in greater depth and with less interruption again soon. Willingly she scribbled down her name and email and throwing me a knowing nod turned her attention back to her fundraising. Clutching the piece of paper and embedding it deep in my pocket under the safety of my now rather warm jar of sauce, I headed back to the bar for a celebratory night cap, pulling up a stool at a table near the stage and chatting with a few middle-aged couples about the

crowdfunding and why they were supporting the crowdfunding campaign. Most people were local residents who said they loved the marsh and wanted to see it protected from “falling into the wrong hands.” By this, they appeared to mean those who might build on it, or entirely neglect it. Some said they wanted to save the marsh for the conservation of wildlife and the river, and others more selfishly, or perhaps just more honestly, told me they wanted to protect the currently stunning views from their back gardens. Satisfied with my night’s research I headed home for a belated supper.

Photograph 14 - Save Beane Marshes fundraising poster attached to a fence on Molewood Road.

The following Monday I emailed Viv to set up a meeting, and then proceeded to search out Beane Marshes. I wanted to get a firsthand look at the piece of land that apparently needed saving. Along Molewood Road I found a poster for the campaign and realised that Beane Marshes was a stretch of land I was already familiar with. Opposite the train station, I had walked past it every morning for years as a commuter. Compared to the waterlessscape I had seen upriver I couldn’t quite understand what needed saving. While not accessible to the public, even from the roadside I could see water in the river and surrounding lush green fields and trees. On reading the poster, I learned that local residents were concerned over what would happen to this land following its listing for sale by auction. They had asked the seller to withdraw it on the condition that they would form a group to crowdfund and buy the land and then gift it to an established local wildlife charity. According to this poster they were still £65,000 short of their target. It appeared saving the River Beane wasn’t just about time, as I had seen with the 20-year commitments of the RBRA, but also

about money. Viv emailed me back the same day and we organised to meet for coffee in Hertford the following week.

Over coffee, Viv told me she had worked as an environmental scientist since completing a PhD on acid rain in the 1980s. She explained how she came to be appointed as a director to Save Beane Marshes, as someone with environmental experience on the importance of ecologies and flows. She was called in as "someone with a bit of environmental gravitas", as well being a local resident who wanted to protect this "really iconic bit of nature." Save Beane Marshes was about ensuring this patch of marshland remained precisely that, a thriving and diverse ecological site. Notably, in gifting the land to a local wildlife charity, these residents did not want to be responsible for the land going forward, only responsible for ensuring it fell into what were considered the right hands. She explained that the wildlife charity owned the stretch of land just before the marsh, as well as downriver at Hartham Common and that they were "interested in the land in terms of the corridors and connectivity." Thus it appeared that by owning an increasing number of sections of the river the charity could try to facilitate re-connection, since according to Viv "this helps that connectivity of the natural system." While Beane Marshes was enacted through the crowdfunding effort as needing saving, this wasn't the kind of saving Feargal Sharkey had alluded to upriver, saving from death and dryness now but was more of a prospective saving, saving the marsh and the river flowing through it from an imagined sorry future.

I was intrigued to know how the group had mustered so much financial support from the local community for a stretch of land on the basis of such an enactment of future survival. Viv explained that she herself was surprised, the grand total needed was £165,000 and by the time I met with her, despite the poster I had seen on Molewood Road, the sum had been reached. For Viv it reflected the affluence of the area and that for donors "that's how they see their legacy… they want to help nature by owning the land, they think that's a really important way of protection." While donors wanted to save and protect the land and river, this had, Viv explained, led to some disagreement and disappointment. For Save Beane Marshes and for the local wildlife charity that would be managing the land, saving Beane Marshes meant an explicit focus on the non-human. As Viv explained to me:

> "The idea is never to have public access to that land because *it's for nature*, so that has led to a little bit of conflict locally because some people would prefer to be able to walk on it and exercise dogs on it, but again I think the way we set up the charity is that it's not for public access 365 days a year. There might be *some public access, but it would be controlled and monitored.*" [my emphasis]

Again questions of health and the boundaries enlisted in its name came to the fore. This newly created charity worked to save Beane Marshes by gifting it to an established local charity who were in a sense 'connecting up' corridors of the river, in the process working to improve the health of non-humans and the River Beane itself. And yet to save Beane Marshes from an imagined sorry future, should the land be purchased for some kind of commercial development or just "not managed properly", the group needed to connect local people to a cause for the future, while continuing to disconnect them from access to this newly saved scape. These people might have had the pockets needed to 'save' the marsh, but they weren't considered a healthy physical addition to the marsh itself. Only those operating under the auspice of scientific management and conservation would be allowed entry to the marshes. Thus there would be gatekeepers, those allowed to be connected to the space in the name of health, and there would be 'ordinary', local people, crowd funders, understood, arguably, as themselves a form of invasive species that must be, as Viv stated, "controlled and monitored" if not separated entirely.

Boundaries, belonging, and matter out of place

Both the invasive species monitoring and removal by the RBRA, and the plans of Save Beane Marshes and the wildlife charity to keep 'ordinary' people separate from Beane Marshes, speak to a politics of belonging mobilised around dominant (scientific), understandings of environmental, and in particular, chalk stream and marsh, health. The invasive species monitoring on the River Beane supports the findings of anthropologists, who note that in a politics of belonging, propagated by state policy that centralises notions of biodiversity and the importance of 'native' species, what is meant by the 'natural' or 'wild' state such species removal policy works to achieve, goes unquestioned (Lavau 2010). Furthermore, in failing to unpick what is meant by natural or wild, commitments to preserving the authenticity of such spaces erases, or at the very least distorts the true histories of socio-natural intermingling (Paxson 2010) that have always made up such spaces.

While we can see a politics of belonging being enacted on the River Beane, in the name of securing chalk stream health for the future, water voles provide an interesting and slightly different example to existing scholarship. This is because water voles are not a presently existing native species that need protecting against invasives on the River Beane. As we have seen, they are entirely absent. So how are we to understand their mobilisation, and in turn make sense of what these non-existent water voles do? I argue that these water voles must be understood as a kind of

ghost native species, the ghost of what are popularly imagined as healthy chalk streams past. These ghost voles are powerfully mobilised as a future-potential for river health as part of a wider concern with the death of chalk streams in terms of their flagship species. It is thus through this mobilisation, as invasive species monitors 'selectively activate certain histories' (Ballestero 2019b:13) of the River Beane as a 'natural' chalk stream with authentic residents, glossing over the reality that bodies of water have always been 'technopolitical entities' (ibid), that a politics of what belongs in and along the River Beane continues to be manufactured and upheld, even where such species are no longer present. Counting American mink as a number of invasive species, and contrasting this with the number of water voles, as a number of none but, could-and-should-be native species, demonstrates how numbers-as-narratives 'make environmental objects real, but real according to the logics of a particular perspective' (Brooks 2017:45).

In activating a healthy chalk stream history to make a case for the desirability of water voles along the River Beane, the history of water vole extinction is obscured; we are never told why the voles died out in the first place. We are led, from American mink monitoring and culling, to believe that perhaps it was at their claws. And yet, as concerns over the bank collapse and loss of water flow at Baywood Estate led to the delay of water vole reintroduction, we might also wonder to what extent the loss of water voles is man-made, if large levels of water abstraction and the placing of infrastructures, weirs, paper mills, have over a long history, intruded, and invaded, if these are in fact the invasives to blame. And yet, as invasive species monitors situate themselves as managers of these chalk environments, working to return them to a 'natural' state – the nature-cultures of interspecies entanglements on the Beane that make up the reality of its history, the history in which water voles were present in an environment no more 'natural' than the Beane valley is today, is, as I have already suggested, shrouded from view. This mobilisation acts to render the history of their extinction invisible, and to situate what is 'natural' for any environment at a static historical point, that appears both real enough to condition the culling of those labelled as invasive species, but under closer inspection, so vague as to betray the non-reality of this 'natural history' in the first place, since no period in this history pre-exists the nature-cultures of interspecies dwelling (Ingold 2011). Holding on to this abstract sense of the natural allows invasive species monitoring to continue to police a politics of belonging in the name of health, acting as environmental stewards and managers, while obscuring the nature-cultures that are water voles' presence and absence on the River Beane.

The invasive species monitoring just discussed and the crowdfunding of Save Beane Marshes illuminate the temporal nature of just such a politics of belonging on the River Beane. In the case

of invasive species monitoring, temporality is presented by volunteers in a static sense when they speak of healthy chalk streams past, and yet this temporal stasis is used to anticipate more dynamic and uncertain could-be healthy futures if the right species are returned to or eliminated from the river. In the case of Save Beane Marshes uncertainty is enacted as a powerful temporal medium, to facilitate action based on the threat of potentially undesirable futures. The power of this anticipatory, or horizoning work, the 'local and highly practical forms… that attempt to bring an unknown or runaway future into the present as an object of knowledge and intervention' (Petryna 2018:573) helps us to understand the speed at which Save Beane Marshes were able to crowdfund such a large sum of money and supports those who have demonstrated uncertainty not as that which paralyses and forecloses action, but as that which is powerfully mobilised to bring action about (Samimian-Darash and Rabinow 2015). Inextricably linked to this temporal politics of belonging, which yoyos between a static conception of past 'nature', and a dynamic actionable could-be better future, is a hierarchy of what belongs. This hierarchy of belonging in invasive species monitoring between different species – American mink and water voles - and in the case of Save Beane Marshes between individuals within the same species – scientists and 'ordinary' lay people - demonstrates that non-humans and humans that might in another geographic location be seen as healthy, clean, and 'natural', can within a chalk stream and chalk marsh politics of belonging constitute 'matter out of place' (Douglas 1966; Milton 2000). As Mary Douglas stresses, matter out of place is seen as dirty, dangerous and polluting precisely because it jeopordises the categories through which sense is made of the world. While this structuralist account is certainly over-deterministic, leaving as Milton argues, too much stead to the subconscious, conservation work can still be fruitfully understood as weeding out that matter out of place (Milton 2000), albeit in a more dynamic and politically inflected sense than Douglas' account would have us believe.

I have already alluded to the ways in which invasive species such as American mink come to be framed as matter out of place. Here however, I wish to think in more depth about the case of Save Beane Marshes, and the ways in which different types of humans, those who have environmental conservation/scientific expertise, and those who do not, come to be positioned as matter in or out of place for the future health of the marshes.

Social scientists have become increasingly interested in studying expertise and how the expert is distinguished from the 'lay' man, one of the laity; a non-professional person; someone who is not an expert' (Collins and Evans 2002:235). The fruitfulness of such enquiry is clear in the current era where the legitimacy of science is frequently called into question (ibid), where it is widely

accepted, following STS scholarship, that context, society and culture sit not at the fringes of scientific knowledge, but are constituent parts of such knowledge (Cetina 1991:107; Latour 1987; Latour and Woolgar 1986) and finally, where uncertainty in terms of climate change and environmental degradation have seen practices of citizen science and environmental stewardship boom (English et al. 2018; Lorimer 2010; Ottinger 2016; Strasser et al. 2018). How then, are those with conservation and scientific expertise continually distinguished from non-expert, ordinary, lay-peoples, such as those who crowdfunded but were not to be allowed access to Beane marshes?

Carr, following the intimations of medical anthropologists and STS scholars, traces expertise not as something one is, but as something one does (Carr 2010). That expertise is a practical doing leads Carr to frame expertise as a multi-scalar enactment that involves a myriad of performances both at the individual, societal, and institutional level. For Carr, enacting expertise relates to institutions and ideologies, periods of training, ways of speaking and presenting oneself all of which, it is argued, naturalise expertise, shrouding from view the real-time interactions that produce such knowledge. Through this process of naturalisation, expertise despite being an enactment comes to be seen as intrinsic to particular people. This allows such individuals to realise themselves as experts 'casting other people as less aware, knowing, or knowledgable' (Carr 2010:22) and also, with particularly interesting relevance to the case of Beane marshes, allowing those naturalised as experts in one scientific field, to 'float across evermore empowering contexts' (ibid:25) with the title expert extending beyond one's individual field and often into others. Thus, Carr argues, 'expertise emerges in the hoary intersection of claims about types of people, and the relative knowledge they contain and control' (ibid:22).

Despite the rise of uncertainty, and the extension of scientific knowledge, for example through citizen science, which may blur the boundaries of expert and lay-person, in cases of environmental conservation and concerns over degradation, this uncertainty often leads a turn not away from expertise and an expert-laity binary, but back towards it, with the idea that such complexity cannot be understood, or managed, by the layperson. Scientific or conservation experts, particularly in the environmental conservation space and in relation to climate change, continue to hold a privileged position. This has led to situations like what Jessica O'Reilly calls the 'technocratic antarctic' whereby an entire continent that is ostensibly not the property of anyone, comes to fall under the jurisdiction of conservation scientists, who not only control knowledge about this landscape, but also physical access to it (O'Reilly 2019). As uncertainty rages, experts come to be redefined for example as those with knowledge which is both universal and contextually particular (Choy 2005) reinforcing their position and silencing alternative ways of

knowing (ibid). The works of O'Reilly and Choy point to situations similar to those on Beane marshes, whereby in the face of future environmental uncertainty, landscapes are policed through a politics of belonging which makes room for the scientific/conservation expert and their knowledge, while access for ordinary lay-people is curtailed precisely in the name of conservation.

While both contributing to, and maintaining or policing these boundaries erected in the name of health, both cases betray a similar set of contradictions. In both cases the idea of a natural state for the River Beane and the land that encloses it is portrayed as something inherently a-historical, a-multispecies, and at the same time, as that which can only be restored/achieved again, through human intervention. Many interlocutors stressed that for chalk streams to survive into the future they would have to be dynamic and adaptable to a changing climate and so forth, and yet invasive species efforts continually work to restore such spaces to an imagined point in history, to a non-dynamic, a-historical glory day from which humans are curiously absent. In the case of Save Beane Marshes, it was stressed that the space would be for nature, not humans, and yet conservation scientists were somehow quasi-human in this sense, and would be allowed to manage the land. This betrays the fact that the land would not be for nature, or managed through a more natural process such as re-wilding (Lorimer et al. 2015) but through direct conservation management, the sine qua non of humans' relation in the Western hemisphere to the environment, and one that Tim Ingold has argued precludes the possibility for a more just or ethical relationship with such creatures and spaces (Ingold 2011). None of this serves to diminish the impassioned efforts of members of the RBRA and Save Beane Marshes. It was clear that members of both groups cared a great deal about the River Beane and were, against a backdrop of great uncertainty and lacking leadership on rivers from local authorities and governing bodies, trying to pick up the slack. And yet, it cannot be ignored that their actions both contributed to, and continued to police, a particular politics of belonging in the name of health, that entrenches an a-historical notion of nature, chalk streams and marshlands, and also entrenches hierarchies of belonging in both the non-human and human realm, preventing access for those invasives, both the furry American ones, and the less furry ordinary human ones, to the River Beane and Beane marshes. This management, framed as natural, constitutes nothing of the sort. It is a techno-enviro-political regime of boundary making and policing, one through which degrees of separation powerfully imagined as securing health, come to stand for an objective truth and history that has never existed.

Separations of pandemic proportion

On the 23rd of March 2020 another set of boundaries entered the mix of my fieldwork. Unimaginable only a month earlier, the public of the UK watched on as the Prime Minister Boris Johnson announced a national lockdown in response to the mounting threat of the coronavirus pandemic. At this moment of breakdown, boundaries, as both discourse and physical infrastructure for the securing of health, became starkly visible (Bowker 1999). Bar a small number of work-related and medical exemptions, food shopping and one daily outing for exercise, people were to stay at home indefinitely. From that evening in late March pandemic uncertainty raged. It began to figure alongside social, environmental, and climactic uncertainty in the ways local peoples thought about what it might mean to strive to be healthy.

While government messaging and advice around the coronavirus morphed over the months that followed, the messages that remained prominent throughout my fieldwork and seemed to have the greatest impact on local residents and illicit visitors to Hertford were those that stressed the importance of separation. The advice to the general public was to erect and police boundaries between oneself and others, to wear a face covering, and to maintain two metres of social distancing. A further part of this messaging that appeared to outlast many other pieces of advice, or at least to be more readily accepted, was that where coming into contact with other people, it was safer to do so outside. As the pandemic continued to unfold, connection and separation, inside and outside, worked as powerful discourse and visible legal tropes of government public health efforts. In Hertford, the floors of local supermarkets and town-centre pavements were adorned with colourful spots, arrows and lines, as these familiar spaces of everyday life were re-codified with the unfamiliar visuals of pandemic possibility. This thesis does not have the scope or space for a nuanced exploration of public health messaging around the coronavirus. Nor does it wish to make assertive statements on the extent to which this messaging permeated the opinions of the public at large. That being said, the pandemic and its effects on my interlocutors could not be ignored. It became a central part of the infrastructure of our daily lives. Through the final section of this chapter I speak of what I saw unfolding, of what the interlocutors I spoke with shared with me, as the River Beane continued, or began, to figure as a vessel through which to grapple with what it might mean to be healthy in the face of a pandemic.

Not all outsides are equal

A central public health message that emerged during the pandemic, as I have already mentioned, was that of it being safer outside. As I took my daily stint of exercise, I began to note differences in how the outsides of the local area were being enacted and experienced by people in Hertford, the

area I found myself locked-down in. If outside was safer than inside, because it was easier to uphold spatial separations, not all outsides appeared to be considered equal. Over the weeks that followed a clear hierarchy of outsides emerged. Residents and illicit visitors to Hertford didn't line the streets of the town or loiter outside the closed shops, cafes and pubs. Instead the outside they headed for in their droves was the parks, canal towpaths, marshes, and rivers of the area. There were a number of reasons for this. Firstly, without the ability to go inside, the town itself had become very boring. This was something I could attest to first-hand; there was quite literally nothing to do besides stare into shop windows at stock unchanged for months. Secondly, the market-town of Hertford with its buildings and narrow pavements had in a way become synonymous with the inside that was now framed as a great threat to health. It was still quite enclosed for an outdoor space. While in local parks and on the marshes it was rare to see anyone wearing a face covering, in the centre of the town this was commonplace. Thus it appeared proximity or likeness to inside was also considered a threat to health, and that the only outside perceived as truly safe, was that outside perceived as radically not inside: 'nature', the 'wild', 'the great outdoors.' This observation was supported by interlocutors who told me that the pandemic and string of lockdowns led them to nature and resonates with survey findings on attitudes towards green and blue space during the pandemic (Guzman et al. 2021). In Hertford, it seemed that the 'nature' interlocutors headed to was the local common and the Rivers Beane and Lea that encase this picturesque expanse of green land.

As local people headed in their droves to this outside that it seemed had been made synonymous with nature, local owners and authorities of land and the rivers that meet on Hartham Common found themselves in a bind. A separation they had long sought to uphold in the name of health, that of keeping humans (explicitly human swimmers) on the land of the common and out of the water of these rivers, was under threat of mass traversal. While it has never been unusual to see small handfuls of teenagers throwing themselves into the water here on particularly hot days, as the lockdown of 2020 continued from March into an unusually warm April, May, and June, numbers of swimmers in the river increased exponentially. Whatever their reasons for swimming (see chapter seven), as participation in this activity boomed, The Canal & Rivers Trust (CRT), the local council authority for Hartham Common, and local landowners who had historically made no qualms about the small number of swimmers using their land to access the rivers here, worked harder than ever to erect and police the boundaries that kept humans separate from these rivers.

Vermin deterrents: Weil's disease

In order to deter swimmers, the CRT and local authority for the common espoused a wide range of possible threats to individual's health should they traverse the land, river-water boundary. They emphasised the threat of illness or even death from temperature induced shock, hidden debris, pollution, and unpredictable currents. Here I focus on one other threat of particular interest to this thesis, given its attention to modes of more-than-human relating occurring along the River Beane. This threat is of a particular form of leptospirosis called Weil's disease. I focus on the mobilisation of Weil's disease as a deterrent aimed to keep humans separate from rivers like the River Beane in the name of health for three reasons. Firstly, because the prevalence and risks associated with Weil's disease are statistically lower than the risks of injury, drowning, or pollution related illness from river swimming and yet it appears to function as a more powerful deterrent than these other risks. Secondly, because Weil's disease takes a central place in the legal waivers that distinguish authorised from non-authorised swimmers. Finally, because of the non-human creature placed at the heart of concerns over Weil's disease, humans' age-old nemesis the rat.

Weil's disease is a zoonotic disease found in a number of animals, caused by bacteria called leptospires. Leptospires are present in the urine of infected animals and can survive in water and wet soil. Humans can be infected with these bacteria if they come into contact with infected water and/or soil, through abrasions of the skin and mouth, or contact with the eyes. Symptoms of Weil's disease are usually flu like in appearance and resolve themselves without medical intervention in a few weeks or with a course of antibiotics. In rare cases Weil's disease can cause meningitis, kidney failure, and can prove fatal. Public Health England's 'Swim Healthy' guidance document updated in June 2019 describes the risks of open water swimming noting 'the risk of more severe infections caused by microorganisms such as E.coli 0157… and leptospirosis (Weil's disease)' [5]. While government guidance, local authorities and folklore led me to believe Weil's disease must be quite common, the frequency of Weil's disease infections in the UK has never exceeded 80 recorded cases in one year. Most of these cases are resolved with or without antibiotics, and thus mortality rates from Weil's disease remain incredibly low. How and why then has Weil's disease been so successfully mobilised as a way to prevent the land-water traversal of swimmers in the name of health, if the likelihood of contracting it is so slim?

The environmentalist, writer and filmmaker Roger Deakin who swam the length of Britain documenting the journey in a thought-provoking ethnographic style book, has himself reflected on

[5] https://www.gov.uk/government/publications/swim-healthy-leaflet/swim-healthy#health-risks par. 1

environmental authorities who try to deter swimmers through statements like 'the most sinister risk of swimming in any river is the risk of contracting Leptospirosis which can lead to Weil's disease, a potential killer' (Deakin 2000:112). Reflecting on this letter excerpt from the EA to a family of river swimmers Deakin stayed with during his open water adventure, Deakin argues that 'Weil's disease is the secret weapon of whatever dark forces are opposed to wild swimming' (Deakin 2000:113). Deakin draws on the work of Robin Philip, a respected epidemiologist at the University of Bristol who spent decades investigating Weil's disease. Philip found that the risks of contracting Weil's disease were lower for 'recreational water-users', including swimmers, than for the total British population, and that given how low cases of Weil's disease are in the UK anyway, there would be on average, only one death every four years (ibid). Like Deakin, I found river authorities, land owners, and even folklore among local residents and visitors' discussions about the dangers of swimming in rivers to be peppered with the 'wonderfully sinister sound' of Weil's disease (Deakin 2000:113).

One afternoon as I stood on the bank of the River Beane on Hartham Common, speaking with Julie, a swimmer who had just emerged from the river, a woman walking a bicycle nearby overheard our conversation and wheeled in closer to join us. Julie beamed as she spoke about what a perfect day it was for swimming, patting droplets of water from her legs, twisting her neck so that her face could be bathed in the warm sunlight of the afternoon. The woman who joined us did not introduce herself by name but by profession, telling us she had worked as an environmental health officer. As she spoke her eyes were fixed on Julie with a look of deep concern. Julie continued to dry herself, oblivious to this intense attention. As introductions began to dwindle the woman asked us quite suddenly if we had heard about a trout farmer further up the River Lea who had died after contracting Weil's disease. Julie shook her head. Intrigued that this woman should accost us to bring up the danger of death, I relayed to her the rumours I had heard amongst some swimmers and residents that thirty years ago a man from Hertford rugby club had died after contracting the disease. I suggested this farmer and rugby player might well have been the same person, if indeed any such man had died from Weil's disease. The woman grimaced as I spoke and lying her bike down to take a closer peer over the riverbank at the water below told us we were very brave. She sighed a little as she turned back towards us and said "I would really like to swim in there you know…. I just don't know if I think it's safe.' Julie replied in a serious tone, "It's really about health and risk, not health and safety", and shrugging her shoulders as if to indicate that the moment of seriousness had passed, smiled cheekily as she said, "This swimming probably isn't the most dangerous thing we could be doing in a pandemic!" At this we all nodded in agreement. We

wished each other well as the woman retrieved her bike from the grass and turned to cycle away. I was glad for her departing at that moment, given Julie's next exciting anecdote was of a snake she had seen swimming in the river a week prior. I gulped as I left Julie to begin my own swim.

