How to Become a Mushroom

A New Nature Ethnography of Fungi in Aotearoa

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Cover photo by Alice Nicholls, 2018

Abstract

This thesis proposes that the moment of interaction between a person and a fungus is transformative of both subjects. Using new nature writing techniques in tandem with multispecies ethnography, this thesis seeks to present a rich, autoethnographic account of my encounters with fungi in the native forests of the West Coast of Aotearoa. Drawing on five days of ethnographic fieldwork spent at the Fungal Network of New Zealand (FUNNZ) annual Fungal Foray in the township of Moana, I explore the affective, emotional, sensory, intellectual, and corporeal experiences of interacting with fungi. Using new nature writing as an ethnographic medium, I suggest that narratives that pertain to the researcher's experiences can render new understandings of nonhuman subjects. In doing so, I explore both the transformative potential of multispecies encounters for the researcher and the researched, and the literary potential of multispecies ethnography to illustrate the encounters themselves.

Key words: fungi; new nature writing; multispecies ethnography; ontology; becoming.

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Monday 7th May 2018.

"...I was in the grip of very old and emotional ways of moving through a landscape, experiencing forms of attention and deportment beyond conscious control." (Macdonald 2014, 5)

'Who are you going with?' Samwise asks me as we huddle around a wooden trestle table in the town hall, waiting to join someone with a car for our first foraging mission of the annual Fungal Network of New Zealand Fungal Foray. I had met Samwise the night before sitting at a small metal table outside our cabin dorm rooms, enjoying a cup of Bell gumboot tea and writing in a red school exercise book. I had asked him if he minded my company, and we had talked for an hour or so before the opening dinner of the foray. Samwise recited a slam poem to me that he was working on, which detailed the emergence of a wizard from a portal in the forest who proceeded to lure the poem's reciter into a world of untold wonders. I listened to Samwise energetically performing his unpolished prose to me while I sat, mouth slightly ajar in skeptical incredulity, wondering how the hell the rest of the foray was going to go if this was the demographic I would be tagging along with for the rest of my fieldwork in Moana. He ended with a modestly triumphant sigh and an apprehensive smile. I realised after slightly too long that my blank stare was perhaps lending him to believe that in the course of his rehearsal, I had had a minor stroke. Jolted back to my current senses, I praised the boldness of Samwise's presentation and expressed my admiration for his commitment to his art, and to rampant absurdism. He bashfully accepted my compliments, and looked out to the mountains over the lake, with a glow of pride radiating from his eyes.

This morning, Samwise is wearing worn grey hiking boots, stubbies, a rain coat, and a Peruvian-style bobble hat with ear flaps. I tell him that I haven't made plans to go with anyone yet, hoping to show just enough concern about the situation to garner an invite. To my disappointment, Samwise is also scouting for a space in a foraging posse. White paper bags are littered across the table's surface, each intended to serve as a register for available vehicles. However, as many of this year's attendees have either brought their own vehicle or are long-time friends and foraging companions, it seems that people are arranging their numbers face to face, leaving the stragglers and newbies like myself to scrounge around for available passage to the forests. Someone in this hall smells quite overwhelmingly of fish entrails. I turn back to the table, hoping to devise a strategy for avoiding them without actually knowing their name.

By some stroke of good fortune I introduce myself to one of the organisers of the foray, Helen, who has three available seats with her foraging companion for the day. Helen is quite a bit taller than I am which, as I stand at 5'11, pleasantly surprises me. Her ruby red hair is long and straight, and her low

voice and sharp features give her an impressive air. In person and up close however, she seems anxiously happy. She introduces Samwise and I to Jon, a British ex-serviceman in his early twilight years. Donned in a green Fair Isle sweater, Jon's warm grin peeks out from a well maintained, short grey beard, and the four of us set off to Lake Kaniere for our first mushroom foraging excursion.

We drive for almost an hour and a half, eagerly anticipating the supposedly beautiful views over the lake and native forest that is home to a hugely diverse array of fungi, flora, and fauna. It is a typical day on the West Coast at this time of year: overcast with thick walls of rain washing the landscape as they roll off of the Pacific Ocean toward the mountain ranges. The temperature seems to have dropped since last night, and as we drive along the highways that cut through farmland and wrap around the coast line, the oppressive warmth of the car begins to give me a headache. Upon arrival at Lake Kaniere we see two other older forayers. The heavy, chilling air feels sharp on my senses as I open the door to the steady showering rain. We have parked in front of a track that claims to offer walkers a ten minute loop through native kahikatea forest. Confident in our efficiency, each of us respectively gear up and we set off along the grit path, into the yellowy-green walls of the stretching forest.