While the environmental health officer spoke of Weil's disease only by name and reputation for serious illness, other interlocutors and members of online forums for river swimmers, canoeists, kayakers, and anglers revealed another central element of Weil's disease folklore – its supposed perpetrator. Weil's disease is most often describes amongst these groups as a disease of rats, or more colloquially as a disease of "rat's piss." Even those who did not know Weil's disease by name, for example a particularly eloquent dog walker who as I changed for a swim one afternoon shouted to me "Aren't you afraid of that rat piss thing?", were aware of a disease in the rivers, emanating from the urine of rats. There are a number of interesting things to unpick here. Firstly, it is worth noting that Weil's disease, though popularly understood as a disease of rats, is in fact a disease that affects a myriad of other animals. This includes cattle, pigs, dogs, hedgehogs and other rodents, all of which can be infected with or act as carriers of Weil's, and may enjoy a soil/river based piss from time to time. Despite this, research into Weil's disease has focused so overwhelmingly on rats that little is known about prevalence and leptospirosis load for a range of other animals (Barragan et al. 2017a) or the environmental conditions conducive to the disease's transmission (Barragan et al. 2017b). These omissions sit comfortably alongside Weil's disease's depiction in the mainstream media. In 2011 when Olympic rowing gold medalist Andy Holmes died at the age of 51 of suspected Weil's disease, the Guardian reported the disease as "a bacterial infection that can be caught from rat urine in river water" [6]. In the feature image for a follow up article, a large rat is seen walking in a shallow river with a caption that links Weil's disease to rivers "contaminated with rat's urine" [7]. Other media outlets such as the Daily Mail used the sensational headline 'Rat disease kills Redgrave's gold medalist' [8], while the BBC, took pains to state that all should "beware" since Weil's disease can kill even the fittest and healthiest of peoples [9]. The potential for other animals to transmit Weil's disease is mentioned in the Guardian and BBC articles but these animals appear as insignificant side stories and do nothing to move the blame away from the villainised rat. Visual representations of Weil's disease in public and workplace signage also fit with the research and media perspectives described above. The rat is

[6] https://www.theguardian.com/uk/2010/oct/25/andy-holmes-dies-rowing-olympics
[7] https://www.theguardian.com/lifeandstyle/2010/oct/26/weils-disease-andy-holmes
[8] https://www.dailymail.co.uk/news/article-1323594/Rat-disease-kills-Andy-Holmes-Rower-dead-days-water-borne-illness.html
[9] https://www.bbc.co.uk/news/health-11625889

again placed centre stage, and comes to stand for the entirety of dangers posed by Weil's disease, rather than one among many animals that might be contaminating river water.

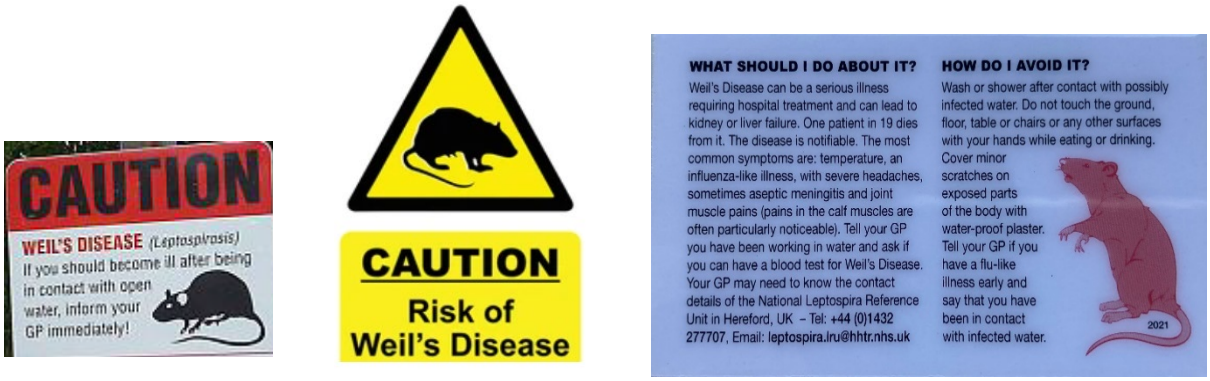


Figure 3 - A selection of open access images representative of the response to an internet search for Weil's disease.

Given this backdrop, it is unsurprising that interlocutors described Weil's disease as a deadly threat from excreting rats. Many individuals I met, much like the ex-environmental officer on the bike, who would have liked to be swimming but were not, were deterred by the threat of this disease and its imagined furry carrier. To make sense of this, I draw on works that have interrogated the blame placed on non-human species in the case of infectious disease. These works exemplify the amalgamation of modern medicine, history, public health and subsequent public discourse that have both caused and continue to condition the framing of particular non-human animals as disease-ridden villains (Lynteris 2019:2). Lynteris notes that animals constituted as particularly wild or unruly, the vermin that 'call into question social relations humans had built around themselves and animals' (ibid:4) have most often been framed as epidemic or infectious villains. One of the most common villains of just such an infectious disease history has been the rat, fused in medicine, public health and civic discourse for years to episodes of the plague.

Karen Sayer has interrogated the villainising of the rat in the history of the plague, paying particular attention to the third plague outbreak in the 1900-1920s by which time the flea had been established as the vector of disease. Sayer argues that despite this scientific knowledge, administrative, public health, and civic discourses of the day continued to frame the rat as the culprit for plague (Sayer 2019:36), part and parcel of a 'vermin landscape' that drew together public health concerns at the macro-level of empire, and the localised level of urban-rural relations. The rat, Sayer argues, was made synonymous with the 'locality and social inferiority' (ibid), epitomising that which was 'less scrupulous in… personal hygiene', and crucially, it was part of a public health effort to single out those peoples that did not make enough effort to

separate themselves from what were perceived as disease ridden landscapes. This speaks to Lynteris' observation that 'putting in place programs of separation between humans and non-human disease vectors became the hallmark of public health from the 1900 onwards' (Lynteris 2019:6), part of a 'sanitary-utopian aspiration to liberate humanity of zoonotic disease… based on no less than a vision of universal "breaking of chains", a separation… of humans from animals' (Lynteris 2020:53). Thus the rat remained a poignant disease ridden villain, an animal which should be destroyed, or one should separate from, in order to be modern, hygienic, and disease free. These insights help us to understand why the rat features as the cover animal for Weil's disease, amongst a magazine's worth of potential animal host and carriers. The rat has been made synonymous with disease, lack of hygiene and infection, in a way that other carriers of Weil's disease, precisely because of their status as domesticated or of fitting under human mastery for economic gain e.g. livestock, are not. It thus appears in the interests of those who would wish to keep swimmers out of rivers to mobilise the rat, as the presence of the rat and the diseases they may harbour is a perfect way to prevent humans from transgressing the boundary from land to river-water.

This brings us to another interesting point, which is the common linkage made between rats and water. Sayer helps us to understand the ways in which concerns over diseases carried in rats came to permeate concerns about water as that which might connect humans to these dangerous vermin. Sayer notes that during the period of empire, great concern emerged over rats entering the UK through ports, thus 'the idea of rats and their diseases… being communicated to humans through water has long, colonial, roots (Sayer 2019:35). Further to this, early medical accounts noted rats as being 'good in water' and 'lining banks of the river'. Rats and their diseases were linked to the poorest classes in England, through their proximity to unclean and unmodern bodies of water. Thus those that had to 'share a pump well, which could become contaminated by water from a pond' as well as those that 'had outdoor privies' were frequently described as bringing plague on themselves, since as a British Medical Journal article from 1906 states 'only those who had but little respect for hygiene were infected'. We thus come to see how the rat functioned as a powerful symbol of disease, that which was considered dirty and unhygienic, and how this was linked to and through people and waters understood to be unmodern and dirty. As Anand has noted, 'rural' or 'backwards' waters of the countryside are juxtaposed in Mumbai with the clean, piped waters of the modern city, with those transgressing the boundaries and using such rural water, chastised as dirty and unmodern, undeserving of citizenship (Anand 2017:chap 6). Thus whether or not the rat was responsible for plague, and in this case Weil's disease, matters less

than the ability of public health and administrators to use the rat as a way to encourage a sanitary-utopia of separation of humans from vermin animals and their perceived landscapes.

The coronavirus pandemic exemplifies a shift scholars have identified as that from zoonotic disease and a focus on separation, towards an idea of 'emergence', or species jump which demonstrates the futility at attempts of separation, and seems to submit to a pandemic imaginary of human extinction (Lynteris 2020). However, the case of Weil's disease on the River Beane indicates that previous models of disease transmission and the importance of separating humans spatially from perceived diseased spaces of animals remains a prevalent deterrent to some would be swimmers. What is so interesting though is how awareness of the coronavirus pandemic led some interlocutors to challenge the importance of these older public health models of separation for health – Julie's musings that river swimming can't be the most dangerous thing to do during a pandemic is just such an example. If the pandemic signals the possibility of human extinction and is just one of many to come, then for some interlocutors it appears to change their perspective on other risks, which they begin to conceive and act upon differently. With so much pandemic uncertainty and staggering numbers of deaths in the UK from the virus, some interlocutors seemed to be saying that river swimming, transgressing this boundary from land to water, and mingling with the excrement of non-humans framed in earlier public health messaging as highly dangerous, couldn't actually be so bad, or at least not as bad as the other risks to health they were currently facing. Having traced Weil's disease as a deterrent to river swimmers, I now turn to the occasions where authorities were willing to let people swim, provided they signed a waiver taking responsibility for their possible contracting of the disease.

Where denied access meets authorised entry

On Hartham Common, the River Beane meets its end as a tributary to the River Lea. Their confluence point is wide, and an island of land juts out as if to acknowledge their meeting. Swimmers often bathe here, debating which river they are swimming in. Here, the River Lea falls under the responsibility of the CRT. The CRT ensure the maintenance of a lock situated on the River Lea at Hartham Common, and are also responsible for monitoring boat moorings along the Lea. Hertford Canoe Club are permitted access to the Lea between Hertford and the next town of Ware, via licences bought from British Canoeing, who pay the CRT on their behalf. As a navigation charity responsible for sections of the River Lea, a CRT representative told me that the charity had to "ensure the safety of all those who may use our waters", although on closer inspection, 'all',

does not mean everyone, but is an all that excludes swimmers. On their website in a section entitled' 'Summer water safety' the Trust make a clear statement regarding swimming:

"On a hot day, it might seem like a great idea to cool down in open water. However, swimming is prohibited in our canals and rivers. There are too many risks that you can't see hidden below the surface, and lots of other ways *you can cool down with two feet on the towpath.*"[10] (my emphasis)

I followed up with the representative from the Trust asking her to clarify why swimmers were not included in all those using the waterway, and to find out what constituted the hidden risks below the River Lea's surface. She told me that river traffic such as boats, low temperatures, reeds and plant life, litter, depth perception and waterborne diseases such as Weil's disease all made swimming in the River Lea not just risky, but a danger of death. It was interesting to note that the boundaries maintained by the Trust in the name of human health were not about the wholesale absence of humans from their canals and rivers, but about a hierarchy of access with very clear exclusions. Activities such as boating, kayaking, canoeing, even paddle boarding are permitted by the Trust, with a licence. It seemed that only where feet were not on, but were literally in, the water of a river, did the trust need to enforce separation in the name of health.

Photograph 15 – CRT No unauthorised swimming sign on the River Lea lock.

I was also intrigued by the phrasing of the Trust's signage on the River Lea lock at Hartham Common. While their online statement and the representative I spoke with implied swimming was an absolute no, the sign on the lock of the River Lea doesn't say no swimming, but no

[10] https://canalrivertrust.org.uk/enjoy-the-waterways/safety-on-our-waterways/summer-water-safety

unauthorised swimming. I questioned this with the Trust, asking what would constitute authorised swimming. I was told that the only way swimming would be authorised was through an organised event. It would take "lots of planning as the canal would need to be closed" and the Trust would have to "put out notices to make boaters aware." I was curious that the logistics of authorised swimming didn't appear to have anything to do with the health risks that had been so central to the CRT's denying of access to swimmers. What about the danger of death that was Weil's disease? Surely that risk remained the same whether boats were out on the water or not.

As I pondered this, I remembered that I had in fact been part of an authorised swimming event in this stretch of the Lea during my first few months as a PhD student. In September of 2018, a local charity was fundraising via a river swim. Thinking back to this event, there were very clear preconditions to our swim, preconditions which I now understood allowed our swim to be considered authorised and which did bring Weil's disease back into focus. Firstly, we were all required to wear brightly coloured neon swimming hats to ensure our visibility in the water. No hat, no swim. Secondly, we all had to sign a waiver confirming that we understood the risks of Weil's disease and took responsibility were we to contract the disease while in the water. No waiver, no swim. I remember signing this form, looking to my mum and a swimmer beside me and asking if anyone knew the risks of Weil's disease. We had all laughed a little, although twinged with some nerves. We were signing to take responsibility and yet in reality none of us appeared to know anything about Weil's disease and thus what it meant to be responsible for it. All we knew was we had to be responsible if we wanted to swim. I didn't see anyone refuse to sign the waiver. We had paid our £20 entry fee, and we wanted to swim.

Figure 4 - Mudlarks charity swim poster. Reproduced with permission of Mudlarks

And so with waivers signed, around fifty or so authorised swimmers entered the River Lea on a cold September morning and swam out as far as the lock house and back. Being an authorised swimmer felt much like being an unauthorised one, besides the uncomfortable and slightly embarrassing swimming hat. We were no less likely to encounter debris, plant life, to fall ill from Weil's disease, to be shocked by the water's temperature, than we would be during an unauthorised swim. Perhaps the only danger highlighted by the CRT we would avoid was that of being struck by a boat. Reflecting back on that day, it appeared that such authorised swimming on the River Lea was not so much about avoiding the risk of ill-health, so much as ensuring swimmers take legal responsibility for it in the case of a defined disease – Weil's disease. With this document signing, swimmers are effectively allowed to do as they please, and are by this very virtue quite happy to take responsibility for themselves. If swimmers had fallen ill following the swim it would be their problem and not one for the Trust to respond to, or compensate for. It seemed that authorised swimming wasn't about securing health, but securing an escape from health and safety litigation, about shifting responsibility for health onto swimmers, regarding one very particular disease. This disease serves to remind swimmers that they have chosen to transcend the land-water boundary, they have chosen to enter the vermin landscape of rats, ultimately that they have chosen, and signed to that effect, the potentially disease-ridden river. Authorising swimming does not mean ignoring Weil's disease but is another example of its mobilisation, as not just a danger but as a legal trope of responsibility.

Photograph 16 - Mudlarks charity swim. Swimmers head out towards the confluence point of the River Beane and Lea. Reproduced with permission from Mudlarks.

Photograph 17 - Mudlarks charity swim. Swimmers heading up the River Lea. Reproduced with permission from Mudlarks.

Unauthorised swimmers

Exactly two years on from the authorised Mudlarks swim, a number of unauthorised swimmers entered into an exchange with the local managing authority of Hartham Common, over the removal of a ladder they had been using to enter and exit the river at the confluence point of the Rivers Beane and Lea. On the photo below from the Mudlarks authorised swim, I have circled in red where this ladder was situated.

Photograph 18 - Photograph 16 reproduced with red circle to indicate the placement of Julie's ladder.

In chapter seven I discuss the story of 'Julie's ladder' in detail, situating the ladder (as well as its emergence, disappearance, and replacement) as an infrastructure of multiplicity, with powerful

meaning as a facilitator of physical swimming practice, but also as a symbol of defiance, connection, and intimacy between swimmers. Here however, I look at how this ladder and its removal raised questions of authorisation, responsibility, and health and safety. To do this I trace a set of correspondences between a swimmer, Mazzo (Michael), and the local managing authority for Hartham Common. Their conversation speaks to the contingency of boundaries that are policed in the name of health, and also to some of the tensions that emerge as swimmers appear to demand freedom from authorities and bemoan health and safety, while at the same time threaten to utilise the very same litigation where they feel their swimming is being curtailed.

Julie's ladder was installed in May of 2020. It was removed in September of 2020 without warning. To this day, no individual, group, or land and/or river authority has taken responsibility for its removal. Its removal provoked feelings of anger and sadness amongst river swimmers who had come to depend on the ladder. It provided an easy route in and out of a very steep bank, and had become a focal place for swimmers to meet and socialise. Perturbed by its removal, and following the general consensus among swimmers that the likely remover of the ladder had been the land management authority for Hartham Common, a swimmer named Mazzo sought answers. Alongside these answers, he wanted to explain to the ladder's supposed remover, just what had been taken away from swimmers of the Rivers Beane and Lea and why this mattered so much at this pandemic moment in time. An excerpt of Mazzo's email read:

> Today, with several others, I swam down the River Beane from below St Leonards Church to the point where the Beane joins the Lea at the bottom of Ware Park.
>
> To get out of the water we were relying on a very solid and well fixed ladder which has been there all summer, so we were surprised to find the ladder had been removed, I am told by the officials of the council. As a result I had to scramble up a muddy bank and very nearly injured myself, in which case I should have had to consider action against the council for damages as it appears this was done without any warning and with complete disregard for the safety of swimmers. Could you tell me who in the council would be responsible. I wish to ascertain… why they took this action and are apparently hostile to peaceful enjoyment of the river, which has been very popular this summer, for obvious reasons? [And] what consideration was given to the safety of swimmers such as myself who might enter the river elsewhere and find themselves unable to get out without significant risk? Surely this is a breach of health and safety regulations?

After a few weeks of waiting, Mazzo received a response from the leisure & parks development manager for Hartham Common, which falls under the umbrella of the county council.

> "We have concluded that we cannot formally authorise unsupervised wild swimming as we cannot adequately assess or control the risks…
>
> We have spoken to the local Crew Commander/Community Safety District Coordinator at Herts Fire and Rescue… Their view is that it is not safe for visitors to swim in this area. They state that this site… is restricted; swimming is not permitted and is considered dangerous. They do however offer some guidance if people choose to enter open water against such advice… whilst they would not condone it, people can swim in the rivers around Hartham and that it is at their own risk…
>
> We understand that there is a community of outdoor swimmers who have been quietly enjoying their activity… We appreciate the positive contribution to community cohesion that outdoor swimming can offer along with keeping fit and healthy.
>
> We are not minded to consider laws to ban such activity… We don't wish to be unnecessarily authoritarian… We had been aware of a home constructed ladder and had considered removing it on the basis that we could not be sure of its design or capacity to provide safe entry to or exit from the water… in this instance we concluded that the risk was low and that the ladder appeared to have been constructed well… By removing it we were concerned that we might in fact increase the risk to those who were using it to swim in the river. We left it in place… We cannot advise who may have removed it."

Mazzo responded to this message.

> "I was pleased to read that you appreciate the positive contribution to community cohesion that outdoor swimming can offer. I would go further and say that for many people it has been a lifeline during a very difficult summer. I think it is now well argued that swimming in a natural environment is extremely beneficial for mental health and general wellbeing, as well as for physical fitness. My own experience it is a wonderful way of connecting with nature…
>
> I have met many people during the course of the summer who have been swimming in the river, some of them for the first time. Without exception, they are all WELL aware of the

risks, including Weil's disease, pollution, underwater debris and submerged vegetation. As far as I am aware, there is no way of quantifying these risks, so people make their own judgments and decisions, depending on the circumstances - for example most people will not swim after heavy rainfall, when the current can be stronger than normal and the river is more polluted… some have observed that the risk is probably lower than that of catching Covid 19 in a public pool! Who can say whether they are right or wrong without strong evidence?

I have certainly not met anyone who believes river swimming is encouraged or even condoned by the council or that the council is responsible for their safety in undertaking this activity. Everyone is well aware that they do this at their own risk. On the whole, people who swim in rivers have a strong sense of personal freedom and with that comes both responsibility and judgement.

My suggestion therefore is that your current stance, as expressed in your second sentence, is the right one: you cannot formally authorise unsupervised wild swimming. No-one is asking you to authorise it, and no-one thinks that you have. If you wish to issue warnings about the risks, that is fine… I believe they [swimmers] already understand this very well and the more you get involved in the judgements of private citizens, the more you will begin to take on a degree of responsibility, quite unnecessarily. I know you appreciate that river swimming is growing in popularity and the health benefits are increasingly understood. The rivers around Hartham represent a really wonderful amenity… Hartham itself is a fantastic asset to the town and is extremely well run and well maintained by your staff."

Before unpicking this set of communications it is important to note that Mazzo is only one swimmer on the River Beane. While a number of swimmers I spoke with shared his sentiments and four regular river swimmers were copied in on the email conversations as a way to demonstrate that Mazzo was not speaking alone, it is of course possible that other swimmers would not share these views. That being said, Mazzo does suggest that he is speaking based on what he believes are the views of other swimmers as well as his own.

Mazzo highlighted a number of facets of river swimming – freedom, wellbeing, fitness and sociability, all of which he stressed have been more crucial than ever because of the isolation and

uncertainty wrought by the pandemic. Thus he intimates that removing the ladder curtails not just the safety of swimmers, but these important possibilities for experiencing wellbeing. He also highlights river swimming as an activity of freedom. This freedom from authority, he is arguing, leads swimmers to be responsible for themselves. He makes explicit that swimmers are attentive to the changing rhythms of the River Beane and Lea themselves, pointing out their attention to rainfall patterns, current, and pollution. He also notes that swimmers look out for one another in relation to these rhythms, and thus form important modes of sociality that keep each other safe and well, as well as bringing much needed company. He makes an interesting point of comparing the risks of river swimming to swimming pools in the face of an airborne pandemic virus. He forces a consideration: is the chlorinated, enclosed, swimming pool really the safer, healthier landscape? He also laments the health and safety that he says confuses the real risks to swimmers with the risk of litigation. And yet, there are contradictions here. While bemoaning this in his second email, in his opening email Mazzo says he might have considered legal action had he injured himself clambering from the bank where the ladder had been removed from. While this may be a form of provocation rather than an actual threat of action, it reinforces health and safety as the lens which frames disputes around river swimming.

There is a tension in Mazzo's argument when he states that swimmers do not want to be authorised, but also want to be free to access the river, made explicit when he states, "you cannot formally authorise unsupervised wild swimming. No-one is asking you to authorise it, and no-one thinks that you have." We might say that swimmers, in the case of the Rivers Beane and Lea, are happy to be informally authorised, or in a sense authorised through a form of not being acknowledged, as if their presence in the rivers were a natural enough occurrence to not warrant attention from land/river authorities at all. Mazzo uses the language of citizenship, to stake a claim to river swimming as an activity of personal, or communal responsibility, which harks back to the discourse around river swimming of the early 1900s, which I will discuss in chapter 7; river swimming as both a joy and a duty of communal responsibility (Love 2003). Ultimately though, what Mazzo works to communicate to the land management team of Hartham Common and the local council, is the sense of wellbeing swimmers find from their practice during a period of immense uncertainty.

Thinking about the other half of the correspondence, that from the leisure and park development manager, there are again a number of tension-laden aspects to unpick. The park manager says they cannot authorise unsupervised swimming. It is "considered dangerous" they "won't condone it" and yet will not stop people swimming at their own risk. They cannot allow the establishing of

foreign unauthorised infrastructure, and yet upon inspection decided that "the ladder appeared to have been constructed well", so they left it in place. They don't want to be authoritarian so they resort to a set of contradictions whereby they agree with the swimmers that their practice is a healthy one, but also uphold the notion that it is prohibited, and a danger of death, so they won't authorise it, but they won't ban it either. This set of correspondences shows how an infrastructure as unassuming as a ladder and the actions of its placement and removal can bring to the fore ongoing localised debates over authorisation, access, and health and safety. It also speaks to larger debates as the River Beane and an infrastructure used to traverse the land and water divide to connect to it (the ladder), come to figure in larger debates of what it means to be healthy and well in relation to environmental waterscapes, and in the face of pandemic uncertainty.

Restoring the 'natural' order

Across the three sets of ethnography in this chapter, an imaginary of restoring a 'natural order' of things on the River Beane comes to the fore, with this natural order made synonymous with what it means for humans, non-humans, and the Beane itself to be healthy. This natural order is about restoring predetermined relations both between and within different sets of humans, non-humans, and particular environmental spaces. In all of these cases the natural order of things speaks ironically to the boundaries that it is felt must be mobilised and policed by humans, in order to ensure the health of environmental spaces, non-humans, and people, that interact in such spaces. As we see in the case of authorised swimmers, if the natural order is to be transgressed and established boundaries broken, then legal waivers must be signed to take responsibility for doing so. The boundary crossing must be documented, made explicit – for if it is not acknowledged as such, there is the gravest danger of all, that the boundary might cease to exist.

For the RBRA, local wildlife charity and water company, invasive species monitoring and removal meant mobilising biodiversity as it is legally defined in government decrees like the NERC Act, and using this to police species and flora boundaries through physical acts of separation. This, they believe, will allow for the return of native chalk stream species to the River Beane, which will re-connect the Beane to a supposed 'natural' state and point in history, and restore it to what would be considered within this framework, a good state of health. Despite the River Beane not housing any of the flagship native species associated with a chalk stream, (the water vole is the focus here, but it is also worth mentioning the brown trout and otter), the RBRA in particular remain hopeful that such a restoration is achievable. Their invasive species monitoring and lobbying for the

reintroduction of the water vole demonstrates this hope and belief in restoration not just as an ideology, but as a powerful practice of environmental engagement. Whatever might be said about the politics of belonging and the disallowing of life for those species framed as invasive, colonising, or foreign, we do well to think not just about these physical practices, but about the hopeful ontologies of restoration they reveal, and which seem to show great resilience despite an era of immense uncertainty. While the pandemic put a halt to water vole reintroduction, it did not dampen the overarching belief in the importance of restoration for the River Beane. In fact, the pandemic appeared to raise concern among interlocutors precisely about the relationships between humans, non-humans and the environment, re-invigorating arguments about the importance of restoring a balance in the relations between humans, non-humans and the environment in the face of potential man-made pandemic extinction (Lynteris 2020:56).

In the case of Save Beane Marshes, it was felt that the marshland needed to be purchased and placed in the right hands now, to save it from an imagined sorry future. While scientists and conservationists would blend seamlessly with the marsh as a space for nature, ordinary humans would be framed as akin to invasive species, as that which pollutes the land and needs to be controlled and limited, if not separated entirely. This kind of restoration speaks to another kind of order or mode of boundary policing – that of nature, culture. Local residents and donators had either become invested, or demonstrated their continued investment in this area of land as they fundraised and lobbied for the marsh to be saved. They were re-connecting to their local environment in the face of its uncertain future, hoping to secure it for the better. And yet, their denied access to the saved scape was a poignant reminder of their place in all of this, as a boundary of nature and culture was erected to ensure they stayed on the right side of the fence. The cyborg scientist and conservationist who was allowed to traverse this boundary was able to do so precisely because being an environmental scientist was framed as being not an ordinary human and solely part of culture, but as someone with the 'gravitas', the more-than-human force to know how to cross the boundary correctly, to manage nature despite the discourse of the land being for 'nature itself'. While the subtlety of these tensions may have evaded public notice, their disappointment with being denied access demonstrates again a hopeful desire for more direct relations with local environments. Not just to financially secure them, gazing in through gaps in the fence, but to live in and with them.

The mobilisation of Weil's disease as an attempt to deter the growing number of swimmers who were relating to their local environment of the River Beane during the coronavirus lockdown demonstrates another example of nature culture boundaries in action. Here, land is made out as

the rightful place of the human, the modern space of safety, cleanliness, where health and wellbeing are secured by keeping two feet on the ground. The river on the other hand is made synonymous with nature as a sinister space of alterity, as the vermin landscape of the rat which makes the river a contaminated, diseased, dangerous place for humans to be. Any human mad enough to cross this boundary must sign their name on a dotted line. They must be responsible for their transgression and any ill-health that should proceed from it. And yet these boundaries are becoming increasingly blurred. The case of unauthorised swimmers and the removal of their unauthorised infrastructure – the ladder - shows how messy things get as these boundaries, and what is meant by the natural order itself, come to be challenged, as pandemic uncertainty leads swimmers to rethink spaces of health. It appears that instead of working to resolve the question of the natural order's veracity, observation, and policing, a myriad of tensions emerge. A fragile balance is struck whereby unauthorised swimmers' actions are not condoned or permitted, but are in a sense known but ignored, keeping the illusion of the boundary alive. However, as these boundary transgressors grow in number and resolution to make their boundary crossing explicit, through infrastructures like the ladder (see chapter seven), the fragility of an imagined natural order is rendered increasingly visible. Swimmers seem in a Latourian sense to be proclaiming, without words but with strokes and crawls, that we have never been modern, separate, or healthier because of such imaginaries. Instead their practice asks if health can be considered as less contingent on maintaining boundaries and separations than on animating local environmental multi-species connections, with river water acting as a vessel both of and for just such a connection. It is to these swimmers that I now turn.

Chapter 7: From traversing to immersing

In chapter six I highlighted the disruptions of a pandemic induced national lockdown and took a first look at emerging ways of relating to the River Beane, conditioned, I argued, by such pandemic uncertainty. These relations (the practice and words of non-authorised river swimmers) were precipitated in part by the language and experience of lockdown and led some swimmers to reflect on what it means to be healthy in relation to a waterlessscape like the River Beane. Isolation, separation, connection, space – all of these notions were central, as I argued in chapter six, to people's seeking out nature as a space for health during the pandemic. As I will go on to show in this chapter, these notions also came to figure profoundly in swimmers' reflections on their immersions into the River Beane as part of nature, and were central to swimmers feeling that their immersions constituted a practice of health and wellbeing.

That the pandemic had such an overwhelming impact on modes of relating to the River Beane, namely through the booming practice of river swimming, left me little choice but to follow this practice and to trace a genealogical approach to waters different to that of the literature presented in chapter two. To situate and make sense of river swimming at this moment of pandemic uncertainty, it was pertinent to think about the shifting epistemologies and practices of public health, sanitation, cleanliness, and concerns of disease that have punctuated its history (Love 2003, Love 2007, Olsen 2007, Davies 2015), and to changing bodily regimes and individuated responsibility for health in relation to swimming (Scott 2009). Using a small number of ethnographic vignettes and conversations with river swimmers from Hertford (both past and present), I create a local dialogue with this history. Following this, I draw on seven months of immersive ethnography undertaken with river swimmers on the rivers Beane and Lea between July 2020 and January 2021. Noting the accretions of wellbeing swimmers express about their immersions in open water (Foley 2017) and following those scholars who stress the importance not just of asking, but of 'feeling' what open water swimming is, I attend to the visceral experience of river swimming through my own immersions as well as those of my interlocutors. This allows me to appreciate the ways in which river swimmers move with a 'heightened kinaesthetic sense' (Throsby 2013:13) dissolving, as auto-ethnographer marathon swimmer Kate Throsby contends, boundaries of nature/culture and mind/body. Considering their practice as one founded on, and seeking out, connection, intimacy, freedom, and spirituality, I note how this amalgamates into a feeling of wellbeing. I conclude the chapter by reflecting on an ethnographic anecdote, Julie's ladder. Julie's ladder demonstrates that experiences of wellbeing enacted through river swimming do not sit in a temporal vacuum but are related to people's experiences of the world around them.

They reflect, as Christopher Love argues, society (Love 2003). I argue that the craving for deep, intimate connection and wellbeing cannot be disentangled from the moment of pandemic uncertainty river swimmers found themselves living and swimming through.

River immersions past and present

An unexpected entry point

In the summer of 2020, as the nationally imposed lockdown to curb the spread of coronavirus in England continued, my partner Jack was invited to a swimming party by a man called Michael, known to us by his nickname Mazzo. Mazzo was a generous and jovial local patron of Hertford Rugby Club. Jack was excited to be invited to a swimming party of Mazzo's and wondered out loud where the party might be. On the day of the party Jack rang Mazzo for directions. I heard his voice suddenly incredulous as he confirmed "in the river?!" He hung up the phone and relayed to me his disbelief at the swimming party's location. When Jack returned home that evening, he told me Mazzo had begun swimming in the river every day – a fact he knew would pique my interest. Jack gave my details to Mazzo and a couple of days later I received a phone call. Mazzo boomed brightly, "Hello Maddy, Jack tells me you're doing some research on our lovely river." I explained a little about my fieldwork and Mazzo quickly followed up with "Well you must come for a swim then." We set a date for later that week.

I will return to my first swim with Mazzo and the months of immersive ethnography that followed it in the second part of this chapter. For now, I focus on Jack's assumption about where the swimming party would be held. While Jack pondered where the party might be in a geographical sense, it never crossed his mind that the swimming itself would take place in anything other than a swimming pool. He surmised in light of the ongoing lockdown that this swimming pool would have to be outside and privately owned, but never did he think the swimming would be done in a local river. This begs the question, why not? To answer this question, I explore how shifting epistemologies of public health, and the intricate relationship between ideas of health, cleanliness, morality, safety and different forms of pollution, have resulted in a situation whereby river swimming has become in a sense, unthinkable, although as we will later see, the pandemic appears to be making it thinkable once more.

River swimming: shifting epistemologies of health, cleanliness, morality, and pollution

River swimming in England, or indeed its absence and incredulity at the thought of it, must be situated within a long and diverse history which brings together aspects of the Graeco-Roman 'water cure', enlightenment thought on the importance of physical exercise for health, and religious, societal, and public health concerns about cleanliness, morality and pollution. These concerns make clear that health in relation to river swimming has never been a simple or stable entity, but shifts continually, being enacted differently with a changing world and the epistemologies used to make sense of it. This health history tells us as much about English society and the modes of sociability and politics it orients around, as it does about swimming (Love 2003).

From minority form to natural English pastime

The therapeutic import of bathing for health and the elimination of disease has roots as far back as the fifth century BC when Hippocrates advocated immersion in thermal waters for curative purposes (Cilliers and Retief 2006; Melillo 1995). The Romans embraced the health benefits of bathing and their conquest of Britain in 43 AD brought spas and thermal bathing to the UK, beginning a tradition of therapeutic spa landscapes (Gesler 1992). Besides this Graeco-Roman influence, the Church and Christian doctrine particularly in the medieval period, deeply impacted British opinions on bathing. Often presented simplistically as an aversion to bathing, Elizabeth Archibald, scholar of English and medieval studies instructs us of a more complex history (Archibold 2012). Church concerns about sinful pagan water practices, as well as the potential for the bath (and of a woman in particular, bathing) to act as it does in the story of Bathsheba as a 'potent sex-aid, leading to the sin of wanton pleasure' (Levy 2000:144 cited in Archibold 2012:5), were tempered by a more nuanced appreciation of bathing as a source of health, purification and cleanliness where practised with good moral intention (ibid).

Prior to the nineteenth century, Britain had only a small interest in bathing and swimming (Love 2003). A handful of works were published between 1500 and 1800, seeking to elevate swimming's status to that of an art or science in the name of health, understood as a combined physical, mental, and spiritual state[11]. This was inspired by educational reforms of enlightenment thinkers

[11] See Everard Digby's 1587 'The Art of Swimming', Floyer and Baynards' 1732 'History of Cold Bathing' and George Cape, secretary of the Lambeth Bath's 1854 work on swimming which stresses 'a natural analogy between the ablution of the body and the purification of the soul'

(Chaline 2018:para 12) and later by the Victorian concept of 'total health or wholeness' (Haley 1978). Despite the desire of such scholars, swimming remained a minority pastime enjoyed by males of the upper echelons of society (Orme 1983:107). This changed in the first half of the nineteenth century as swimming in England 'once practiced by only a few individuals, nearly always men, developed into an activity engaged in by millions of people' (Love 2003:23).

Historians of medicine note, 'hydrotherapy was introduced as a purification method, a remedy to clean both body and soul and later on was used for various therapeutic purposes, becoming thus a panacea' (Tsoucalas et al. 2015:430). This trajectory was reflected in nineteenth century Britain where bathers 'entered the water looking to cure their ailments or as a preventative against future illness… soaking in water being seen as beneficial' (Love 2003:28). In 1816 Frost published 'Scientific Swimming' arguing that swimming was the perfect way to promote cleanliness and health (Frost 1816), while in 1826 'National Tepid and Cold Water Swimming Baths' opened in Lambeth (Love 2003:37). Eton College began a Psychrolutic Society in 1828 dedicated to winter open water swimming[12] and in 1834 a tract was published titled 'The constant use of the cold or swimming bath of great importance in the prevention of disease and the preservation of health' (cited in Love 2003:285). Contemporary writers told of the 'health import of bathing and swimming… in natural bodies of water' (ibid:284), while newspaper articles in The Times from 1820 to 1863 reported on the strength of Northern swimmers who utilised outdoor waters (ibid:38). In the mid nineteenth century the health import of swimming and bathing was finally extended to women. For women 'from the health and character point of view, cold bathing was regarded as a particularly good tonic for the circulation' (Vertinsky 1994:82), improving 'muscular strength and endurance', boosting fertility, all with the 'added benefit of cleanliness' (ibid).

Moral concerns

Mounting popularity and the enrolment of women saw concerns about the intentions and circumstances of swimming reignited. Victorian society, with its highly-regulated moral order and strict social codes on interaction between the sexes worked increasingly hard to police bathing and to 'prevent any possibility of sexual arousal or intimacy taking place' (Love 2003:67). From the 1830s swimming costumes were a central provision for women, despite being seemingly optional

[12] Psychrolutic Society: Book of the Society of Psychrolutes, MISC PSY 01 01, (1828 - 1857)
Psychrolutic Society: Accounts, MISC PSY 01 02, (1828 - 1833)

for men until localised laws were introduced in the 1860s (ibid:66). Around this time, same-sex bathing came under strict curtailment. The Bath and Washhouse Act of 1846 segregated the sexes at bath houses and subsequent legislation, The Town Police Clauses Act of 1847, set strict limits on open water areas of bathing for men and women, ensuring adequate distance to avoid 'indecent exposure' (Love 2003:66). While men were still exempt from swimming attire outside of race situations, as made implicit in the Amateur Swimming Association's (ASA) first costume law in 1890, women were expected to wear costumes at all times, and gowns before entering and exiting the water[13]. The ASA today states that 'the swimwear of all competitors shall be in good moral taste' and 'non-transparent'[14], highlighting enduring concerns over swimming and morality. Worries about cleanliness, morality and purity also existed regarding peoples of different class. The Bath and Washhouse Act not only separated the sexes, it also functioned as a measure to clean up, morally and physically, those lower classes understood to constitute 'the great unwashed' (Campbell 1918; Cape 1854). The Washhouse Act sought to regulate the body politic of ever greater echelons of society, disciplining individual bodies through a moral locus and the health of bodies at the population level, functioning as a biopolitical regime in the Foucauldian sense (Foucault 1978).

Public Health, as an institution, tells its own history of emerging in Britain just a few years after the Washhouse Act. Its focus, sanitation, was made pressing by Jon Snow's discovery of the link between cholera transmission and contaminated drinking water in 1854, and the 'great stink' of 1958 in which putrid odours rose from the Thames, causing great concern in an era that espoused miasma theory. As sewerage systems were put in place to deal with the Thames' contamination with raw sewage, sanitary reformers pushed the importance of washing for the masses. Despite an increasing number of wash houses emerging and being priced to try and include most of the working population, many still preferred to swim in rivers and the sea. This was partly due to the freedom such spaces afforded in terms of attire and behaviour (Ayriss 2009) but also due to the nature of the water at public baths. Love tells us 'for almost the entire period between 1800 and 1918 there was no concern about, or conception of, filtering the water used in swimming pools' (Love 2003:302). Pools were filled and used for upwards of four days, then drained and refilled again. Access to 'fresh water' days was limited to first and second class swimmers and thus working class people were often left with 'dirty water days' (ibid). Unsurprisingly then, nearly 250,000 people still swam in the Serpentine in the summer of 1881 (ibid:55). The popularity of open-water swimming was heightened by the celebrity status of Captain Matthew Webb who

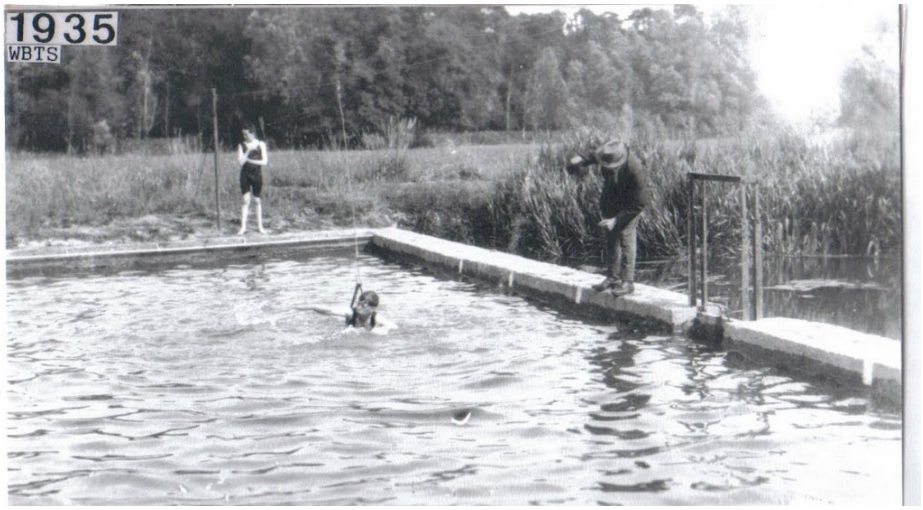
[13] ASA Handbook London 1909 pp 44-45
[14] FINA General Rule 5.1 and 5.2

successfully crossed the channel in 1875. Webb 'captured the imagination of an entire nation' (Love 2003:51-2) and endurance swimming, for men and women was elevated to a new status that lasted well into the 1900s (ibid:55-58).

Disease and Pollution

By the early 1930s, the germ theory of disease discovered fifty years prior was well established and concerns about the potential for disease to spread through water were heightened. Historians wager 'the polio outbreaks of this period were responsible for replacing the natural swimming hole in favour of the man-made pool' (Olsen 2007:135). That swimming pools had clearer water and began incorporating coarse filtration systems was central to their being perceived as less likely to transmit polio (ibid).

We see the relationship between public health disease concern over polio, and the move from rivers to swimming pools reflected in the local history of those who learned to swim in the River Beane at Goldings boarding school in Hertford in the 1900s. The anecdote below was shared with me by an alumnus of the school.



Photograph 19 - Boys learn to swim in the river pool at Goldings Estate in 1935. Reproduced with permission from Golding Old Boys.

"The [river] pool was used from about 1923 to 1937… There was a worry later on that the boys may catch polio from the river and so it was decided that the boys and staff would build a proper swimming pool. The boys and the staff dug out a new pool in 1938. I was also taught to swim in 1962. It was filled in after 1967… for safety reasons, as one councillor told me, people walk the dogs in the grounds, and the council was concerned someone would fall in… So it only exists in my memory."

Photograph 20 - Boys making a splash in the river pool. Reproduced with permission from Goldings Old Boys.

Photograph 21 - Boys diving from a concrete diving board in the pool dug out in 1938. Reproduced with permission from Goldings Old Boys.

The chemical industry boom of the post-World War II period, and praise of its revolutionary potential, was tempered in the 1960s as concerns of river pollution with chemicals emerged. Coinciding with the English publication of Carson's Silent Spring in 1965, a toxic waste spill in Kent killed numerous animals and one person. The Kent spill made newspaper headlines, bringing to public and government attention the chemical pollution of rivers (Clark 2017). Echoing the opening fable of Silent Spring, as concerns over river pollution in England grew, 'everywhere was a shadow of death' (Carson 1965:9). No longer framed as spaces for swimming, health and cleanliness, rivers were increasing denoted as contaminated bodies of water to avoid. Alongside industrial pollutants, population growth and urbanisation had by the 1970s overwhelmed Victorian built sewage systems (WWF 2017:7). Sewage plants began depositing ever-larger quantities of 'overflow' into rivers and oceans. By the 1980s owing to the heavy burden of water pollution, England was considered 'the dirty man of Europe' (WWF 2017:9), as a scientist

from North-West Water reflects, 'the river was awash with a deadly cocktail of raw sewage and toxic chemicals, and people in Liverpool joked that you couldn't drown in the Mersey because you'd die of poisoning first.'[15]

Photograph 22 - Boys swimming in the outdoor lido on Hartham Common. Reproduced with permission from Hertford Archives.

While rivers and seas were being increasingly polluted, the space of the swimming pool was becoming increasingly sanitised. The photo slide included to the right is of boys swimming in an enclosed section of Hartham Common's open-air swimming pool, which operated until the end of World War II. The pool was supplied, the slide's annotation tells us, with river water which flowed through a coarse filter. Swimming pools were an answer to growing concerns over the pollution of open waters but were also framed as safer than rivers due to their being bounded spaces with lifeguard supervision. In 1973 a British Public Information short film titled "Lonely Water" was released. The video features a grim reaper, the spirit of dark and lonely water, who narrates the unknown, hidden dangers of open water. As numerous children enter murky looking rivers and disappear, the Grim Reaper cackles with glee at their vanishing, leaving the viewer with no doubt that the children have drowned [16]. Thus by the 1970s and 80s, public health information efforts worked to emphasise the safety and health benefit of swimming pools and to deter peoples from swimming in rivers.

[15] Mersey Basin Campaign. 2010. Who saved the Mersey? Available at: www. merseybasin.org.uk/archive/assets/176/original/Who_Saved_the_Mersey.pdf
[16] Lonely Water public information video 1973 https://www.youtube.com/watch?v=XNPMYRlvySY

The smell of cleanliness: chlorination

In 1970, a lido was opened on Hartham Common. The photo below includes clear objects or infrastructures designed to ensure safety for swimmers therein. The elevated lifeguard chair sits in the foreground to the left and life rings are attached to the wall of the changing rooms in the background. Alongside these infrastructures of supervision and safety, this lido was the first in the vicinity to have what was considered safer water. It was supplied with piped, chlorinated water, rather than water siphoned directly off the rivers of the common. Some peoples who swam in this lido, which only remained open until 1979, were explicit that they swam in the River Lea until the pool opened. Recounting this move, they spoke of the sensorium so associated with swimming pools, recanting "I can almost smell the chlorine!"

Photograph 23 - The first chlorinated lido built on Hartham Common in 1970. Reproduced with permission of Hertford Archives.