These particular kahikatea trees grow in a spectacular amount of water. A bridge guides us over at least a foot of rain water, in which ferns and weeds are suspended. The constant humidity gives rise to a variety of ferns and slimes that have colonised the trunks of the trees. It feels more like I am walking through a swamp in a fairy tale than a wooded inlet just a stone's throw away from the car. I feel an instant shift in my focus. Forests command silence like great, echoing cathedrals. Unlike tropical rainforests, woodlands this low below the equator get more and more quiet as the flora condenses. Few birds herald our arrival with their song, and my eyes dart everywhere in my almost primordial attunement to these alien surroundings. Jon walks ahead of me with a wicker basket containing a knife, some identification slips that are used to record specimens for cataloguing, and two different sizes of pill boxes that he uses to keep his specimens apart. He seems to instantly be accepted by the forest. Of course, the trees haven't changed, but his confidence seems to allow him to a certain level of comfortable access that my anxieties inhibit me from attaining. My heartbeat rises, and as I follow his lead across the wooden bridge to the next part of the grit path I feel a prickle on the back of my neck, as though the trees have turned to watch me walk past them.

I try to remember why we are here. Every year, the Fungal Network of New Zealand (FUNNZ) organises a Fungal Foray at a unique destination in Aotearoa. Fungi enthusiasts travel from as far away as Britain and the USA to reacquaint themselves with their friends and colleagues in an idyllic rural landscape. While they are here, they spend four days foraging for fungal specimens in the neighbouring habitats, identifying them, and recording their presence on the fungal database at Manaaki Whenua/Landcare

Research. The foraging community has been expanding in recent years to a whopping 65 person throng of indispensable enthusiasts. Despite my lack of knowledge, coordination, and confidence, I am determined to be one of them. Ignoring the piercing glare of the trees around me, I begin to scan their feet for signs of fungal life. My mood hovers somewhere between over stimulated and alert, and my sharpened eyes are no match for the flickering nervousness of my glance as I try to wedge myself into this new physical, and emotional, and social terrain.

Suddenly, almost abruptly, there is a mushroom. Its striped pale chestnut-brown cap shines in the liquid air of the forest undergrowth. Its stipe is so thin that it almost seems to be wafting upward, its weighted top carried by some static helium below. Jon walks past the tree that it is on, unaware of the hair pin sized jewel that has fixated my gaze. I look at it in disbelief. Who knew it would be so simple as to just look for mushrooms where you would most expect them to grow. My stare is unbroken and for a moment, the hollow silence of the forest is covered with a ringing radiating from the mushroom. Can't anybody else hear it? Why can't I look away? It's deafening, seducing my attention simply by being there. An icy rush of cold breeze smacks my mind back into my body, and I look over to Jon, now about a metre away from me. 'Look,' I say. 'There's one.'

It all seems very mundane, as though announcing its presence should rip open a gaping chasm in the fabric of the world for us to be blinded by. But of course, nothing much happens. Jon, blinking with slight apprehension, walks over to where I am standing. He is led by his keen eyes, hunched over slightly as they pull him toward the direction of my finger tip. 'Oh! So there is! Look at that.'

I can't quite believe that's it. I mean, I understand logically that what is in front of me is a mushroom. But how can it be so... there? Now that the ringing has stopped, time has returned to something resembling normality and Helen and Samwise too cluster around the little fruit that has burst from the humus surrounding the tree. Jon takes his knife and careful not to damage the stipe, lifts the mushroom from the base up, turning it gently in his hand in admiration. Looking at it in his palm, it seems like a mighty being fallen from grace. It doesn't ring now so much so as stare at me as a dead fish stares at you from a chip shop display. It seems rather pathetic now. Helen and Samwise congratulate me on the first mushroom of our forage. I smile outwardly to acknowledge their kindness, but my encounter has initiated a sense of introspection within me. An echoing chamber gapes open-mouthed from my chest, where hope for my research sat not long ago. It still swirls with empty air, but as I fall to the back of our foraging procession, glancing to the open wound in the soil where a little mushroom was only moments ago, I feel the porcelain tinkling of the small striped mushroom bouncing around the walls inside me.

The ten minute Lake Kaniere walking track takes us an hour and a half to sweep. I emerge into the carpark on the other side of the long drop toilets that separate the two entrances. Leaving behind the thick humming atmosphere of the forest, I breathe deeply in the crisp air. It is still raining, but a break in the lowest layer of clouds indicates a reprieve from the rain that is perfectly timed to eat our lunch. I feel adrift as I walk to the car. Time and space warp and shimmer when you're looking for fungi. One tree may be host to twenty or so species at the height of the season, and when you are tasked with collecting as many specimens as you see fit to, you can quickly lose yourself in the same patch of ground for hours on end.