Nicholas Shapiro's introduction to chemo-ethnography encourages attention to the myriad ways chemicals facilitate modes of sociality and understandings of the world (Shapiro and Kirksey 2017), while Denyer-Willis offers the 'salvific sensorium' to make sense of smells and soaps which construct new kinds of space with affective consequences (Denyer-Willis 2018). Chlorine, discovered as a sterilising agent and used to disinfect potable water in 1897 when British scientist Sims Woodhead used it against a typhoid outbreak in Kent (Olsen 2007:131), has only been widely used in swimming pools since the 1960s. There is no doubt that the smell of chlorine became

associated at this time, and continues to be associated today, with sanitised, hygienic spaces for swimming. A recent Swimming World Magazine article opens with the line, 'distinctly recognizable with its pungent, bleach-like odor, chlorine is worn as a swimmer's perfume'[17]. Anthropologist Alex Nading writes of such chemical compounds, 'bleach doesn't simply put things in and out of place. It makes place' (Nading 2014:para 3) and 'bleach also acts as a reminder that *they* live' (ibid:para 2). Applying this to the swimming context I argue that chlorine makes up a constituent part of the swimming pool as a place and reminds swimmers that 'they', germs, viruses, bacteria, which such chlorine is purported to neutralise, exist in the first place. As chlorinated water came to be seen as healthy by virtue of its status as germ-free, and as germ-free came with the appearance of translucent water and a sensorium of bleach-like smells, swimming pools stood in further contrast to germ-ridden, polluted, unhygienic rivers. By the 1990s the lido on Hartham Common had been encased within a large building, functioning as an indoor swimming complex.

Photograph 24 - The indoor pool on Hartham Common today where the author learned to swim in 1995.

The body project, neoliberalism, and individual responsibility for health

As sensoriums of cleanliness, bounded spatially and supervised in the name of safety, swimming pools and the swimming therein have been enlisted since the 1980s in further conversations about health, this time, as spaces through which body projects of late modernity are enacted (Scott 2009; Throsby 2013). These body projects, as Giddens tells us, are part of a process through which individuals have been encouraged to attend to and work on refining their bodily representations

[17] https://www.swimmingworldmagazine.com/news/the-silent-assassin-is-chlorine-hurting-swimmers-more-than-it-is-helping-them/

(Giddens 1991). In relation to swimming pools, as anthropologist Kate Throsby contends, this body project conditions an image of desirable aesthetics; fit, lean and muscular swimming bodies, working to exclude and shaming non-conforming bodies (Throsby 2013). Sociologist Susie Scott argues that this modern body project is implicit in the negotiated order and social code of swimming pools (Scott 2009). Socialising is minimised and frowned upon she argues, as is any acknowledgement that all swimming parties are ostensibly naked (ibid:124). Swimmers are expected to conform to demarcated strokes and to select a lane from those labelled slow, medium, and fast, labels which regulate, in a Foucauldian sense, bodies in space (ibid:129). Scott concludes that swimming pools are not spaces for leisurely bathing but for swimming, understood as a form of exercise to facilitate bodily 'improvement' (ibid). Remaining vigilant that this sociological model is reductionist and should not be taken to represent a singular 'truth' of swimming realities, Scott's work is nevertheless helpful in our understanding the multiple ways in which health is imagined and enacted through the practice of swimming in relation to specific spaces, epistemologies, and epochs.

Modern body projects, as they have come to influence enactments of health at swimming pools, must be understood in relation to the rise of neoliberal styles of governance which inflect public health and health governance. In the same era that water was privatised in England under Conservative Prime Minister Margaret Thatcher, health became an increasingly 'private' matter, to be managed less by the state, and more by the individual (Lupton 1995; Petersen and Lupton 2000). Built on the premise of individual freedom and state roll-back, individuals are encouraged to look after their own health, doing so as good dutiful citizens (ibid). While some social scientists have critiqued neoliberal health policy and austerity, arguing that it is in fact such neoliberal politics that 'makes us sick' (Schrecker and Bambra 2015), in a world permeated by a growing number of health-threatening risks (Beck 1992) some have asked whether the answer to such uncertainty is the formation of more resilient, health-responsible citizens (Rose and Letzos 2017). Without space to delve into a deep theoretical discussion of neoliberalism, responsibility and health, I want to home in practically, at a micro-level, to note how these ideas have influenced recent swimming history in England. To do so I focus on how such neoliberal governance and messaging on health relates to peoples who never left open waters for the chlorinated, surveilled safety of the swimming pool; those who river swam in the activity's hinterland years. This will then help us to think about those who during the pandemic were forced to leave the swimming pool. Those who, as I will show later in the chapter, turned to the river for what they assumed

would be a finite period, only to find themselves enthralled and now post-pandemic lockdowns, more permanently emplaced as river swimmers.

Hinterland years swimmers and swimmers who began their foray into river swimming during the pandemic have been met with an interesting paradox. This paradox is a fundamental part of the neoliberal style of health-governance that has come to inflect swimming and understandings of health in relation to this practice. We saw this paradox in chapter six through Mazzo's discussion with the LPDM. Swimmers have been encouraged not to swim in rivers due to a myriad of risks or dangers therein. However, swimmers have been implicitly allowed to swim, despite lacking authorisation and in the face of these risks, if they take responsibility for themselves. This neoliberal style of health governance in relation to open water swimming is reflected at a nation-wide level through the Environment Agency's 'Swimfo' Map. The EA monitors the quality of open waters that are publicly accessible as well as those that are not. For those publicly accessible, almost exclusively coastal waters, the Swimfo map uses a directory of bright blue pin drops to signal 'designated bathing waters,' and a no entry red circle with diagonal line symbol to signify 'advice against bathing'. Since most rivers are not accessible in a legal sense, the EA does not report on rivers using this system of bathing-related words and symbols, but instead provides an index of water quality as 'excellent, good, sufficient, or poor' [18]. This means that the River Beane, while receiving a water quality status report, is rendered invisible as a bathing water – we do not know if it would obtain a blue drop or a red no entry symbol. This invisibility does not render the river inaccessible to swimmers who wish to swim against the signage and warnings I discussed in chapter six, but does certainly render it less visible as a space for swimming than for example, the municipal swimming pool which also sits on Hartham Common, proudly welcoming new swimmers through advertisements in local magazines, and in flyers in its reception area.

Returning to the Swimfo map, we might say the map is the neoliberal inflection of individual responsibility for health in relation to open water swimming par excellence. Swimmers are, based on the EA's assessments, only ever advised against bathing in particular places. They are not forbidden from doing so. That swimmers can choose to swim against the advice of the map is, I would argue, central to the framing of open water swimming today as an activity of risk. Risk, especially in terms of environmental pollution and the boomerang effect of expelling such toxins, is as Beck argues, a guiding principle for societies living in the wake of industrial modernity (Beck 1992). River swimmers can swim against government advice if they take responsibility for that

[18] https://environment.data.gov.uk/bwq/profiles/ Environment Agency 'Swimfo': Find a bathing water

choice and the potential outcomes of making such a choice. Instead of public health impetus from government working to improve the quality of rivers for purposes of bathing, the government reports on the increasingly poor status of river water quality, and advises individuals against bathing, but ultimately still permits them to do what they will with such information. The risk is theirs to take.

It has been important to note this shift towards neoliberal governance and public health messaging in relation to swimming for two reasons. Firstly, because it supports the rise of swimming pools as spaces of modern body projects, safe, hygienic spaces for exercise and self-improvement. It has in this sense continued a tradition since the 1940s of deterring river swimming. Secondly, as I showed with the Swimfo map, and something which I would argue has not been included in scholarship on swimming, is the glimpse it provides into river swimming, which may have receded but still existed in those hinterland years. During those years, the notion of individual responsibility and freedom has bobbed along, paradoxical in both strongly discouraging, yet simultaneously allowing open water swimming. This paradox and the tensions that emerge through it are being rendered more explicit than ever, as river swimming is resurrected as a more popular activity in the face of the coronavirus pandemic and as some peoples come to enact health differently in the face of such pandemic uncertainty.

A springboard leap

This history has provided a long-winded, non-direct answer to why Jack thought Mazzo's swimming party would be in a swimming pool. While Jack cannot be made to stand for all people, and of course some people might in fact associate swimming parties with rivers, the history just traced makes a compelling case that in England over the past century, swimming and what it means to enact health through this practice has, in large part, shifted. From an activity of submerging, bathing and swimming in open waters to obtain health, understood as a combination of the physical, mental, and moral/spiritual, we see swimming today as an activity frequently understood to take place in the disease-free, safe, chlorinated water, and supervised space of the swimming pool. This is encouraged as part of neoliberal individual responsibility for health, achieved through exercise and bodily improvement. Non-direct answer complete. Now to a question, or springboard, to the immersive ethnography of this chapter. Why after everything we have just learned from the history above, was the party being held in the River Beane? And further to this, why was Mazzo now swimming in the river every day?

While the number of open water, and in particular river swimmers, dwindled between the 1960s and the early 2000s, Swim England reported a revival between 2016 and 2018. While 266,500 people swam in open water from November 2016 to 2017, for the same time period the following year 490,660 swimmers were reported. Swim England's open water development officer Sharon Lock when asked about this staggering rise, said open water swimming is "liberating", involves a feeling of "freedom" and has "additional health benefits… opposed to a pool[19]." Two years later, and coinciding with the global coronavirus pandemic, Outdoor Swimmer Magazine published its first 'Trends in Outdoor Swimming' report. It noted a 94% increase in open water swimming numbers for the year 2019 – 2020 (Outdoor Swimmer 2021). While it is too early for Swim England to release formal statistics on swimming for the period of the pandemic, Outdoor Swimming Magazine using its own surveys, anecdotal evidence and google search data are confident that the pre-pandemic number of half a million open water swimmers will be dwarfed (ibid:10). To answer the question I just posed, to make sense of these numbers, and to think about what this all means in relation to enactments of health and their continually shifting nature, I now turn to my first swim with Mazzo and the seven months of immersive ethnography on the rivers Beane and Lea that followed it.

Meeting swimmers of the Beane

I met Mazzo at the River Beane at 4pm on a Wednesday afternoon. The spot he had directed me to is an entry point to the river situated a few metres off a public footpath, parallel to the public land of Hartham Common. As mentioned in chapter four, this is an unusual and welcome space where the private landowner has not publicly permitted but has equally never stopped people entering the water and sunbathing on the banks. Overlooking the river here is Saint Leonard's church, the oldest church in Hertford which sits at the top of a gentle hill to the right as you face the river. The view from this hill is so beautiful that years of repeated visits do nothing to dampen its effect on the senses. Only ten minutes from the town centre of Hertford and minutes from some of the dense residential areas of Bengeo that sprawl out into the fringes, you suddenly arrive at an expanse of green. Between Hertford and the next town along of Ware there is suddenly only fields, wetlands, and a maze of rivers. The rivers Beane, Rib and Lea all come together here. This spot,

[19] https://www.swimming.org/openwater/open-water-swimming-rise/ Swim England on the rise of open water swimming published May 2019.

where we began our swims, has become an increasingly popular bathing area known to river swimmers (and now google maps) as the beach.

Photograph 25 - The beach of the River Beane at the bottom of the hill from St Leonard's church.

Sitting on a mound of grass, eyes darting between the waters before me and the three paths from which I expected Mazzo to materialise, I waited with mounting apprehension. From the middle of the three paths Mazzo emerged, waving emphatically at me as he walked towards the beach. We exchanged pleasantries and hurriedly stripped down to our swimming attire. Once we had stuffed our clothes into bags, Mazzo shot me a glance and a loud “Ready then?” We slid in from a high bank and were instantly waist deep in the water. The air temperature was around twenty-two degrees, and while the water felt much colder than that, it was certainly not unpleasant. I glanced down, spreading my toes into the gravels of the riverbed below me. I looked to Mazzo, who had already began stroking out into the water, puffing his cheeks out slightly. He shouted back to me at a bracing volume “ISN’T THIS WONDERFUL.” Before I had time to respond, Mazzo shouted a follow up of “This way!” and as instructed, I pushed off into the water, swimming quickly to catch up with him. We came to a positional standstill at his preferred swimming point about twenty metres up-river from where we had entered. Here the current flowed strongly as it approached the meander of the beach and so while we would have looked from the banks to have been static, under the water our legs and arms moved continuously against the flowing water. Mazzo swam on

his side against the current and I doggy paddled against it, marvelling at its strength even in this narrow river. In the centre of the channel we were unable to touch the riverbed beneath us without being fully submerged.

Once we were in a rhythm and I had relaxed into the cool of the water, I asked Mazzo what had drawn him to wild swimming, a term I had heard being used locally to describe these swimmers. He instantly corrected me, stating firmly "This isn't wild swimming, I like to think it's just real swimming." He told me that he grew up in Bengeo in a house not too far from Saint Leonard's church and had always thought this a truly beautiful place. After an unknown time period, for neither of us was wearing a watch, we turned back towards the beach and allowed the current which we had been fighting to push us back into the opening of the beach. The feeling was thrilling. We climbed out at the bank, gripping the longer grass in our hands. We hauled ourselves onto our knees and then feet, dripping as we picked up our towels. Mazzo dried his torso, threw on his t-shirt, and told me he was ready to go. I was glad to be left alone to peel off my wet costume and dress before walking home myself. Mazzo asked a parting question, although it was certainly delivered as a statement, "So we will see you again soon?" I nodded enthusiastically, he certainly would.

I retraced my swim with Mazzo a few days later, eager to meet other swimmers and to hear their reasons for swimming and I had to admit, eager to feel the sensation of cold water against my skin again. As I swam upstream from the beach, battling the subtle but strong current, I noticed other swimmers moving comfortably past me as they were carried effortlessly downstream. I struck up a conversation with a man who I decided looked roughly my age. He was paddling, wading, standing where the depth allowed him to. It was clear to me that he knew the contours of the river as these changing movements were performed with a calm aquatic dexterity. This stood in obvious contrast to my lack of experience, when trying to put a foot down to begin a conversation I suddenly found myself up to my forehead in water having misjudged how deep the section was underfoot. Regaining my composure and stroke, I said hello and he asked me if I swam here often. I told him only recently for my research and asked him the same question. He told me he had moved back to Hertford from London. As a musician with no gigs to play and with the city locked down, he told me renting in London had become both unappealing and unfeasible. He had ended up back at his mother's house, where bored and clearly a little lonely, he had been coaxed out of the house by a neighbour for a swim. He told me that this neighbour Michael was a real character and that they walked down to the river and swam there together nearly every day. As our swim drew to a close we were amused to realise that the Michael who had encouraged Rich to begin

swimming was in fact Mazzo, and that we had both been inaugurated by the same man who I was beginning to suspect was patron saint of the River Beane. On realising our mutual friend and the likelihood of future river rendezvous, I wrapped up my swim and headed home.

I joined Mazzo, Rich, and a woman Lizzer who also swam with them regularly every week for the next seven months. While we had been drawn together in the pursuit of river swimming, it was interesting as the months passed that these swims seemed to extend quite naturally into less watery social moments, and that land-based social moments were made, where they had to be, into watery ones. When lockdown restrictions permitted, we drank flasks of tea and ate cake on the river's edge or on Mazzo's patio, putting an uncertain world to rights as best we could. When restrictions were at their tightest and exercise remained one of the few permitted reasons to leave the house, we marked each other's special occasions with conveniently timed swims; just four solo swimmers who happened to have turned up to swim at the same time. On the 21st of December 2020 we paddled at the beach in the cold and the rain while Mazzo Lizzer and Rich sang happy birthday to me.

Photograph 26 - From left to right, Rich, the author, Mazzo, Lizzer, readying to swim at the beach.

Photograph 27 – Swimmer's bags and clothes strewn on the banks of the beach.

A space for health once more

Comfortably situated in a swimming quartet, I had the opportunity to better understand what had drawn these swimmers to the waters of the Beane, what kept them there, and also to engage with other river swimmers along the way. That I took part in these swims allowed me, as marathon swimmer and auto-ethnographer Karen Throsby states, to tune into the kinaesthetic sensibility of open water immersion. I was able to observe and listen to swimmers share, as well as to feel for myself, the immersive possibilities of moving through lively waters (Throsby 2013).

It became clear during this period of immersive ethnography that many river swimmers had been drawn to the water for the sense of health and wellbeing moving through it instilled. Mazzo on our first swim, when I asked his reasons for swimming, told me he normally frequented swimming pools using them as therapy for lower back pain. When his local swimming pool closed during the coronavirus lockdown, he had decided the river would have to do as a substitute. Interestingly, and speaking to centuries of history on cold water immersion (Love 2003), Mazzo believed that the coldness of the river water was easing his back pain far more than the swimming pool ever

had. This belief made him adamant that when swimming pools reopened he would not return there. The river was where he swam now, the substitute had become the staple. Nearly two years on as I write, Mazzo is still swimming in the Beane every week.

In October I met another swimmer who was using river immersion to free herself from pain. Kelly was a bubbly middle-aged woman who turned up one afternoon with her daughter Molly, who looked to have been in her early teens. They both wore wetsuits, gloves, hats and goggles, and set off together for the swim around from the beach to Julie's ladder (discussed later in this chapter). Kelly told me that she had taken up swimming to keep fit while gyms and other exercise spaces were closed. She told us that she had Lupus, an auto-immune disease, and had discovered while river swimming that the cold water eased her symptoms beyond recognition and that she was now pain free most days. Kelly was like Mazzo, emphatic that this realisation would see her as a life-long convert to river swimming as opposed to a patron of swimming pools.

On another afternoon staring out from my favourite bench positioned just in front of Julie's ladder, I met two men in their late thirties. They told me they had started driving here from Bedfordshire (an hour's drive away) as often as work permitted them to. They told me they found river swimming "electric", and one nodded in agreement as his friend told me it "keeps my mental health in check." River swimming for these men was so powerful a tonic for mental anxiety and distress that it was worth the long drive for the relatively short period of immersion. Finally, in late autumn I was part of a discussion amongst river swimmers about an article that had been published by the BBC. The article presented research that linked cold water swimming to a reduction in degenerative brain disease such as Dementia and Alzheimer's[20]. Many of the swimmers were not surprised by this link. They agreed with one another that swimming made them feel mentally stimulated and also calmed. One swimmer expressed that it was good to know it didn't just feel good, but physically did good too.

[20] https://www.bbc.co.uk/news/health-54531075

Photograph 28 - Swimmers with warm hats on swimming at the beach in the winter.

While these examples can be read as interlocutors sharing examples of how river swimming helped improve or manage their physical or mental health seen as independent entities, there was also, from many swimmers, a sense of river swimming being good for health in a more holistic sense. Even swimmers who shared the particular benefits of river swimming for one ailment or another often followed this up with a statement like “it just feels so good”, making no distinction between mind and body, but intimating that their entire being, they as a subject rather than an object of knowledge (Merleau-Ponty 1962) felt good.

While the swimmer who reflected on the BBC article on degenerative brain disease was happy to know it didn’t just feel, but did physical good, this expression intimates a difficulty in separating sensations of the physical and mental in understandings of health as they come to be enacted through swimming. When I asked Rich about his taking up river swimming he spoke to me in precisely this way, never mentioning health, his mind, or his body, but describing a sense that these daily immersions were doing something poignant for, and to him. Rich told me about his life as that of a young person put on hold, paused during what were supposed to be some of the most exciting times of his life. He had, just before the pandemic, been travelling overseas, and “the

music stuff was going so well." In the face of sudden stasis, Rich's days had become oriented around his afternoon swims. It was here that he could escape that sense of immobility. He came to the river to move and be moved, it was for him a way of connecting to something emotionally charging, while also serving as a powerful release and escape in the middle of a pandemic which had left him disconnected from his home, friends, and livelihood. Rich's words reminded me of the more totalising form or 'holistic' health that was central to Victorian recommendations for open water bathing (Haley 1978). Swimming was keeping Rich physically strong, but it was also allowing him to retain a sense of himself in a period that threatened to dissolve who he was entirely. He said the river was different every day and that he enjoyed seeing how he felt in relation to it. In this sense, Rich's immersion were a reminder that 'places are always becoming, and a human… is one element in a seething space pulsing with interesting trajectories and temporalities' (Edensor 2010:7). Rich was aware of his ability to 'affect and be affected by a multitude of rhythms' (Edensor 2010:5) and this sense of emplacement, was for him, akin to a sense of wellbeing.

That some swimmers think about their activity in what I would argue constitutes a holistic framing of health with an awareness that 'the mind is necessarily embodied and the sense mindful' (Howes and Howes 2005) has been noted by scholars who denote open water swimming as an accretive practice of wellbeing (Foley 2017). Foley uses the maritime metaphor of accretion, the process by which objects become 'encrusted' over time by their immersion in water, to try to make sense of swimming as a kind of 'therapeutic accretion, wherein body knowledge, memory, practice and place encounters build to develop a resilient wellbeing' (ibid:14). To quote Foley at length,

> 'therapeutic accretion works in a similarly backwards and forwards way. If a resilient crust is built up with every swim we take, this helps sustain our health in a forward direction; yet the experience of the swim is also an echo backwards along the emotional continuum to an affective past where that deep initial layering took place. Putting these together the fleeting event of the swim and the milieu in which it takes place, harden into a sort of embodied lacquer of wellness.' (ibid)

I would argue that the way Rich spoke about his river swims and the way they had helped him regain a sense of himself during the pandemic can be understood through Foley's accretions, as Rich had found an 'embodied lacquer of wellness' through his ongoing immersions.

Health in iterative dialogue with risk

In chapter six I recounted a conversation between Julie, myself, and a retired environmental health officer. Julie had said of river swimming, “it’s not about health and safety it’s about health and risk.” While it is important to recognise this as the stated opinion of only one swimmer, I found nearly all the swimmers I spoke and swam with, regardless of how they thought about the health benefits of their activity, in a Cartesian dualistic sense of mind and body ‘cures’, or in a more holistic, totalising sense as an immersive form of wellness, all spoke or acted in relation to their considerations of risk.

Risk, for some swimmers I met, was about mitigation. Risks for these swimmers had a scale. While they could not be eliminated entirely, they could be managed and reduced to ensure the healthiest possible swimming experience. For swimmers such as Carly and the two men I met from Bedfordshire, wearing wetsuits, wetsuit gloves and socks in the winter reduced the risk of hypothermia from cold water exposure, but allowed for a longer immersion than if wearing only a swimming costume or trunks. They reduced a risk and extended the duration of their wellbeing experience through the same protective measure of the wetsuit.

Photograph 29 - Swimmers battle the current to swim back from the broad water to the beach.

Those who didn’t wear wetsuits at all, such as Barbara, one of the few swimmers I met who had not taken up the activity during the pandemic, but had been swimming here for years, and those who only wore rash vests which included Mazzo, Lizzer and Rich, were in a constant dialogue with each other about how long to stay in the water for as the temperature dropped over the winter. Rich had invested in a thermometer, which on entering the water he would place securely against a tree branch, half-submerged in the river. He would check the temperature and shout it to the

group. When the temperature fell below seven degrees there was particularly strong consensus that we should be careful not to stay in for too long. A woman from the Herts Open Water and Lido Swimming Group (HOWLS) had shared on Facebook in December of 2020 a warning to others in this respect. She recounted having had a particularly enjoyable swim and staying in for longer than usual despite the cold. On the walk back to her car she had lost vision in both eyes for a number of minutes, a known symptom of hypothermia. Her message did not tell other swimmers not to swim but ended with a mantra I had heard amongst river swimmers in the winter; one minute of immersion for every one degree of temperature, especially for those less experienced in cold water immersion. Thus when it came to the cold, the swimmers I met appeared to work carefully to extract health benefit from this aspect of the water, while remaining aware of a tipping point at which that same aspect could constitute a heightened risk of ill-health.

Photograph 30 - The author pausing on the broad water on New Year's day 2021.

In relation to the seasons and temperature of river water, there was for some swimmers a trade-off between health, risk, and enjoyment. The three swimmers I swam with most often found the swim around from the beach to Julie's ladder at the confluence point of the rivers Beane and Lea to be the most enjoyable of all the immersions to take part in. Despite the swim around being for my

swimming quartet the most enjoyable, the fact that it took at least twenty to thirty minutes to complete meant we did not do it in the coldest of the winter months. It was too far, and thus too risky considering how long we would be immersed for, especially given Mazzo Lizzer and Rich's aversion to wetsuits. We made an exception to this rule on New Year's Day 2021, but to do so, agreed they would all have to wear wetsuits. We all noted at the end of the swim around how much we had missed the route, and Mazzo, the eternal optimist said it wouldn't be too long until the spring arrived and we could enjoy it again.

Thinking about another aspect of the water itself, its perceived quality, swimmers again undertook conversations with one another and employed different techniques of risk mitigation. Following heavy rainfall there were always fewer swimmers at the river. Some swimmers told me they avoided the river entirely during and following heavy rainfall for a few days because they feared that the current would be stronger and thus harder to swim against. This particular concern came to fruition for Lizzer one afternoon when I did not join the group. The current had pushed Lizzer beyond the beach and after trying to swim upstream unsuccessfully she had to let herself be carried even further downstream to a point at which she could climb out of a bank and walk back across the common. Other concerns about heavy rainfall were of increased levels of pollution and debris in the water. Runoff from roads, pesticides, as well as concerns of sewage put many swimmers off during very wet weather. For those who continued to swim despite these conditions, mitigation of risks came in the form of keeping heads above water, making sure not to put hands in mouths after swimming, and showering as soon as possible afterwards. When the EA published its latest report on water quality in England in September of 2020, river swimmers on the Beane were clearly concerned with the results that 0% of rivers met legal water quality standards, with all rivers being heavily polluted with chemicals[21]. I was part of a number of conversations at the beach about these findings. The consensus I wrote in my fieldnotes amongst the swimmers was to be more careful not to swallow any river water, and not to swim with open cuts of any kind. Whether these mitigation techniques have any impact against chemical pollution is less important here than the fact that river swimmers were coming together communally to try and find ways to continue the activity they so loved, and to gain from it the sense of wellbeing or health benefits they so desired, without succumbing to the risks which they acknowledged were there and appeared to be growing rather than decreasing.

[21] https://chemtrust.org/news/uk-rivers-chemical-pollution/

For most of the swimmers I met then, risk was not the antithesis of health but was about maintaining an iterative dialogue between river swimming's potential to give health, and its potential to take it away, should the river and its changing rhythms not be respected. The swimmers I met did not romanticise river swimming as unreservedly good for health. What they did was remain in constant conversation with each other, with the aesthetics of the river, the weather, and news on water quality reports. It was this ongoing dialogue that allowed swimmers to mitigate the risks they saw as most likely to diminish health, and to swim when health gains or opportunities for wellbeing were in their opinion most ripe for the taking. This tacit, ongoing process of assessing risks in relation to river swimming is interesting in the way it speaks to neoliberal politics of the body and the responsibilising of health. At first glance we might say the way these swimmers quantify the risks of swimming and take responsibility for themselves in relation to these risks is the epitome of neoliberal individual responsibility. Swimmers appear to take on and accept the risks they perceive of swimming in order to improve their individual health. However, the fact that river swimmers so often do this as a community, in conversation and in agreement with one another complicates this. Similar to Watson's findings of swimmers on Hampstead Heath, that 'new publics are mobilised politically through water… around the notion of risk', discussions of risk can be considered as an issue that sparked a swimming public on the River Beane not necessarily into being (Marres 2005), but certainly into continuation and conversation. As I will return to in the next section when I discuss re-negotiating order, the fact that in working to mitigate these risks swimmers often work together and take responsibility for one another in both word and physical action demonstrates a move towards a more collective striving for, and understanding of, wellbeing, and a more collective way of dealing with risk which does not entirely fit with the neoliberal project.

Freedom and re-negotiating order

It became clear through my period of immersive ethnography that much enjoyment was derived by swimmers from the feeling of freedom river swimming gave them. Such recourse to the language and feeling of freedom has already been noted by scholars of open water engagement including river and sea swimming (Foley 2015; Foley 2017), scuba-diving (Straughan 2012), and surfing (Anderson 2013; Anderson 2014) and thus is clearly a focal part of what it means to move through open water.

One afternoon as I stood waist-deep in the River Beane, readying myself to take the full plunge, I noticed a man jogging down the hill from Saint Leonard's church in a short wetsuit, goggles and a hat. Rich, Mazzo, Lizzer and I had already begun swimming by the time James, as he told us his name was, jumped in. As he swam upstream to join us, he thrashed so hard against the current that jets of water were sent in all directions. We laughed kindly at this spirited display and waited for this enthusiastic swimmer to reach us. A head-submerging fan, as he neared our small group, he lifted his face and thrilled, shouted through the water that dribbled down his face, "it's food for the soul… can't you just feel the history, the anarchy!" James was a high-flyer in the city of London but had been coming to the river now that he was working from home. Rather than spending hours on commuter trains, he now had time to come to the river for a dose of what he called "true freedom." We left James in the river as he explained to us as we turned back towards the beach that he was "just not ready to get out yet." Most of our party did not have wetsuits on and their time was up. A while later as I sat in my car, warming my fingers against the heater before attempting to drive, I caught sight of James' silhouette still visible against the darkening sky. Dripping wet, goggles still over his eyes, James was jogging bare foot through the graveyard of St Leonard's church to his car parked on the adjacent road. He looked euphoric, and it must be said, incredibly free.

Alongside this ethnographic anecdote, I want to think about this recourse to freedom more analytically. To do so, I return to Susie Scott's work on the swimming pool. While Scott's argument that swimming pools are spaces of negotiated order, censored in terms of movement, interaction, temporality and dress, is a little too crude and neat I would argue, to reflect the realities of swimming pool sociality, it is certainly true that river swimmers I met on the River Beane believed swimming pools to be more censored, individualistic, and fitness oriented, than river swimming. River swimmers situated their practice as a community-minded, social activity of relationality to other swimmers, non-humans, and the environment. These facets were sources from which a sense of wellbeing was drawn, a wellbeing which was not tantamount or reducible to fitness or exercise.

For river swimmers there was greater freedom at the river than the swimming pool to share intimate moments of touch and conversation. River swimmers on the Beane rarely swam alone, their practice was by nature not individualistic. Swimmers often arranged to meet for a swim, enjoying the opportunity to catch up over a flask of tea before or after their swim, and would arrange their schedules so that they could swim with company. While swimmers enjoyed insular, personal moments while in the water, most swimmers in the interests of their wellbeing did not

choose to swim entirely alone and told me they gained a great sense of happiness from socialising with other river swimmers. River swimming on the Beane was thus an engagement that afforded opportunities for both individual deep connection with nature, and also space for a sense of community and connection with others, both for sociality and safety, in relation to a personally meaningful landscape (Foley and Kistemann 2015; Watson 2019).

Following on from this, swimmers not only tended not to swim alone, but in swimming together often broke down barriers of touch. I often observed river swimmers helping each other get dressed and undressed for a swim, particularly in the winter post-swim, when finger dexterity was non-existent and helping each other out of icy gloves, socks and wetsuits quickly was paramount in avoiding hypothermia. I saw swimmers hold towels around one another when changing, sometimes even rubbing each other's arms and legs vigorously to return warmth to the body. I saw swimmers help each other to pack up bags at the end of a swim and pass thermos flasks and cake between themselves. While in the water swimmers also challenged the importance of personal space and individualism in several ways. Swimmers would check in with each other verbally throughout their swims. On entering the water I often heard swimmers call to each other "Are you okay", "Deep breaths", and towards the end of swims, "It's time to get out now." I saw swimmers offer an arm to haul each other from the water at the end of swims. Proximity appeared to be a central part of river swimming, something that most of the swimmers I met embraced, took joy and comfort in, and did not feel uncomfortable about in the slightest.

Perhaps the most convincing aspect of Scott's negotiated swimming pool order is the way in which such space de-sexualises swimming. The presence of life guards, swimming pool staff, single-sex changing rooms, individual changing cubicles, and rules over attire, can all be seen as enactments of governmentality in the name of ensuring moral, de-sexualised swimming pool encounters. River swimmers on the Beane appeared to take a far more relaxed attitude to such interactions, demonstrating far more tolerance of sexual expressiveness and a far less stigmatised attitude towards nudity. In the case of sexual expression, it was not abnormal to see river swimmers cuddled up on a towel before or after a swim, enjoying a drink and some food, entwined in an embrace. In the water I observed river swimmers flirt with one another splashing water and teasing, pulling playfully at a leg, and swimming up until faces nearly touched. In terms of nudity, swimmers both male and female dressed and undressed on the banks, and it was not uncommon to see flashes of flesh. While in some cases this was met with averted eyes and bashfulness, among groups of female swimmers I also heard whoops and hollers, a sense of body positivity and embracing of nudity, as opposed to shame. While certainly not common, on a handful of occasions

I met peoples who hadn't intended to swim but found on nearing the river they couldn't resist and were thus swimming in underwear or topless. I also saw a lively conversation online between members of the HOWLS Facebook group who were planning a nude swim to mark the summer solstice. Asking some swimmers how they felt about this at the beach a week later they said they understood the appeal of being "in nature in your natural state." For some then, nudity was desexualised as something natural, and as an exhilarating and freeing experience.

Finally, river swimmers felt themselves free to move through river water in ways that felt good. Their swimming was not characterised by rigidly defined styles of movement, and there were no lanes with arrows to tell swimmers where and in which direction to move in. I found, as Bates and Moles (2021) and Foley have (Foley 2017), that many river swimmers described their movements, their mode of engagement with these waters not through stroke terminology at all, but through other modes of movement; 'dipping', 'flapping' 'paddling', 'bobbing'. In the mornings when I did not swim but often came and observed, a group of women could be seen entering the water, lowering their bodies until submerged to neck height and enjoying five to ten minutes, exiting the water having had their feet on the gravels at all times. This is not to say that river swimmers did not do front-crawl, breaststroke, or backstroke, but it is to recognise that there is a myriad of ways in which bodies wanted to move in water, and that 'in the constantly shifting environment of the open water, which both develops and demands a heightened kinaesthetic sense… No single stroke… is ever the same' (Throsby 2013:13). The 're-negotiated' order that I argue emerges through the practice of river swimmers on the Beane was one through which swimmers felt greater freedom to move through water in ways that felt good, not just using prescribed strokes. Swimmers felt freer to interact with one another in terms of both conversation and touch. Swimmers also felt freer to immerse for short periods of time, escaping the kind of 'health' which has come to dominate swimming pools – one of fitness and aesthetic body projects. Finally, river swimmers felt greater freedom in their dress, wearing as much (wetsuit), and in some cases as little (partial or full nudity) as they wished.

Spirituality

I argued earlier in this chapter, that the way swimmers such as Rich talked about the benefits of swimming as a holistic embodied experience could be understood through Ronan Foley's 'accretions of wellbeing'. I return to these accretions here since a fundamental part of Foley's

argument relates to the geographical nature of these accretions, the deep sense of connection forged between peoples and landscapes they find therapeutic (Foley 2015; Foley 2017).

Photograph 31 - Sun setting over the canal where the River Beane meets the River Lea.

We might say then that for accretions of wellbeing to emerge, a person has to be afforded the opportunity to really be in place, to dwell there, occupying what Tim Ingold (2011) imagines as a more sentient ecology of connection between peoples and place that is inherently more-than-human. These ways of understanding how swimmers like Rich think about their swims, foregrounds the embodied sense of connection, the lingering sensations, and the ways in which bodies are fundamentally changed by open water swimming (Throsby 2013; Watson 2019). Some swimmers on the River Beane expressed explicit awareness of moments in which they felt their states had changed, moments in which a heightened sense of connection to the river, the plant life, the non-humans, the landscape of the River Beane came to be experienced as something spiritual.

On an afternoon in September as Mazzo Rich and I swam around from the beach of the River Beane to the steps at the confluence point of the rivers Beane and Lea, I noticed a man back-stroking in the river. His enthusiastic style of stroke had led him straight into an overhanging tree. I allowed myself a good laugh when I realised that it was in fact my stepdad, who following a swim I had invited him on, had become enthralled. He told us he has been coming down on his own later in the evenings, unable to join us at 4pm due to work commitments. As we walked back across the common to the beach on that particularly peaceful evening, a dusty blue and pink sky

framing us as we went, my stepdad Dave told us that these evening swims had been “almost religious… in a pantheistic way.” Mazzo replied with a deep “yes” that was almost unintelligible, it was more of a feeling communicated through sound than a word. He went on to tell us he too had had such moments and shared a story of a swim during which he quietly treaded water only metres away from a coot as it coaxed its chicks onto the water from their nest for the first time. Rich chips in that he has had similar moments when the river is quiet and he finds himself momentarily alone, just him, the water, the sun on his face and the sound of the ducks and birds. I don’t catch who speaks next, but they say if there is a God, this is the closest thing that there is to it.

Dave, Mazzo and Rich’s thoughts allows us to see the ways in which swimmers on the River Beane, as Anderson has found of surfers in Wales, ‘engage with spirituality through convergence with aquatic nature’ (Anderson 2013:967), and feel themselves to be ‘connected with the cosmos, with the spatial and temporal depth of being’ (Game and Metcalfe 2011). Their emplacement on the River Beane had spiritual, connective dimensions (Humberstone 2011:505) and was powerfully linked to the experience, as Game and Metcalfe have found of those swimming, running and surfing on Bondi beach, of ‘belonging in lived space-time…[being part of] an open relation, a connection’ (ibid:46). That Dave, Mazzo and Rich’s moments were not about something ‘other worldly’ but about ‘immanent’ moments of connection speaks to what Taylor has found and coins ‘aquatic nature religions’. These religions, Taylor argues, allow space for spirituality in everyday lived practice (Taylor 2007:866). Such open water experiences, understood as a form of spirituality through conversion with aquatic nature, have been most commonly associated with surfing (Anderson 2013) but are beginning to be better recognised in relation to open water swimming (Bates and Moles 2021; Foley 2015; Watson 2019). Anderson observes how access to such spirituality is (b)ordered by surfers, of particular interest and relevance to the River Beane in terms of territory, whereby the importance of ‘localism’ works to define who belongs or not, and in turn dictates or forecloses who has the ‘capacity to experience their [waters] affective spirituality’ (Anderson 2013:966). While this thesis does not have the scope to fully explore the politics of localism among river swimmers, it is worth noting that while swimmers rarely swam alone, and were glad of company, as lockdown measures lifted in the summer of 2020, and ‘tourists’ began travelling from as far as London to swim in the River Beane (following its high recommendation and listing on wild swimming websites which themselves boomed during the pandemic) many local swimmers became increasingly frustrated at those peoples who did not have a local connection to the River Beane. These tourist swimmers were often accused of

“eroding the banks”, “leaving litter”, and “kicking up silt”. With the benefit of more research we might expect to further echo Anderson’s findings that part of maintaining the spirituality of such nature engagements is their policing and ensuring that not too many bodies, especially non-local bodies, are trying to access the cathedral and its redemptive properties at once (ibid).

I have noted the ways in which for some swimmers the River Beane shifted from being a pandemic substitute for the swimming pool, to their chosen staple in terms of location for swimming. I have also noted that for some swimmers these immersions cannot be understood to improve health through a Cartesian dualism that separates mind or body, but have come to be experienced as embodied immersions that contribute over time to a more holistic and totalising ‘lacquer of wellness’ (Foley 2017:14). I have noted that swimmers keep the opportunities for wellbeing in an iterative dialogue with the risks they perceive in their swimming, doing so in ways that are at once neoliberal, but also not, given their communal, collectively oriented aspects. I have described the sense of freedom swimmers shared with me and have created a dialogue between this and Scott’s analysis of the negotiated order of swimming pools, to argue for the ways in which I have seen river swimmers re-negotiate an order which is far less bounded spatially, kinaesthetically, and socially, allowing for freedom of movement, intimacy, conversation, and dress. Finally, I have noted that this sense of wellbeing is intimately related to the landscape of the River Beane and river swimmers’ sense of dwelling there, which comes to be experienced as a deep connection explained through the language and feeling of spirituality. I conclude this chapter by sharing one last ethnographic excerpt to reiterate the tensions from chapter six, that have emerged as river swimming has boomed on the rivers Beane and Lea, and to ask how swimmers are, through their relations with the River Beane, enacting a deep sense of connection or what I want to consider as intimacy, which will lead me to the final discussion of the thesis.

Julie’s ladder

Absence makes the heart grow fonder

In chapter six I discussed the removal of Julie’s ladder in relation to themes of authority, responsibility and health and safety. Here I want to return to Julie’s ladder, using more in-depth immersive ethnography to think about this set of steps, their removal and replacement, in dialogue with ideas of connection, intimacy, and wellbeing.

On the first day of September 2020, I walked to the confluence point of the Beane and Lea to sit and observe the river for an hour before my swim. I sat on the bench where I met the two men

from Bedfordshire who found swimming here “electric.” Over the months between these two occasions, swimmers had put rubber mats down in front of the bench to keep the ground from muddying. I sat on the bench next to a couple who were also taking in the scenery. A few minutes later a woman rounded the bend of the river, swimming strongly with her head submerged. I had noticed as I arrived at this spot that the ladder which we had become accustomed to using when swimming here from the beach was missing. I suddenly wondered how this woman would get out of the water. Her strong front crawl, hat and googles had been deceptive. Only now as she blinked up at the steep bank with a worried brow did I realise her likely age. The woman on the bench next to me jumped up and offered a strong arm to the swimmer, who gladly accepted it. Once hauled from the water, we started to talk about the ladder and its mysterious disappearance.

Photograph 32 - Julie's ladder at the confluence point of the River Beane and Lea. Photograph reproduced with Julie's permission.

This woman, Julie, told me that the ladder had in fact been built for her. Having witnessed her husband pull her from the water like this back in May, two onlooking cyclists told her she needed a ladder. The following day when she arrived, they cycled up and told her that they had made her one. These good Samaritans canoed the ladder across from the towpath on the far side of the river’s channel and secured it to the end of this pier-like section of land with bolts. Writing in the Kenwood Ladies’ Pond Association newsletter, an outdoor swimming group in North London of which she was an avid member, Julie described this as “a beautiful ladder, perfectly sited, obviously made to measure and no sharp edges, only bolts attaching the rungs. I thought it was a beautiful, completely altruistic act of kindness.” Julie and the rest of the river swimmers on the Beane, including myself, had benefitted from the ladder all summer.

I walked with Julie back around the common to where she had left her belongings. I asked her how she had ended up at the Beane if she normally swam at Kenwood ladies' pond. She told me that covid regulations had meant the ponds were only accessible by booked timeslot, something that for her had ruined the spontaneity and naturalness of this hobby. This had led her to look further afield. She had found the River Beane and had been enthralled by a number of intimate moments during her swims on this new found river. These moments kept her coming back. In one Julie said to me, "I was gazing at the river and I saw the kingfisher flying all the way up. It was magical." Julie also emphasised to me that this activity was never just about swimming. She cherished the ladies' pond in Kenwood as a safe space to "open up, relax, and just be", mirroring Watson's ethnographic findings of swimmers at the neighbouring Hampstead ponds (Watson 2019). Engrossed in conversation and delighted to have met the woman for whom the ladder had been built and originally placed, I realised the time and told Julie I needed to get going or would miss my own swim.

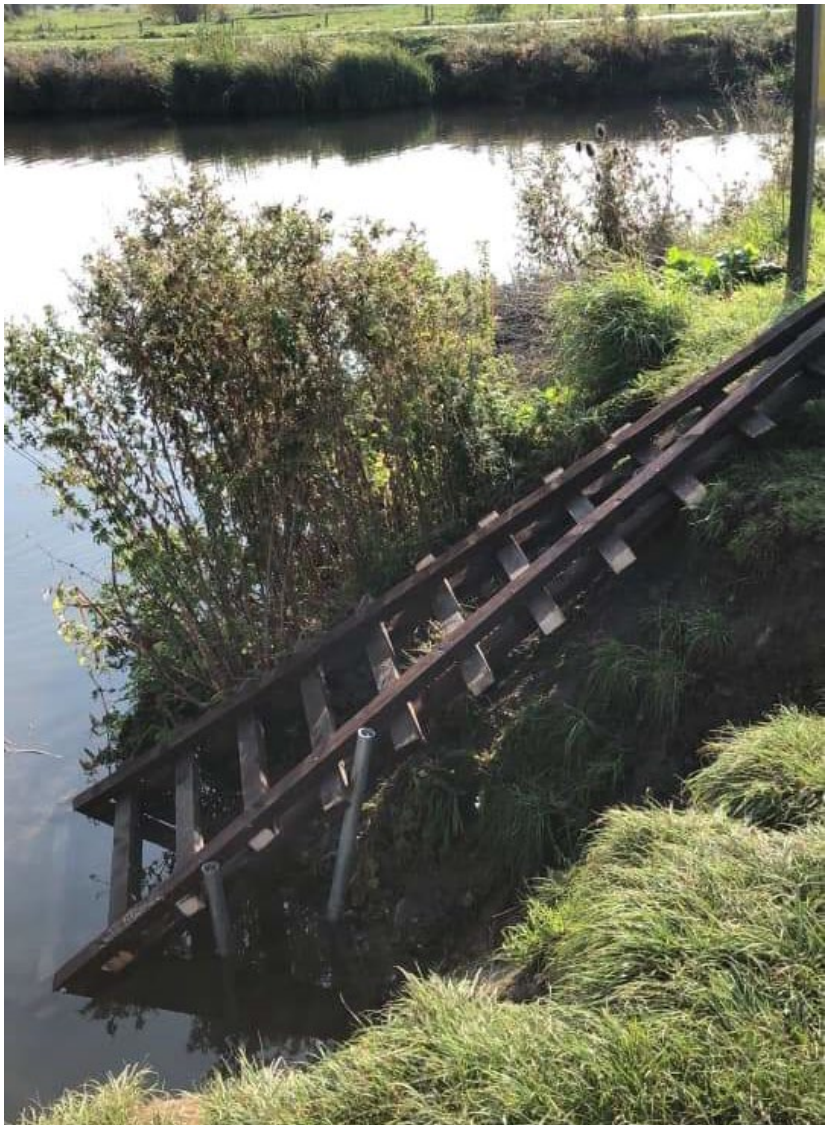
Photograph 33 - Muddy bank swimmers exited from following the removal of Julie's ladder.

I left Julie and hurried across the Common to meet Mazzo, Rich, Lizzer and Dave. I lamented with them the loss of the ladder. The mood of the swim that followed was sombre and quiet. Where conversation emerged, its sole focus was the missing ladder and these snippets of anger hung in the warm air. They stifled the sense of relaxation our swimming normally aroused and preoccupied us as we swam around from the beach. We finished up our swim at the muddy ladder-less bank, mirroring the helpless blinks I had seen from Julie only an hour earlier. News of the missing ladder spread through the river swimming community over the next few weeks and was met with feelings of sadness, bewilderment, and anger. While the ladder was built and placed for Julie, all the local swimmers I spoke to about its disappearance appeared to feel a deep sense of connection to it and mourned its loss. Its absence only made swimmers' hearts grow fonder.

A new ladder

On one of the last days of September 2020, our swimming quartet joined with a number of other swimmers to take in what we nicknamed the last swim of summer. A change in the weather had been forecast for the following week and it appeared we were not the only swimmers keen to enjoy the swim from the beach to where the ladder used to be while it was still hot. At the beach besides our usual four, Lizzer's sister Julia, Barbara and her dog Phoebe, my stepdad Dave and a woman we had swum with a few times Emma, all readied ourselves to set off. The mood was jovial and the sun was warm on our backs as we stripped down and began, a few of us at a time, lowering in from the bank and gliding out into the refreshing water. Phoebe barked loud encouragement from the bank, running alongside us as we swam. The chatter of swimmers reverberated off the banks and despite the cold water that encased our bodies, our facial expressions emanated a sense of warmth which met and mingled with the balmy air. We reached the broad water, about half way around the swim and all enjoyed lolling in this wide section of water, taking in the low hanging trees, and the expansive lily pads that we wove between, deep green dinner plates that swayed with the current. As we neared the end of the broad water, I squinted against the sunlight as I could hear my name being called by a figure on the bank. The figure was waving with both arms and as I swam closer to its edge, I realised it was Julie. Julie shouted to me "Maddy, our ladder is back!" At this exclamation all the swimmers in the river gave a collective cheer, and Julie, despite having just dried herself from swimming around, could not resist climbing back down the bank and escorting us to see the new ladder. Walking back across the common, there was a sense amongst the swimmers that order had been restored. No one was in a rush to leave the beach that evening. It seemed like fate that we had brought cake and tins of beer. We toasted the new ladder, and sentiments of "bring on the winter" abounded. The swimmers, lifted by the presence of this new ladder, appeared to be ready to take on anything.

The new ladder that appeared in late September was different from Julie's ladder. Its rungs were rectangular instead of smooth and rounded. It was dark wood instead of light. While it had been more thoroughly secured at the base to make any attempt at its removal more challenging, its top edge swayed a little as you climbed. Swimmers from the HOWLS Facebook group had got together and organised both the building of the replacement ladder and a small team outing to install it.



Photograph 34 - New ladder installed by local swimmers in September of 2020.

If the first ladder was an altruistic gift to one swimmer, which then served to benefit the whole local swimming community, the second ladder was something else. Yes, it helped swimmers enter and exit the water safely, but the second ladder was much more than this. Julie's ladder was an infrastructure that made river swimming on the Beane visible, even when swimmers were not present. It made swimming appear as a consistent, every day, and normalised part of the landscape in a way it had not been for half a century. Its presence intimated the traversal of land and water as something that did not need to be hidden away but as something to be made easier. The ladder was in this sense an infrastructure of communal wellbeing.

The removal of Julie's ladder did something, something that its mysterious remover probably did not anticipate. Its removal did not deter swimmers, it enraged them. It did not for a second cause swimmers to rethink whether they should be swimming in the river but made them more resolute

than ever that they would continue to swim here, and that they would not do so in the shadows. While Julie's ladder was a beacon of altruistic kindness the new ladder was a symbol of defiance and triumph. By the placing of this ladder, river swimmers were making a statement to whoever was watching them, to whoever supported their traversals, and to whoever did not. This new ladder was not just about ensuring a safe entry and exit from the River Beane but was about the intimacy of river swimmers, their strong deep sense of connection to each other as a community, and to the waters of the River Beane as the water(less)scape where they immerse themselves and embody wellbeing. The new ladder, with its eleven damp rungs, spoke a thousand words. It spoke of a spirit of river swimming, alive again, a community of connection human, non-human and environmental. The new ladder, which after a number of months became just 'the ladder', still stands proudly at the confluence point of the rivers Beane and Lea.

Photograph 35 - The tip of the new ladder seen from the viewpoint of the bench looking over the confluence point of the River Beane and Lea.

Intimacy, connection, and wellbeing

This chapter communicated the myriad ways in which health, or in a more holistic sense, wellbeing, is enacted and experienced by river swimmers as they relate to, in, and through, the River Beane. When thinking about this, it has been pertinent not to overlook that while river swimming in England was growing again in popularity from 2016 onwards, its extreme

resurgence coincided with the coronavirus pandemic. Emerging research on the pandemic and the effects of lockdowns on people across the country has been unanimous in reports of peoples feeling isolated, lonely, confined both spatially and socially (Guzman et al. 2021). River swimmers I met on the River Beane were certainly striving for an escape from this loneliness, and relished the sense of connection, spatial and social freedom that river swimming gave them.

While river swimming may have acted as a substitute for swimming pools in the first months of the pandemic, that it became a staple for some swimmers and continues to be part of their daily lives post-lockdown demonstrates that something further is at work here. The resurgence of this swimming can be better understood by taking stock of this temporal juncture of extreme pandemic uncertainty while synonymously tuning into the visceral changing rhythms of open waters and taking seriously the ways in which people feel themselves to be changed by them (Throsby 2013). I intimate that while desires for freedom, connection, and intimacy became more visible and were felt more starkly during the pandemic, such desires, in particular the desire for intimacy, reflect a more enduring condition, speaking to some of the tensions that permeate the present neoliberal age. The language and enactment of freedom by swimmers on the River Beane, was not, I argue a freedom that can be understood as simply neoliberal individuality, despite swimmers' acceptance of risk and responsibility (as we saw between Mazzo and the LPDM there are definitely tensions here too). This freedom was instead, a freedom to be intimate. Swimmers felt freedom in crafting intimate relationships with the water(less)scape of the River Beane, the non-humans therein, and other swimmers that they immersed alongside. Freedom was a practice of being intimate, of experiencing deep connections, moving as bodies of water (Neimanis 2017) in ways that felt good, and thus constituted a holistic state of wellbeing. This desire, heightened considerably through the pandemic, continues to burn among river swimmers on the River Beane.

Chapter 8: Discussing relations that matter

The River that has already Beane

In the introduction to this thesis I asked how are people relating to one local vessel of water or water(less)scape, the River Beane. Through the ethnography that followed, I explored diverse modes and moments of relationality, noting how they spoke to and reflected a sense of uncertainty. As interlocutors related in and through the River Beane, they grappled with questions of life and death, presence and absence, and reflected on, or in some cases worked to expand, what could be imagined, enacted, or experienced as health. Despite their seeming differences, interlocutors across the ethnography were using their relations with the River Beane to foster a local sense of water-based connection, or to lobby for such a connection where its possibility was foreclosed by river authorities and landowners.

I turn now to the discussion of this thesis, where I want to introduce a notion, public intimacy. I introduce and explore this notion as one that encompasses people's modes of relating to other people, non-humans, and to the River Beane. I also use it to make sense of the affective experiences of wellbeing and connection that come to be produced through such relations. I situate public intimacy alongside scholarship on affect, publics, and more-than-human intimacy and note how it figures in people's experiences of uncertainty and temporality. I explore why public intimacy mattered to the interlocutors in my research and also explore what attending to public intimacy can illuminate for those of us interested in more-than-human relations and health. Before turning to public intimacy, I will first retrace the key observations from each data chapter. This will ensure they are fresh in the reader's mind before I draw them into conversation with my notion of public intimacy.

In the first of the data chapters, I observed river-concerned parties like the RBRA, who decried the river's death as an increasingly waterlessscape. I noted death's enactment as a number, a narrative, and a metaphor, as that which worked not to signal a finite ending but to mobilise action in the present, to restore from the precipice this river in 'crisis'. While concerned parties connected the River Beane's death to a wider chalk stream crisis in order to lobby for action at the level of water regulation and governance, their routine modes of relating to the River Beane through borehole dipping and river fly monitoring, were small-scale, localised ways of demonstrating and enacting environmental connections, and of arguing for their importance.

In the second data chapter I brought into focus emerging tensions over connection, health, and the more-than-human, in peoples relations to the River Beane. I used three examples: firstly, the

invasive American mink ghost-water vole saga, through which dominant biodiversity narratives and a particular politics of belonging conditioned framings of what could constitute a healthy chalk stream, driving efforts to resurrect ghostly species and to cull existing ones; secondly, the case of Save Beane Marshes, where local people were encouraged to forge affective place-based relations and to invest financially to save Beane Marshes but were to have their access controlled and monitored by conservationists who would manage the space to ensure the wellbeing of 'nature'; and finally the example of Weil's disease, used by water authorities and permeating local folklore to maintain the boundary of land-human-health and river water-rat-disease, a boundary only to be traversed where legal responsibility was acknowledged in writing, denoting 'authorised' swimmers - rendering the boundary explicit even in its traversal.

In the final data chapter I discussed the traversal of the land-water boundary, immersing myself alongside an increasing number of rivers swimmers in the River Beane. I reflected on this emergent practice, observing and listening as swimmers brought their immersions into conversation with formulations of health and wellbeing. Their insights made clear the inseparability of river swimming's rise and the sense of pandemic uncertainty being lived and swum through. I noted river swimming as a complex practice not reducible to neoliberal 'responsibilised' individuals looking after their health. This practice expanded or exploded what could be imagined through the language of freedom, extending it beyond neoliberal ideas of individual expression and choice, to include the possibility of forming deep, intimate, communal, spiritual connections with the River Beane, other swimmers, and in some cases, with non-humans. I now bring these chapters into conversation with one another, exploring them through what I propose as public intimacy.

Relating to the River Beane as public intimacy

Members of the RBRA decried the River Beane as a dead river, enacting it as such through their practices of counting, measuring and observing its increasingly waterless stretches. Residents grew attached to Beane Marshes, investing in it emotionally and financially to save it from an imagined sorry future. Swimmers immersed themselves in the River Beane, finding therein a sense of wellbeing, connection, and spirituality. All of these disparate practices of relating, I want to argue here, can be made sense of through a notion of public intimacy.

Public intimacy, as I present it here, encapsulates the affective connections interlocutors were forming with and through the River Beane. It is a way of recognising the ontological nature of

these affective connections, since it was through these intimate acts or doings that publics like the RBRA, Save Beane Marshes, and the river swimmers emerged. Public intimacy is not limited to the formation of these publics however, it is both ontological and symbiotic. As these publics formed through their river relations and continued to engage the River Beane, their intimate moments and practices of tuning in furthered and deepened their sense of intimacy and local more-than-human connection. The very nature of public intimacy then is active and ongoing. It is never fully achieved but is strived for and in process. In this way, public intimacy alerts us to the contingency of the publics it brings into being. This is because, in the simplest of terms, without these ongoing modes of relating to the River Beane, the RBRA, Save Beane Marshes, and the river swimmers as publics would dissolve. Thus public intimacy is a culmination of what affectual relational engagements on the River Beane produce, intended or otherwise.

This notion of public intimacy has much in common with Kathleen Stewart's theory of ordinary affect. For Stewart,

'affect is a surging, a rubbing, a connection of some kind that has an impact. It is transpersonal… about bodies literally affecting one another and generating intensities: human bodies, discursive bodies, bodies of thoughts, bodies of water' (Stewart 2008:128).

The connections of 'some kind' on the River Beane allow public intimacy to extend beyond affectual relations between human bodies, as Stewart's theory of affect limits itself to[22], and to include attunement and attachments that occur through water, or through concern over its absence, which are in many cases more-than-human. Thus public intimacy speaks to scholarship that considers more-than-human relational affect and agencies, drawing our attention to interspecies 'knots of relatedness' (Govindrajan 2019:17) and giving an insight into practices through which people come to 'recognize that one's past, present, and future are gathered in theirs' (ibid:177). The importance I place on relatedness should help us to understand why public intimacy cannot be understood in separation as 'public' or 'intimacy', since it is the multiplicity, contingency, and symbiotic way in which intimacy and public interpellate one another that keep public intimacy and its rhizomatic reality in focus.

As I have already suggested, public intimacy allows us to hold in centre view contingent, lively enactments on the River Beane. These sprouted out in surprising rhizomatic ways, emerging,

[22] Stewart's final recourse to bodies of water in this passage, while relevant to the notion of public intimacy I formulate here comes as a surprise in her work, given the absence of more-than-human elements in the rest of her monograph.

moving and dispersing, as river swimmers did, in discordant harmony with an increasingly uncertain world. Further to this, public intimacy reminds us that such practices of relating are not just social, and that intimacy is not just a relational feat of the private sphere but that such modes of relating are inherently public and political (Berlant 2008a). We saw this through tensions in chapters five and six, where publics through different modes of relating produced disagreeing parameters of life and death on the River Beane and vied over the politics of what or who belongs where. Finally, by foregrounding intimacy and the affective nature of the relations around which such publics emerge, it allows us to see that these acts of connecting produce a different kind of public than the one we most readily imagine: the big P public of big P politics, whose emergence and manifestations have been described (Habermas 1989), debated, (Calhoun 1992), and critiqued (Warner 2002).

These social science depictions of the public have not helped me to fully account for relational phenomena on the River Beane. This is because such relations are constituted through modes of public intimacy that expand beyond the locational, intellectual, and single-species nature of existing formulations of publics (Habermas 1989). Public intimacy is topographically fluid and emergent. It is based on forms of knowledge that draw on rational science, dominant ways of knowing the environment, but also on visceral affective bodily knowledge. It operates on a scale and register inclusive of more-than-human relations, drawing in the vibrant materiality of non-human entities (Bennett 2010). For these reasons public intimacy also fails to fit within subsequent rubrics, devised to better account for the reality of publics. While public intimacy can be formulated around alternative knowledge, like 'subaltern' publics (Fraser 1990), and can work to counter dominant ways of knowing like a 'counter-public' (Hirschkind 2006), it operates as a connective intimate force. As I noted throughout the data chapters, it is often permeated by the holding of different ways of knowing, in tension, at the same time. Thus it is inherently more rhizomatic, affective, and multiple, than these formulations allow for.

Public intimacy has elements in common with global environmentalism and its green agenda. The RBRA's biodiversity conservation work could be framed as a practice of citizen science, which has been noted to fill gaps in government led biodiversity management (Lorimer 2010). It acts in part on the basis of top-down rational scientific knowledge of what health on a chalk stream can and should look like. However, public intimacy is often far less pre-determined than this, and it is always formed around relations that matter because of their local, connective, significance. It is often about being rendered political through intimate practices and modes of relating to the River Beane which have nothing (initially) to do with science or a green agenda. Saving Beane Marshes

was just as much about a localised ideal and sentimental attachment to the aesthetics of the marsh as it was about its future health from a conservation perspective. This was made clear by residents who invested in the land, wanting to access it for leisure purposes. River swimmers did not begin swimming because they cared about the River Beane from an environmental standpoint. However, many came through this practice to feel more deeply connected to the river, and began to care more deeply about the non-human life therein and the quality of the river's water. Thus I characterise public intimacy as a gentler politics of the small: a politics through which local interrelations come to be valued in ways that can be green, and can be blue, but are always first and foremost experienced as relations that matter from the perspective of localised connection – this being their most determining factor.

To the reader who is still unsure what I mean by public intimacy, I hope it becomes clearer as I explore some examples of its emergence through the ethnography and situate it alongside the sense of uncertainty that interlocutors grappled with through their relations to the River Beane. But also, without trying to be irritating or counter-intuitive, I hope it doesn't become too clear. If it does, I fear I will have lost a crucial part of what public intimacy is. For public intimacy functions in my usage as a notion, as something strived for, but also as a kind of momentum. It holds together and infuses the enactments, practices, temporalities and tensions that make up relations with the River Beane and what they in turn bring into being. In doing so, public intimacy is never quite graspable and nor should it ever fully be. To grasp it tightly would be to render it inert, and public intimacy is only meaningful for being alive with possibility, for being hopeful. I will return to the importance of hope for public intimacy later in the discussion. For now I turn to public intimacy as it emerged ethnographically.

Chalk – the watery mineral of public intimacy

The riverfly monitors I observed on Waterford Marsh and discussed in detail in chapter five were, in quite an obvious way, having close-up intimate encounters with invertebrates on the River Beane. Scooping them up in nets, sorting them into small petri-style dishes, and eyeing them with great care and interest as they wiggled and writhed in the watery oval of white plastic spoons. I watched Bob and Anthea become quietly enthralled by these creatures, not normally considered to be charismatic but who through these moments of close up interaction came to be known, and whose health, as it came to stand for the health of the River Beane, rendered these small creatures important and intimately related to people in the local area. While riverfly monitoring is about intimacy in a straightforward observable sense of physical interaction between species in close proximity, and while its spatial inflection is also quite obvious, taking place in and along the river

that forms the object of concern for this public, there is another way in which to think about its intimacy. On one of our riverfly monitoring outings, Bob paused in the midst of a merry bout of conversation and while smiling wistfully at the River Beane, gestured an arm towards it and offered up a self-identification with this scape, telling me, "I'm a chalk river man." In the summer of 2019 when Bob made this statement I nodded along and didn't think much of it. He had after all been a keen biologist and was now an active member of the RBRA so I assumed being a chalk river man simply meant caring about chalk streams and their flagship species.

I came back to Bob's self-identification as a chalk river man more than two years later, and found myself thinking about it in a slightly different way. Yes, Bob did care about chalk stream flagship species, but he also, through these intimate practices of counting, of being with small creatures of the River Beane and of feeling so strongly about the implications of their health for the wider health of this local river, non-human and human ecologies, enacted chalk not just as a practice of care, but of intrinsic connection. I thought about his being a chalk river man in light of the musings of the water company's agricultural advisor who had talked to me about chalk as a connecting substance. When Toby wondered if chalk was the missing piece, if it could function as a mineral around which to come together for more sustainable more-than-human futures, he hinted at what it means to be aware of ones chalk-based nature. Bob was, perhaps, an example of this kind of self-positioning. His modes of connecting to the River Beane, of enacting what it means for the river to be living through riverfly monitoring and of seeing through this, a wider connective possibility of all living things in the area was, I would argue, enacting public intimacy linked in and through chalk. While chalk is commonly talked about as a mineral – this being its final form if you will - it is made up of the shells of millions of minute marine organisms. Thus even chalk itself is a watery body. Chalk then, the watery-mineral base of the River Beane, can function as far more than a political vehicle and ecological description. It conditions and permeates the waters of the River Beane, runs alongside and through the bodies of the non-humans therein and the humans whose domestic water supply is drawn from the aquifer. Chalk is an intrinsic substance of the River Beane through which public intimacy is, by some, realised and embodied.

Desires for, and foreclosures of, public intimacy

While public intimacy might embody the affective connections people make through their relations to the River Beane, it is pertinent not to lose sight of its tensions. These tensions emerge both within as well as between publics, and serve as examples of public intimacy at its most contested,

and public intimacy foreclosed. Save Beane Marshes involved encouraging a greater number of people to relate to a local marsh scape housing the River Beane, which the crowd-funding organisers had framed as needing saving. A public of concerned local residents were brought into being as those sentimentally attached, and financially invested in the land. While local residents had been encouraged to relate to the marshes, to care about it more deeply than they might have done before – to be its saviours - when the land was finally purchased and gifted to a local wildlife charity, these saviours were not to have the opportunity to translate this indirect sense of public intimacy into a more visceral, physical connection, but were to have their access to the land denied as it had been deemed by the crowd funder's and charity's conservationists as for 'nature'. At this point the public fragmented and dissolved, as while some within Save Beane Marshes supported this conservationist approach, others were offended and disheartened by it. They cared about the land and the river running through it. How could it need saving from them? This set of happenings not only functions as another example of public intimacy, but also serves to demonstrate its precarity. It reminds us then that while public intimacy might be about the local, the intimate, and what relating to environmental and waterscapes spurs into being, it is also just as much about the power politics of land ownership and access rights, the ways in which opportunities for public intimacy can be foreclosed and dissipate just as quickly as they emerge.

In chapter seven I highlighted some of the power struggles and contingencies between swimmers and river authorities. These interactions demonstrate how big P politics intersects with the small p politics of public intimacy. As the CRT differentiated authorised from unauthorised swimmers, they worked to police opportunities for public intimacy. River authorities inscribed these potentially intimate immersive moments with their big P political concern of public health and safety. They highlighted the dangers of drowning, temperature-induced shock, and debris and even enlisted Weil's disease as part of their deterrence effort. Those swimmers they determined as authorised swimmers were permitted intimate engagement with the River Beane and Lea, but this engagement had to be planned, and the swimmers had to legally acknowledge their personal responsibility for Weil's disease. Thus a local connective experience of swimming was codified into a legal contract with clear species, temporal, and spatial boundaries. It could not be said to encompass the feeling of freedom that for the unauthorised swimmers of chapter eight was central to experiences of public intimacy. So in a not entirely dissimilar way to the case of Save Beane Marshes, opportunities for intimacy were made available in particular forms, but were short lived, restrained, and were prohibited from becoming an everyday norm. The river was not to be a de facto space for public intimacy in the eyes of those exercising legal authority over it.

Immersion as an experience of public intimacy

Unauthorised river swimmers offer one of the clearest cases of public intimacy emerging in and through relations with the River Beane. River swimming serves as an interesting example of public intimacy and reveals yet another aspect to this notion – its sometimes accidental emergence. River swimmers, at least the ones I met, did not go to the River Beane for their first swim seeking out an intimate connective experience with this local body of water and the non-humans that live in and along it. They went to the river because during a time of pandemic lock-down it was the only place they could swim. Over time however, through these ongoing immersive moments, they came to tune into the River Beane not as a swimming pool replacement, but as a space of deeper, connective possibilities. These immersions left traces, or a 'lacquer of wellness' (Foley 2017). River swimmers quite accidentally found themselves meeting other swimmers, people they had never met before, with whom they came to forge affective relations through their shared practice. They had moments while swimming like Mazzo did, where they came within touching distance of ducklings, and shared with them intimate moments such as their first adventure away from the nest. River swimmers did not know they would feel a sense of freedom and spirituality by immersing in the River Beane until they immersed and those senses revealed themselves. They were enacted through the action of river swimming. Thus public intimacy through swimming was revelatory, and through this revelatory potential, hopeful. In a time of pandemic uncertainty where the motion of life became strange, inert despite the passing of time, river swimming was a mode of relating in and through the River Beane that allowed, as Rich explained to me, swimmers to be moved, physically, affectively, and spiritually. River swimmers felt, without having sought it out initially, a far deeper connection to their local environment and the non-humans they shared it with. While as people, the time of the pandemic was clearly experienced as one filled with uncertainty and despair, I came to see that where people identified and practiced public intimacy as swimmers during the time of the pandemic, they were able to experience something else: connectedness, ease, and hope.

It can be tempting to romanticise river swimming and its participants. One way in which to avoid doing so is to home in on the contingent nature of river swimming as public intimacy. We can tease out its tensions and remind ourselves that river swimming as I observed and took part in on the River Beane is not a return to an imagined past of idyllic nature-based immersion. It is a public intimacy now, which draws these imagined ideals of freedom into contentious conversation with modern infrastructures of river governance, neoliberalism, and public health and safety. River

swimmers, as they came to relate more deeply to the River Beane through their swims, demonstrated a complex set of desires and standpoints. We saw through Mazzo's email exchange with the land management and development manager for Hartham Common that swimmers wanted freedom from forms of external responsibility, they wanted to be responsible for themselves. However, they also resorted to the legal language of health and safety where they did want external authorities to take responsibility – as when they removed the ladder and 'endangered' swimmers. Thus again we see how public intimacy as a form of local intimate connection and of small p politics, can serve to both push back against and simultaneously uphold aspects of dominant big P politics. In the case of river swimmers, health and safety and neoliberal ideas about responsibility for individual health are held in tension, at the same time, as ideas of freedom that are not neoliberal, but are about the freedom to engage health as something not individual but inherently communal, connective, and immersed in local environmental relations.

Uncertainty and public intimacy

While the interlocutors I met on the River Beane demonstrated differing interests, practices and topographical areas of concern, across them there cuts an undeniable similarity, that their being spurred into being by, and continued affective tuning in as public intimacy, always has a relationship with uncertainty. Uncertainty is part of the in-motion, contingent nature of public intimacy and it permeates relations with the River Beane at this particular juncture.

A sense of uncertainty triggered all kinds of active relating to the River Beane. The horizoning work of imagining and working to mitigate what is depicted as yet to come (Petryna 2018), was central to the fostering of public intimacy for Save Beane Marshes. It was the uncertainty of who might own the land and what they might do with it that caused people to rally around the land, to invest sentimentally and financially and to save it through this mode of public intimacy – even if the opportunity for intimacy was short lived and foreclosed. In a not dissimilar way, a declared state of crisis that renders the immanent, imminent (Caduff 2015:68) pushed the RBRA in the case of their local 'chalk stream in crisis' to work *now* to restore the River Beane to an imagined idyllic point in history, achieving a future where absent flagship species could be lively again instead of ghostly. This crisis was however permeated with uncertainty. The crisis both spurred modes of relating that we can understand as public intimacy, and through practices of public intimacy produced yet more uncertainty. The RBRA's chairman was disappointed and disenfranchised; they had succeeded in lobbying for a reduction in water abstraction from the River Beane's aquifer, but

as he admitted to me, “this river isn’t flowing, and no one can understand it.” Was it still dry because of human re-routing and geomorphology like the water company argued? Was it still dry because of climate change and what he told me was the “wrong kind of rain”? Thus much like public intimacy itself, this sense of uncertainty was symbiotic. It was enmeshed in these modes of relating to the River Beane. It helped to form them and in turn was produced through them.

A further sense of uncertainty emerged dramatically in the Spring of 2020. A sense of unknown risk and human mortality embodied by a pandemic virus (Lynteris 2020) led some to question who or what defines what is healthy for human-environmental relations. At this juncture more and more swimmers immersed themselves in the River Beane against the advice of local land and river authorities. As Julie suggested to the retired environmental health officer who called our swimming brave, in the face of a pandemic there could surely be far more risky activities than taking a dip in a beautiful local river. For river swimmers the temporal and spatial uncertainties of the pandemic powerfully conditioned their desires for public intimacy. It was an activity through which they could, at a safe distance, have an experience of connection to other people. It provided a sense of continuity and for some became the orienting activity of days which were otherwise empty of routine.

As a sense of uncertainty spurred forms of public intimacy, and as forms of public intimacy in some cases responded to but also produced and multiplied uncertainty, the fragmented and uncertain landscape that is water ownership, management and responsibility not just on the River Beane, but in England more generally was brought by publics on the River Beane into view. This view was by no means in clear focus, nor was it perceived in the same way by all whose affective practices of public intimacy brought it into the field of vision. And yet, the “disconnected bureaucracies” of water management, ownership, and responsibility, that the RBRA’s chairman lamented, the abstract ‘authorities’ that river swimmers admonished for removing the ladder and for allowing local rivers to be polluted, these figures were being traced by a greater number of local fingers in relation to a growing number of water-related issues. They might not have been pinned down, but the point is, practices of public intimacy called into question the uncertainties on which they are built – and demanded, in sometimes very obvious and in others a vaguer sense, better clarity. Tuning into the River Beane, being affected by it, revealed uncertainties and led some people to ask questions. Why, I heard an RBRA member ask at an AGM meeting, does a water company human-demand order outweigh the calling of an environmental drought by the EA? Why, a river swimmer asked, are less than five percent of rivers in England accessible to swimmers? Who, another asked, is responsible for cleaning up rivers? The questions go on. This

thesis does not work to answer these questions, but instead here wants to dwell on the point of how and where they emerge. They emerge through practices of public intimacy and in response to uncertainty; as people on the River Beane come to tune in, some also come to recognise a strangeness, a fundamental disconnect in how river water is managed, owned, and made a responsibility. I return to this point in the second half of this discussion chapter as it is certainly a part of why public intimacy mattered to the interlocutors in my research.

A relational approach to the temporal

The temporal nature of public intimacy on the River Beane is as much about rupture and disjointed temporal clashes which move backwards, forwards, side to side, as it is about any straightforward processual movement. This is why I position temporality within the rubric of public intimacy's relation with uncertainty. The temporal emerged in subtle but interesting ways not only through the actions of those relating to the River Beane, but also in the narratives and infrastructures that worked to condition or facilitate such relations. In its 'Riverside Tales' the WWF gives 'lessons for water management reform from three English Rivers.' (WWF 2010), referring to the River Beane as a Cinderella river which could be a 'crystal clear jewel' if only its fate didn't continue to go unrecognised (p.15). Like Cinderella, the river is put to work for the benefit of others, itself quietly withering away. And yet, just as Cinderella is found by the Prince, finally truly seen, appreciated and with the helping hand of the fairy godmother, restored to shimmering beauty, so too the river with the support of community groups can be recognised, protected from further denigration, and uplifted to a state of ecological glory. There is hope for the River Beane; it can, such creative fairy-tale narratives imply, still have a happy ending.

The temporalities that inflect, encourage and condition experiences and practices of public intimacy materialise not only in creative narrative, but also in interesting ways through infrastructures such as Julie's ladder. The ladder can be understood as an infrastructure not only of connection but of continuity. Even at times of day when no one is swimming in the river, the ladder is a powerful reminder that someone has done so before, and that someone will do so again. The ladder's presence thus stretches backwards and forwards in time as well as being an infrastructure of connection and intimacy now. As we saw in the case of swimmers like James, this infrastructure allows swimmers to feel a connection not just to each other as they swim, and to the recent echoes of other swimmers, but to a far longer, older history. While few swimmers on the Beane today know much of its actual swimming history, the belief that it must have a long and vibrant swimming history has a palpable effect on them. It functions as both idea and ideal of a time in which people were, or are at least imagined to have been, in closer connection with nature.

Further to this, temporalities and their relationship to public intimacy as it emerges through infrastructural relations, also inflect how people come to understand themselves. As Strang states 'infrastructures might be described as an uber expression of societal ideas and values, which as well as manifesting these in reforming land and waterscapes, play a key role in constructions of citizenship and identity' (Strang 2020a). Here we might think about the ladder, which functioned as an infrastructure around which a community of river swimmers met and identified themselves. The ladder was a deep expression of swimmers' valuing of connection, and played a part in constructing them as a swimming public – it was part of their identity. At the same time, we should be reminded that such practices of public intimacy which bring into being publics like the river swimmers are never static. Public intimacy as that which is always in process, and being strived for, helps us to see that 'even a community may be a malleable emic construction and not a fixed referent, arising from particular social conditions and material realities' (Bowles 2022:200). We see how publics emerge from particular material realities in the case of the River Beane's aquifer, which both is, and avoids being infrastructuralised (Ballestero 2019c) as a 'resource' for human water consumption, with communities of domestic water users, non-humans, and concerned RBRA borehole measurers all emerging in relation to this underground, never fully knowable space. Public intimacy allows us to foreground the affective nature of these uncertainty-driven, temporally inflected practices which to take Bowles' provocation seriously and to remind the reader of what I argued was public intimacy's fundamental nature, cannot become fixed referents but always remain malleable and emic.

We come to see across the ethnography of this thesis then, how a pervasive sense of uncertainty, greater attention to unknowable futures, and imaginaries of better pasts, come to bear on present modes of relating to the River Beane. I have worked to make better sense of these affective engagements as they are embodied through a notion I proposed as public intimacy. Public intimacy is the symbiotic way in which publics emerge through and are continually refashioned through their modes of practising river relations. Public intimacy highlights the contingent, tension-laden ways in which some people try to enlist and achieve a semblance of connection, stability and hope in the face of these uncertain times. While in some cases this connection is joyously achieved, in others, connection only produces further uncertainties, further unaccounted-for disconnections to ponder and decry. A sense of uncertainty continues to rage, and so too, does public intimacy.

Why does this thesis and its idea of public intimacy matter?

'Through engaging with water we can uncover relational processes that allow us to think differently about our selves and our relationship to other forms of matter' (Strang 2019b:xxi).

In proposing public intimacy and tuning-in to the rhizomatic complexity of relations on the River Beane, I have brought together fields of research - water, uncertainty, affect, and attention to alternative ways of knowing - to demonstrate how people make worlds in relation to water and come to 'recognize something, in a shared space of impact' (Stewart 2008:39). I have demonstrated that these moments of recognition and what they produce, intended or otherwise, can be conditioned by happenings that are palpable and happenings that are intangible. The practical emplacement of counting invertebrates as a group can produce these impacts, as can the surreal enduring of a pandemic virus and the time spent swimming through it. In tuning in to these phenomena I am not suggesting that I have made an entirely novel contribution. Anthropologists have made important contributions to a broader field of water studies through their tuning-in to water relations. This is true whether it has been from a structuralist (Douglas 1966), sociocultural (Strang 2004), feminist (Neimanis 2017; Throsby 2013), materialist (de Micheaux et al. 2018), infrastructural (Anand 2011) or multispecies (Morita 2017) perspective (see chapter two). That I have sought to make sense of these relations through the notion of public intimacy allows me, I would argue, to contribute to and further this offering. This is because public intimacy uncovers particular dimensions of affective relations with water not accounted for across this existing scholarship.

In drawing attention to the importance of the temporal, public intimacy tells us that affective relations happen and matter in space and time. At this point in time these relations matter not only because they are local, watery, and waterless, but because they are all of these things in a time experienced by interlocutors as increasingly uncertain and disconnected. Inseparable from this point, in situating these affective relations as temporally inflected by experiences of uncertainty and disconnection, we come to see why intimacy matters so much to these affective encounters. Intimacy as physical proximity, the hunching together over a plastic tray of invertebrates, the act of patting down a fellow swimmer with a towel, becomes not just the experience of these relations but the basis of a collective response to a sense of uncertainty. Mobilised in different ways then, this intimacy is a resource from which people position themselves as publics relating to water. Intimacy can be understood as the lifeblood of these affective relations.

Why does public intimacy matter to people?

Bringing life back to water and our engagements with it

When Ivan Illich depicted engagements with water in the late 1980s the picture was bleak. He concluded his short book by stating, 'the city child has no opportunities to come in touch with living water. Water can no more be observed; it can only be imagined' (Illich 1986:76). Hertfordshire is not a city, and children make up only a tiny percentage of the interlocutors whose relations to the River Beane are recounted here. Still, I have found myself returning to Illich's words again and again as I consider why public intimacy matters to people relating to the River Beane. Across the ethnography interlocutors were engaging with the river in ways that called to the fore the importance of being able to observe, connect to, and immerse in waters which are living. While what it meant for waters to be living across different interlocutors reflected a substantive multiplicity (Deleuze and Guattari 1988), most interlocutors wanted to bring back, sense, or enact life on the River Beane and to animate local engagement with this water(less)scape. How were they working to make this vibrancy and life possible, to not just observe once more, but in some cases to be in and with this vessel of river water? Through practices of public intimacy.

I have already demonstrated the many ways in which people were engaging public intimacy and in doing so were able to highlight in a present experienced as deeply uncertain and disconnected, possibilities for and the importance of, being connected. At its most simple then, public intimacy mattered to interlocutors as a way in which to forge public, affective, intimate relations with the River Beane as a local environment they felt attuned and attached to. Further to this, it was a way not only of doing such relations, but of practising and arguing for them as connections that are possible, and as connections that matter. These connections mattered to the RBRA, as a way of contributing to a more equal, thriving environment for humans and non-humans alike. They mattered for swimmers as a way in which to realise the wellbeing potential of immersing in a local river – of finding health in and through connection, and as an accidental byproduct, of coming to care more deeply about the non-humans they shared this river space with. Public intimacy was thus for some people a tonic to, a way of asking for, and a mode of facilitating, connections with water that reinscribe water as far more than a 'modern abstraction' (Linton 2010) of disconnected H_2O. So while Illich has implied that opportunities to engage with water are over, that they can only be imagined, some people relating to the River Beane are trying harder than ever to rally against this sense that disconnection is complete. Public intimacy is a way of responding to and

challenging disconnection, of working to bring life back to the waters of the River Beane and to bring life back to local peoples engagements with it.

Public intimacy is political

'There's a politics to being/feeling connected (or not), to impacts that are shared (or not), to energies spent worrying or scheming (or not), to affective contagion, and to all the forms of attunement and attachment.' (Stewart 2008:16)

As Stewart has noted, there is a politics to being connected, and thus it is unsurprising that public intimacy as that which embodies and is produced through intimate attachments to the River Beane is, and matters to interlocutors as, a political practice. There are a multitude of ways in which this mattering materialises. One of the most prominent ways is where we see public intimacy as a practice of *doing something* in the face of what many interlocutors told me was political inertia at the national government level. The RBRA's intimate practices of measuring, counting and connecting to the River Beane were, when they first appeared, responses to what the chairman described as a failure of the EA. While disappointment in the EA was laced by some interlocutors with sympathy at underfunding, for others like Feargal Sharkey, it was met only with contempt and viewed as part of governmental complicity at the highest level. In the face of what Feargal presented to the Chalk Aquifer Alliance as the 'sins' of the EA and water companies, permitted through government legislation that gives water companies the right to regulate and report on their own activities, interlocutors sought to make a difference through their own local actions – through a micropolitics of public intimacy in relation to the River Beane. As interlocutors, particularly those forming environmental conservation groups, wait, give up on, or lobby like Feargal quite ferociously, for the UK government to do something substantial about environmental degradation, water pollution, over-abstraction, and climate change, there is a sense of achievement and political activism in these intimate local connections and practices of public intimacy.

An example of this in action is the RBRA's commitment to returning water voles to the River Beane. In chapter seven I described the lengthy process of mink mapping and culling, and the minimising of disruptions to river flow from the Baywood Estate onwards which would need to be achieved before water voles could be reintroduced. The coronavirus pandemic delayed and disrupted these efforts, but the RBRA persevered, beginning their practices of mapping again, patiently putting the foundations in place. In the final month of thesis writing, I received word and

saw a newspaper cutting that celebrated the reintroduction of water voles to the River Beane. As these ghostly voles re-establish themselves along the banks of the River Beane, they are living breathing proof of why public intimacy matters to publics on the River Beane. If it were not for the RBRA's tireless practices, their ongoing tuning into the River Beane and its non-human life or its absence, there would not as I write this sentence, be somewhere, tucked into a riverbank sleeping through the midday heat, a water vole. Public intimacy matters to interlocutors because they see through it, hope in their local 'blasted' landscape (Kirksey et al. 2013), the dead chalk stream, once more alive and scurrying.

12 MERCURY

News

Water voles returned to river in battle to save them for future

NEW HOPE FOR UK'S FASTEST-DECLINING MAMMAL

By CHARLOTTE PAGE

WATER voles have been reintroduced to the River Beane after an absence of more than 20 years.

Herts and Middlesex Wildlife Trust (HMWT), in collaboration with the Woodhall Estate, and with support from the River Beane Restoration Association, reintroduced water voles to a stretch of the River Beane near Watton-at-Stone on Friday, July 22.

Water voles used to be commonly found on rivers throughout Hertfordshire and the rest of the country, but over the last 50 years have become the UK's fastest-declining mammal and now face extinction.

This has been due to two main factors - loss of quality wetland habitats and predation by American mink, an invasive, non-native species. Both have contributed to a 90 per cent decrease in water vole populations.

The Woodhall Estate was chosen as a release site thanks to the landowner's commitment to conservation and relationship with HMWT, the management of the habitat on the private

Pens being prepared for the water voles

good health of the river in that location.

The 138 water voles were bred in Devon by the Derek Gow Consultancy before being brought to the Beane.

Prior to their arrival, the last recorded water vole population on the river was in 2000.

Josh Kalms, water vole conservation officer at HMWT, said: "We are delighted to have reintroduced water voles to the River Beane.

"Water voles are a vitally important species in wetland ecosystems

> Water voles are a vitally important species in wetland ecosystems.
>
> Josh Kalms

maintaining the health of these habitats.

"They are mini ecosystem engineers - their burrowing and feeding by grazing helps keep our river banks and wetlands in good condition.

"The water voles were released along the banks of the River Beane, within the grounds of the Woodhall Estate, which is a private family-run estate focused on conservation.

"Volunteers from the River Beane Restoration Association (RBRA) and HMWT transported half the voles, to pens set out along the river bank, giving them time to settle into their new environment.

"During this period, they were fed a supplementary diet of fruit and vegetables.

"After a few days, the acclimatised voles gained the freedom to go wild and make their own riverside burrows, then pens were then removed.

"Other adult voles were released directly into a nearby watercourse, where they are now establishing territories and sending down to breed."

Between 2017 and 2018 volunteers helped HMWT to survey the River Beane to ensure that the habitat was still suitable for water voles.

Successful campaigning by the RBRA to reduce the quantity of water taken from the river enabled the reintroduction to take place.

During the release, RBRA volunteers continued to play a vital role including carrying the pens and feed the water voles.

Dave Standing, secretary of the RBRA, said: "We are delighted to work with our friends at HMWT on

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Figure 5 - Newspaper article documenting the reintroduction of water voles on the River Beane.

The politics of public intimacy looks quite different from the vantage point of swimmers. Here, there is a body-politic of public intimacy. In swimming against the advice of local authorities, in being unauthorised, swimmers used their physical bodies as materials of defiance. This was both in the sense of refuting public health advice and authorities who framed swimming as dangerous or a risk to health, and also refuting a spatial politics of where bodies, human and otherwise, belong. There was also a sense of defiance through swimmers' bodies in how they moved through water. Swimming in the river for many people I met was about wellbeing in a holistic sense which gave them freedom to move in ways that felt good. Rather than feeling any need to swim prescribed strokes, to swim for a certain length of time or distance, many swimmers found themselves going with the flow of how they felt. This in itself was a liberating experience and one that demonstrates how the body-politic of public intimacy for river swimmers expands what can be imagined as the benefits of swimming to reach far beyond physical exercise. A final sense in which swimming as public intimacy matters as a political practice is through the ladder. Julie's ladder embodied the altruism of its builders, the joy and sense of connection of it users, but also undoubtedly, when it was removed and replaced, a political sense of defiance. Thus the politics of

public intimacy was not just about the materiality of swimmers' bodies, but also of the infrastructures they enlisted as part of their relations with the River Beane. The ladder mattered to swimmers not just to allow them safe entry and exit to the river, but as an infrastructure that challenges the big P politics of land and river ownership. It stands as a political beacon, an embodiment of the small p politics of intimacy and connection.

Public intimacy is hope in practice

Noting the politics of public intimacy is important, but I want to be careful not to fall into the kind of dualisms I have tried to avoid. While practices of public intimacy respond in certain ways to what interlocutors perceive as a macro, or 'big P' Politics of environmental inattention and inaction, and a foreclosure of land and waterways, it should not be seen as a collection of practices of out and out opposition, anger, and frustration. In fact, public intimacy is a hopeful political practice.

The returning of water voles to the River Beane gave the RBRA hope, it was a sign that the river could, piece by piece, be restored. In this case, hope was about restoration – it was based on an existing, dominant conservation approach, looking back to the past to argue for what a healthy chalk stream should look like and be home to in the future. However, there is another sense in which public intimacy matters to people as hope in practice – through its potential not necessarily for restoration, but for doing, and imagining the possibility of health and relations to the River Beane differently. These modes of public intimacy do not work to take the place of, or to stand in for macro-level governance of the environment, but to perhaps open its eyes to other ways of doing environmental relations. As Kirksey, Shapiro and Brodine tell us when they draw on Jacques Derrida to discuss possibilities of biocultural hope (Kirksey et al. 2013:229), uncertain futures hold within themselves an 'attraction' (Derrida 1999), they signal an opportunity to do things differently, to emancipate from what has been (Derrida 1994:74). This opportunity to do things differently is at the heart of what is hopeful about the unknown. Discussing the North American ocean oil spill of 2010, the authors draw on an example of an artist Jacqueline Bishop, who 'against the nightmarish landscape of the oil slick… grounded her desire for a liveable future in the figure of the hermit crab.' (2013:234). Her collecting and cleaning of these forgotten hermit crabs is comparable to the RBRA's riverfly monitoring. In both cases this intimate engagement with what are considered non-charismatic water-based species is a practice not only of understanding how one's own being is intimately related to theirs, but also of trying to make a difference, to render non-human life visible, to make it matter, in the face of increasingly uncertain landscapes. It is

also about using different entities to think with, for example chalk, and being hopeful that positioning humans as just another part of a local chalk-scape, might lead to more environmentally attuned water-practices. Practices of public intimacy are thus important to interlocutors on the River Beane as they offer up the possibility of doing things differently, in the sense that Derrida intimates (1999), and in doing things differently, may spur 'reframings' (Fraser 1990) of local environmental relations. Public intimacy is thus a method of hope (Miyazaki 2004).

Interestingly, while some practices of public intimacy are directed from the outset towards more hopeful more-than-human healthy futures, others begin as more human-centred practices that over time foster a greater sense of connection and care. I found this to be the case for river swimmers, who through their practice of swimming became more attuned to the river itself, more interested in its plight and more conscious of other layers of connection they have with the river, its non-humans and so on. Public intimacy is hopeful in this sense too then, for the way it comes to matter to people almost by accident, since it offers opportunities to build ever stronger relations to local environments, for people to be affected in ways they did not realise were possible. This is a good juncture to move on to my second question of why public intimacy should matter to academics and for public health.

Why does public intimacy matter beyond the River Beane?

Having considered why public intimacy matters to the people who informed this research, I now want to think beyond the River Beane. I want to consider the kinds of conversations public intimacy holds with government health authorities, human and environmental. I also want to think about how public intimacy might open up ways of thinking that are relevant to studies of the social beyond engagements with water.

Public intimacy in conversation with health authorities

Public intimacy offers a way of thinking about how publics emerge and how health is imbued in this. This differs from a more narrowly defined 'public health' that might be imagined and practised by authorities such as Public Health England (PHE)[23]. PHE, as it was still known at the time of this research, made efforts to protect the public, including when they swam in rivers, by

[23] The government department PHE was replaced by the UK Health Security Agency and the Office for Health Improvement and Disparities on the 1st of October 2021. I use PHE in this discussion as during the period of my fieldwork the agency was still operating under this auspice. That it has been replaced by a security agency in the era of a pandemic deserves unpicking but is beyond the scope of this thesis.

attending to particular dimensions of the ways that the public are intimate with water and its constituent entities and elements. It focused on human biomedical health and ill-health. Its 'Swim Healthy' guidance, an ironic choice of name, opened with a set of paragraphs on open water swimming's risks, 'of gastrointestinal illness… [and] more severe infections caused by microorganisms which may cause severe gastrointestinal illness and leptospirosis (Weil's disease)' (Swim Healthy 2019:para 2). Its focus on human biomedical health and ill-health is clear, as is the premise (explored in chapter seven) that the healthiest option of all is to keep bodies human, non-human, and river-watery, separate.

If the parameters within which people working in public health think about health and water have narrowly defined boundaries, then we straight away see what is different about health enacted through practices of public intimacy. Public intimacy is about health as something less bounded. It produces notions of health as part of a more-than-human environmental complex that is always in motion and never reducible to an epistemology of rational science. It does, however, remain in conversation with this more formal mode of public health. As I demonstrated among river swimmers, health enacted by way of intimate affective immersions is held in conversation and tension at the same time as ideas from mainstream public health. Thus we see that public intimacy does not stand in opposition to public health, but is about people drawing ideas from it into conversation with their own experiences of health as they emerge through localised experiences of affective intimacy with others. The intimacy of public intimacy is often about human to human intimacy but also about human to non-human and human to environmental intimacy. In some cases it is an amalgamation of all three. Thus it operates health on a fundamentally different plain to that of public health, or perhaps on a multiplicity of different plains. Public intimacy helps us to see how people enact through more-than-human relations on a local vessel of water, health in a sense that is more open-ended and freer. Health is thus positioned as a relational process that unfolds, can surprise, and is not black and white but contingent.

Understanding public intimacy illuminates a wider landscape of public health. It shows how publics organise themselves to be healthy, or for bodies of water and non-humans to be healthy. The fact that swimmers on the River Beane know water is likely polluted in the sense public health attends to but still choose to swim demonstrates that achieving healthy lives goes, for some, far beyond considerations of what is, or is not, meant to be 'in' water. Understanding public intimacy then renders closing access to these bodies of water a naïve move, and pushes for alternative options to be considered. Moreover, the fact that these ways of finding health through connection

are being amplified through this uncertain period makes the significance of taking them seriously all the more important.

Another government health authority of central relevance to this thesis and which public intimacy holds an interesting conversation with is the EA. In a not dissimilar way to public health, the way the EA imagines health for that which comes under its jurisdiction, the environment, has clear boundaries. It is about the health of the environment, focused on watercourses. It also, more so than public health, has a quite obvious temporal axis. It works towards achieving particular water quality targets by particular dates. It measures current river flows against historic ones, and it uses scientific metrics to quantify the health of the environment, or at least it is supposed to.

The intimate affective engagements of the RBRA that filled the EA's empty shoes for decades of the River Beane's dying years did engage many of these scientific metrics. They did however do something more. They situated the health of this river in a less bounded way. They connected it to their own health, and in some cases like Bob's, to their very existence as a chalk-laced being. Also, in the uncertainty that was produced where the River Beane did not spring back to life following their successful lobby to reduce abstraction, the RBRA highlighted the health of the River Beane as something potentially far more complex. They offered an understanding of the River Beane as something with dimensions that could not be scientifically quantified. Ultimately, they situated the river as a relational entity, not one which could be simply recorded and managed, but one which needed to be tuned in to, respected, and situated as part and parcel of the local health of all beings.

In chapter two I presented an argument by Kathleen Stewart about ordinary affects. For Stewart, making worlds through affective modes of relating is never 'simply "good" or "bad" but always first, both powerful and mixed' (Stewart 2008:11). This, I believe, is a helpful way to think about the conversations and tensions public intimacy holds with health as it is imagined by way of the government's health authorities, PHE and the EA. Public intimacy is a process of enacting health in multiple ways. These enactments are not simply good or bad, they are, following Stewart's words, powerful and they are mixed. They contain elements of these intimate affective connections as health, but also aspects of health as imagined through existing public health and EA demarcations of environmental health. What public intimacy achieves is an expanding of what can be imagined as health, in some cases drawing into the intimacies through which health is imagined, beings that are more-than-human. Thus it explains relations and ways of doing health that fall beyond the remit and I would argue, the imaginaries, of public health and the EA.

Thinking with public intimacy beyond water

Public intimacy opens up a way of thinking that has relevance to studies of the social beyond people's connections to water. While I want to reflect on this potential relevance, I want to do so in a way that is open-ended. If public intimacy is as rhizomatic as I have tried to suggest throughout the thesis, it would be wrong to suggest that its potentials can be fully known. With this in mind I position its relevance as possibilities. If public intimacy functions as a kind of 'surge', reminding us that 'the world is still tentative' (Stewart 2008:128), what might this illuminate for social studies beyond those of water?

Public intimacy tells us something about the quality of emerging collectives in a world experienced by people as increasingly uncertain. It tells us that these collectives are more affective than the traditional political publics that academics have described. Thus intimacy acts as a pivotal axis in how publics organise themselves to be healthy across different domains. It is central to how people are responding to and positioning themselves in relation to shared experiences. This has relevance far beyond social studies of people's connections with water. It tells us something more generally about how people orient themselves, forge relations, and come to be situated within publics. In this thesis it has allowed us to see how health emerges through these affective moments as something far broader than its demarcation by government health authorities be they human or environmental.

Water is just one vessel through which these ways of forging intimate relations and trusting one's own body or other techniques of quantifying health emerge. There are no doubt many more vessels, objects and entities that social scientists might wish to tune in to and which we might expect to find illuminate emerging modes of intimate relating and enactments of health. Public intimacy affords opportunities to tune in to how this is happening and also to note where it is disrupted and in turn, sprouts out in new, surprising directions. This happened for me in a very obvious way due to the irrevocable disruption to my research caused by the coronavirus pandemic. When I believed my research was over, it was the emergence of a new mode of relating to the river that spurred me to continue. Just as public intimacy took the people of Hertfordshire in new directions in their relations to the river, it took me along for the ride too. Thus there is potential in public intimacy to allow our research to move with and trace the surprising emergences that reflect the uncertainty of the times we are all living through. This possibility has relevance to social studies far beyond the study of water. Public intimacy opens up ways of thinking about and attending to relational phenomena in an era of uncertainty, whatever those phenomena might be.

Dropping threads – a game of Poohsticks

I have offered public intimacy as a rubric to make sense of relations on the River Beane. In doing so I have packaged up this rhizomatic reality in one particular fashion. There are of course other ways of presenting this picture. I could have engaged relational phenomena on the River Beane through a different set of analytics and themes. I could have followed things I chose to ignore. I could have ignored things I chose to follow. My decision to follow river swimming as it emerged speaks clearly to this latter point and raises intriguing questions of what this thesis might have looked like had I not taken a foray, quite literally, into the River Beane. It also provokes a reflection on the very nature of ethnography and the agencies outside of the researcher that impact what comes to be researched.

Medical anthropologist Bharat Venkat reminds us that this is the nature of research, 'threads are dropped, others are picked up' (Venkat 2021:20). Venkat offers this insight in such a nonchalant way, and in doing so demonstrates that dropping things in research is not only inevitable but also not worth getting too hung up on. It is okay, and is in fact necessary to drop things as our research unfolds. Imagine how chunky this already sizeable thesis would be had I held on to every idea, theme and morsel of data. A daunting thought. A fan of Venkat's relaxed approach to dropping threads, inevitability rather than shortcoming, I want to think about what gets dropped through research slightly differently. I want to keep the idea of dropping more active, agentive, and less land-based as a way of departing this thesis and as a way of looking forward to what might, by myself or others, be picked up in the future for this kind of river-y research.

For Venkat, research is an ongoing process of dropping threads. This framing makes the dropping of threads appear as the selective choice of the researcher. However, ethnography is a research method through which agencies beyond the researcher constantly impact what can be foregrounded and what comes to be dropped by the wayside. In the research that makes up this thesis for example, the randomness of the River Beane itself and the momentous curveball of a pandemic were just as powerful in conditioning what came to be foregrounded and what came to be let go of, as any decision I could pretend to make in isolation from the environment of my research. It was the pandemic and how people related to the river through it at this time that led me to land on public intimacy and to tie the data together through this affective lens. Thus we are never the sole masters of our fate in ethnography. We are part of an intimate dance with the objects of our research, human and otherwise, and the moment of time our research is conducted

through. Thus themes are not simply dropped. They are let go of as part of a relational process in space and time. We can have greater control over this in some instances, while in others, like for me during the pandemic, these decisions can be quite literally forced upon, and in some ways made for us.

Sticking with the pandemic, I want to consider its role in this thesis. Dropping things in research is not necessarily easy. It can in fact be a painful process, one that involves time spent mourning, rebuilding, and accepting. For me the pandemic encourages attention to the affective nature of what it means and feels like to drop things during research. This is because for me, the pandemic exists throughout this thesis as the shadow of what might have been. What if I had not, amidst the inertia of all that I had been following on the River Beane, changed tack and followed river swimmers? What if I had waited to see if my research with environmental groups, the water company and EA could have continued in person? What might I have attended to? What might I have illuminated that I did not? I think the landscape of river ownership, management, and responsibility is incredibly interesting and complex. I was scratching the surface of it when my research was disrupted. While the swimmers ended up speaking to these issues in interesting ways, especially where the ladder was removed, I would have liked to have held on to these ideas for longer and to have developed them further in chapters five and six. I would certainly like to pick them up again and provide a more thorough engagement with the complex and fragmented history of water and land privatisation in England, the rise of neoliberalism, and the legalities and discourse of responsibility that accompany them, especially as they come to relate to health. The fact that the chair of the EA publicly called in July of 2022 for the jailing of water company bosses who continue to pollute English rivers[24] indicates that questions of responsibility are only becoming more serious, more public, and to my mind, ever-more worthy of research.

The pandemic forced me not only to reflect on what I dropped in terms of themes and ideas but also to reflect on things I might have done differently in a methodological sense. I began to see more vividly than ever that my methodological choices affected how realities of relationality on the Beane appeared. The photographs included throughout the thesis are intended to give the reader some sense of the affective nature of the River Beane as people come to engage it as a water(less)scape. That said, more creative methods such as using GoPro video technology might have allowed me to better show the contrast between the echoey silences of waterless stretches of the River Beane and the lively soundscapes where swimmers immerse and sounds clash together

[24] https://www.theguardian.com/environment/2022/jul/14/jail-water-firm-bosses-over-appalling-pollution-says-environment-agency

in merry harmonies, water against skin, birds calling out, human conversation carried away on the current. I realise the thesis does more I realise to communicate the visuals of death and life as interlocutors come to enact these notions, and might have done more to elaborate creatively on the soundscapes or more multisensory aesthetics that impact how people relating to water come to realise them.

Finally, I want to think about what I dropped, not in terms of a purposeful or provoked sidelining, but in terms of what I want to let go of as I round up this thesis. This metaphor is agentive and playful, it pays dues to the river which was the entity around which the relations of this research emerged. I want to let go of public intimacy here as a game of Poohsticks.

Poohsticks was one of my favourite childhood games. I still enjoy it now. You throw a stick from the upstream side of a bridge into a river and rush to the downstream side to see if the stick will emerge before anyone else's stick. The thing about Poohsticks is you can spend all the time you like selecting what you think is a great stick, you can alter how you let go of it over the bridge, but ultimately, you can't control Poohsticks. Poohsticks is in the hands of the river you're playing it with. Thus if we imagine public intimacy as a Pooh stick, it was always in large part up to the River Beane to determine these relations. The River Beane is, after all, the entity around which these intimate affective relations emerged, and it is the entity around which they will continue to pulse and change. I now want to let go of public intimacy as a Pooh stick. I want to release it from my grip over a bridge, returning it to the River Beane which will decide again where it might go. I am hopeful that it makes it out of the other side of the bridge, that it doesn't get lodged and stuck. But my hopes are only a small part of this relational field. The river will always be central to the direction public intimacy goes in. Still, if public intimacy is a method of hope, then public intimacy as Poohsticks is for me a game of hope. One which might allow public intimacy to continue its lively journey. Someone else might pick up public intimacy. They might let it go over the edge of another bridge into another river, at another relational moment. They might see where else it goes. Who can really say. Still, I'd like to give it a go.

1, 2, 3, Poohsticks!

Chapter 9: Epilogue

Photograph 36 - Private property, no swimming sign. Erected on the beach Autumn 2021. Reproduced with permission from swimmer who photographed the sign.

While writing up this thesis in October of 2021 I received a message and photo from a swimmer of the River Beane. A sign had been erected on the beach which read PRIVATE PROPERTY, NO SWIMMING. I looked at the photo for a long time. That can't be real, I said to myself. In fact, it looks kind of superimposed. Maybe it is. This response spoke to my sense of incredulity and deep sadness at the placing of this sign. I knew from a near entire lifetime spent in Hertford that no sign had ever forbidden swimming at the beach before now. It was a new emblem of explicit aversion of the landowner towards River Beane swimmers. This sign, unbeknownst to the

landowner I'm sure, did not simply deny access to swimming, but denied access to intimate moments of connection and feelings of wellbeing that as I have argued throughout this thesis, are sometimes more-than-human and contain within themselves the possibility of encouraging deeper local environmental relations.

A few weeks after receiving word of the new sign, I was privy to a further conversation about its removal. A swimmer I had not met during my time on the Beane had detached it from the grey pole displaying it and apparently taken it home. I returned to the beach with Mazzo and Lizzer in June of 2022. This was a final opportunity to discuss the swimming chapter and also just as importantly, to share in a swim together before completing the thesis. As we swam, I found that the grey post of this now sign-less post kept catching the corner of my eye. It was very quiet on our swim and I asked Mazzo and Lizzer if fewer people were swimming these days. They told me that while they had not been deterred by the sign or its remnants in the form of the ugly pole that I had decided was definitely watching me swim, many other swimmers had not been so bold. Many now began and finished their swims at the ladder, missing out on the swim around which they so loved, given that swimming upstream into the current for such a distance is for most too physically difficult. The eerie panopticon of the post and what it signalled even where denuded of its sign seemed to have been enough to move on some of the most dedicated swimmers. As I got dressed, I realised in myself a sense of relief and also sadness. Relief that we hadn't been told off – I have always been mortified by a public scolding – and sadness that I no longer felt free to just sink down into the long grass and watch the river meander along and the dusty pink clouds roll away.

As I walked across the common that evening I thought about the ladder, which remains as a signal of river swimmers' belief in connection. I thought alongside this of the denuded signpost, now just the panopticon pole that serves to remind swimmers at the beach of their intimate practice's precarity. That public intimacy can be, at any moment, foreclosed. I thought about how all of these happenings continue to move and shift. How as my research drew to an end, none of what it had engaged drew to any such finite point. Finally, I thought more deeply and believed with more conviction about the importance of public intimacy. For the more environmentally attuned ways of living it might purposefully, or entirely accidentally, encourage. I also realised more acutely than ever that during the pandemic my own practices of public intimacy, intimately meshed with my fieldwork, had been a form of connective solace. Without public intimacy there would be no thesis at all. Public intimacy as a practice or method of hope in the face of uncertainty not only kept my interlocutors going. It kept me going too.

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Appendices

Appendix 1. Ethics approval letter

London School of Hygiene & Tropical Medicine
Keppel Street, London WC1E 7HT
United Kingdom
Switchboard: +44 (0)20 7636 8636

www.lshtm.ac.uk

Research Ethics Committee

Miss Maddy Pearson
16 April 2020

Dear Maddy,

Study Title: Investigating Water Quality and Sustainability on the River Beane: An Ethnographic Study of Water-concerned Parties.

LSHTM Ethics ref: 17797 - 1

Thank you for submitting your amendment for the above research project.

Your amendment has been assessed by the Research Governance & Integrity Office and has been approved as a non-substantial change. The amendment does not require further ethical approval from the observational ethics committee.

List of documents reviewed:

Document Type	File Name	Date	Version
Other	Interview_Consent_Form_Phone_Skype_26.03.20	26/03/2020	1.0
Other	PhD_Interview_InformationSheet_Phone_Skype_26.03.20	26/03/2020	1.0
Covering Letter	Ethics_Response_Cover_Letter_14.04.20	14/04/2020	1.0

Any subsequent changes to the application must be submitted to the Committee via an Amendment form on the ethics online applications website: http://leo.lshtm.ac.uk .

Best of luck with your project.

Yours sincerely,

[redacted]

Rebecca Carter

Research Governance Coordinator

Ethics@lshtm.ac.uk
http://www.lshtm.ac.uk/ethics/

Improving health worldwide

Appendix 2. Recruitment procedure: example recruitment email

Dear (Sir/Madam/Name of potential participant),

Please allow me to introduce myself. My name is Maddy Pearson and I am an anthropologist and PhD researcher based at the London School of Hygiene and Tropical Medicine. My research looks at water quality and sustainability along the River Beane in Hertfordshire. Rivers such as the River Beane are under threat due to poor water quality and low flow. This research will explore these issues and hopes to contribute to better understanding and communication of these problems. I will be conducting interviews and observations with participants with knowledge or expertise in this field. You have been identified as someone with relevant knowledge or expertise for this research, and therefore I would like to invite you to take part.

Attached you will find an information sheet. If you are interested in taking part in this research please do read the sheet and consider whether you would like to take part or not. Also attached is an informed consent form. This will explain what would be expected of you should you take part in the research. If you choose to take part, we will go through the informed consent form together when the interview or observation takes place. The consent form highlights that your taking part is entirely voluntary. You are under no obligation to take part if you do not wish to.

If you have any further questions about the research please do not hesitate to contact me on email: maddy.pearson@lshtm.ac.uk or by telephone: 07729236542.

I look forward to hearing from you soon,

Yours faithfully,

Maddy Pearson

Appendix 3. Permission letter for conducting research

From: Secretary RBRA
Sent: 20 May 2019 16:30
To: Maddy Pearson
Cc: Bob
Subject: assistance from the RBRA

Dear Maddy

It was good to meet you the other day and to hear about your plans for your PhD. I hope our contribution was of use

On behalf of the RBRA, I am happy to grant you permission to attend meetings and to have discussions with members and will be happy to put you in contact with individuals relevant to the project.

We have added your name to our mailing list and you will receive the newsletter, there are more on our web site.

We look forward to meeting you again.

Kind regards.

Dave Standing
(Hon sec. RBRA)

Appendix 4. Consent forms

Informed Consent Form for Observations

Your signature below means that you understand the information given to you in this consent form about your participation in the study and agree with the following statements:

1. "I have read the consent form concerning this study (or have understood the verbal explanation of the consent form) and I understand what will be required of me and what will happen to me if I take part."

2. "My questions concerning this study have been answered by the person who signed below."

3. "I understand that at any time, I may withdraw from this study without giving a reason."

4. "I agree to take part in this study."

If you wish to participate in this study, you should sign below.

	Yes	No
I consent to participate in this research. Participating in this research means that I agree for the researcher to observe my activities and actions that relate to the River Beane.	☐	☐

I consent to the researcher taking field notes during observations, and I give my permission.	☐	☐
I consent to observations being audio-recorded when this is appropriate, and I give my permission.	☐	☐
I consent to photographs, video recordings and sketches being taken when this is appropriate, and I give my permission.	☐	☐
I consent to being quoted anonymously in any thesis or peer-reviewed material produced from this research, and I give my permission.	☐	☐

Print Name of Participant_____

Signature of Participant _____

Date _____

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily. A copy of this Informed Consent Form has been provided to the participant.

Print Name of Researcher _____

Signature of Researcher _____

Date _____

Demographic Information

Sharing your demographic information allows this research to build a better picture of who is interested in river related issues. You do not have to share this information if you do not wish to. Like the rest of the information you have shared, if you do choose to share your information it will be anonymised.

Age: _____

Gender: Male ☐ Female ☐ Prefer not to say ☐

Years interested/involved in river related issues: _____

Informed Consent form for Interviews

Your signature below means that you understand the information given to you in this consent form about your participation in the study and agree with the following statements:

1. “I have read the consent form concerning this study (or have understood the verbal explanation of the consent form) and I understand what will be required of me and what will happen to me if I take part.”

2. “My questions concerning this study have been answered by the person who signed below.”

3. “I understand that at any time, I may withdraw from this study without giving a reason.”

4. “I agree to take part in this study.”

If you wish to participate in this study, you should sign below.

	Yes	No
I consent to being interviewed about my opinions, thoughts and perceptions of quality and sustainability of the River Beane.	☐	☐
I consent to my interviews being audio-recorded when this is appropriate, and I give my permission.	☐	☐
I consent to being quoted anonymously in any thesis or peer-reviewed publications produced from this research.	☐	☐

Print Name of Participant_____

Signature of Participant _____

Date _____

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily. A copy of this Informed Consent Form has been provided to the participant.

Print Name of Researcher _____

Signature of Researcher _____

Date _____

Demographic Information

Sharing your demographic information allows this research to build a better picture of who is interested in river related issues. You do not have to share this information if you do not wish to. Like the rest of the information you have shared, if you do choose to share your information it will be anonymised.

Age: _____

Gender: Male ☐ Female ☐ Prefer not to say ☐

Years interested/involved in river related issues: _____

Informed Consent form for Skype/Phone Interviews

I will read aloud to you this consent form, your verbal agreement means that you understand the information given to you about your participation in the study and agree with the following statements:

1. "I have had the consent form concerning this study read aloud to me and I understand what will be required of me and what will happen to me if I take part."

2. "My questions concerning this study have been answered by the person reading me this consent form."

3. "I understand that at any time, I may withdraw from this study without giving a reason."

4. "I agree to take part in this study."

If you wish to participate in this study, you should verbally answer yes or no to the following statements.

	Yes	No
I consent to being interviewed about my opinions, thoughts and perceptions of quality and sustainability of the River Beane.	☐	☐
I consent to my interviews being audio-recorded when this is appropriate, and I give my permission.	☐	☐
I consent to being quoted anonymously in any thesis or peer-reviewed publications produced from this research.	☐	☐

I will now read the statements back to you to ensure you understand what you have consented to. If you are happy I will print your name as a signature to confirm that you are consenting to take part in this study.

Print Name of Participant_____

Signature of Participant _____

Date _____

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily. A copy of this Informed Consent Form has been provided to the participant.

Print Name of Researcher _____

Signature of Researcher _____

Date _____

Demographic Information

Sharing your demographic information allows this research to build a better picture of who is interested in river related issues. You do not have to share this information if you do not wish to. Like the rest of the information you have shared, if you do choose to share your information it will be anonymised.

If you are happy to, please tell me your age, gender, and the number of years you have been interested or involved in river related issues.

Age: _____

Gender: Male ☐ Female ☐ Prefer not to say ☐

Years interested/involved in river related issues: _____

Appendix 5. List of main interlocutors

Name where individual is identified in thesis	**Institutional affinity or activity**	**Job Role/why of interest**
N/A	Water company	Biodiversity specialist
Toby	Water company	Agricultural advisor
Rachel	Water company	River restoration and project manager
Sal	Water company	Biodiversity manager, senior asset scientist
Hydrological scientist	Water company	Technical specialist abstraction and supply
N/A	River Catchment Partnership	Integrated Catchment Delivery Program Manager
Bob	RBRA member	Riverfly monitor
Anthea	RBRA member	Riverfly monitor, history of the River Beane research
The chairman	RBRA Chairman	Borehole dipping, chairman
N/A	RBRA Secretary	River monitoring, quarterly newsletter author
N/A	RBRA member	Borehole dipping, statistics of water levels
Feargal Sharkey	Chalk stream advocate	Local activist for chalk rivers, part of the newly formed Chalk Aquifer Alliance
Sarah	Wildlife charity	Hertfordshire living rivers officer
N/A	Environment Agency	Trainee environment program
N/A	National Farmers Union	Environment adviser and member
N/A	Natural England	Lead adviser
Charles Walker	Member of Parliament	Broxbourne MP interested in chalk streams
Viv	Save Beane Marshes	Organiser for Save Beane Marshes, freshwater specialist
Farmer	Landowner/Farmer in Sandon	Owns land the River Beane runs through, fishes on Waterford Marsh with family
Farmer	Landowner/Farmer in Bennington	Owns land alongside the River Beane, using progressive farming techniques
Head of communications	Water company	Director of communications, communities and corporate affairs
Chairman of the River Chess Association	River Chess Association	Chairman
Environment Agency Catchment Coordinator	Environment Agency	River catchment coordinator
N/A	Freshwater Biological Association	Chief Executive
N/A	Freshwater Biological Association	Macroinvertebrate taxonomist, with a background in biomonitoring, citizen science and long term monitoring

Goldings Old Boys alumni	Goldings Old Boys	Student who learned to swim in the River Beane pool on Goldings Estate in the 1960s
N/A	Hertford Canoe club	Secretary, provided information on legal rights of river users/access
Michael (Mazzo)	River swimmer	River swimmer on the River Beane, long-term ethnographic interlocutor
Lizzer	River swimmer	River swimmer on the River Beane, long-term ethnographic interlocutor
Rich	River swimmer	River swimmer on the River Beane, long-term ethnographic interlocutor
Emma	River swimmer	River swimmer on the River Beane
Julia	River swimmer	River swimmer on the River Beane
Julie	Open water swimmer	Kenwood Ladies Association and river swimmer on the River Beane and River Lea
Barbara	River swimmer	River swimmer on the River Beane, swimming prior to the coronavirus pandemic
Dave	River swimmer	River swimmer on the River Beane
Representative from the Canal & Rivers Trust	The Canal & Rivers Trust	Public communications representative
James	River swimmer	River swimmer on the River Beane
Kelly and Molly	River swimmers	Mother and daughter, river swimmers on the River Beane
Swimmers from Bedfordshire	River swimmers	Two men who travelled from Bedfordshire to swim the River Beane and River Lea