But we have collected an impressive variety of specimens in our time on and off the track, including a cluster of yellow wax gills that prompted a member of the other foraging party to throw her crutches aside and lower herself onto her stomach in the sludgy earth, eye to eye with the radiant mushrooms.

Jon remarks on the convenience of a wicker basket in hunting for mushrooms, expressing what a shame it is that this essential tool of the trade has not become common place in New Zealand. He looks distinctly European as he meanders back to the car to fish out his zip-locked lunch that we each assembled for ourselves after breakfast in the town hall. Samwise is chirpy as ever, reinvigorated by our communion with fungi after a stuffy car ride. Helen, eager to sit down with her lunch, rests in the front seat of the car while Jon, Samwise, and I stand beside a picnic table at the mouth of the lake to eat.

Despite their individual idiosyncrasies, my foraging companions seem rather unaffected by our time in the forest. I on the other hand feel like I've become slightly displaced from my own body. My wet, numb hands grasp my ham salad sandwich in the spitting rain while my mind tries to process the snippets of memories and feelings that are reeling through me. The fungi occupy a different world, a different sensory realm. They manipulate time, slowing down each moment to a humming crawl in order that they can be noticed, and incorporated into our work. They called on my body to contort, to shrink down to their stature in order to inspect and uproot them. My eyes felt like camera lenses that I had to manually adjust, straining to find the right depth of field to see the illusive fruits that blinked up at my enormous figure. My footsteps were boulders, smashing through the delicately balanced undergrowth, squashing innumerable fungi as I clumsily sought to find them. And the *sound*. A call that drifted through my ears telling me that they were waiting, hiding in plain sight. Stepping out of the forest and into the garish light of the carpark, I began to doubt whether the sound was ever there. I forgot how to walk, suddenly confused at the prospect of strolling to the car. I blinked in the light, trying to remember how to look at the world that I naturally occupy. Speaking feels like an interruption, a tumbling block of words that clatter through the sound of the lapping lake front and the rustling trees.

As I eat my sandwich, I look at the forest that we have just emerged from. It sounds the way a forest usually does. The pathway in seems inviting, and birds flit around the canopy making random remarks to one another. But I know what is in there. I have felt the tide of the fungal world that swirled me into the dark, fetid floor of the forest, the slimy tree trunks, the clay walls of the path. I don't feel afraid, but I do feel different. Perhaps it's the cold, or the steady dripping of the rain, but I feel like I have seen a part of the forest that has passed others by.

I turn my back to the forest and try to admire the sweeping vista of the lake. I'm sure I'd be successful if I could see anything other than a thick, grey blanket of cloud. As Jon and Samwise discuss the Stoned Ape theory and the potential of fungi to recover the planet in the wake of a global climate catastrophe, I quietly ponder whether my current state of ambiguity will last for much longer. Staring blankly at the fuzzy outline of the lake, I unwrap my muesli bar and begin passively consuming it. It tastes largely of grey, with the occasional zing of something acidic. I look down at the wrapper out of sheer habit. Black Forest. I look back up at the lake, holding a mouthful of the snack motionlessly in my mouth. I *hate* black forest. It is without a doubt the most assaulting combination of flavours I could inflict upon myself. And yet here I am, drifting in and out of my own head, mindlessly eating a black forest muesli bar, contemplating my own sanity. I think back to the forest, the yellow wax gills, my stomping boots, a ringing in my ear, the chestnut-brown mycena, the smell of rotten wood, the shining slime on the tree trunks, the ache in my neck, the glare of the trees. What have those mushrooms done to me?

I fall asleep in the car on the drive back to Moana, giving over to my confused exhaustion by the low humming of the car engine. Even Samwise's boundless energy and enthusiasm had given way to the cosy humid warmth of the car, his head lolling as he tries to stay awake. When we arrive back at the hall, I wait tentatively to see what the next course of action is. We are not the first back from our excursion, but the mood in the hall is lowered and productive, and the few people that have arrived speak in hushed voices in the company of their specimens. Each fungi lies on a paper bag beside an ID slip, in neat rows on a table to ensure efficiency and clarity in the identifying work yet to be done. A cardboard box of books has been placed on the hall stage, many outdated but still considered indispensable sources of knowledge. I go back to my room and change out of my wet clothes and into my dry blue jeans. When I return to the hall, some more forayers have arrived, and the empty library atmosphere has become more lively and exciting. People have returned with rare and unusual specimens, and forayers take the time to wander around the stalls of other groups and admire the jewels of the forest available for our interpretation.

Jon makes himself comfortable at a microscope, meticulously surveying the spore shape, cap texture, colour, and size of each specimen, documenting as many specifics as possible. Emphasis is placed on finding a name for each fungus. This strikes me as somewhat unnecessary, as the forayers are constantly having to keep up with the reallocation of various species to new genera. Jon's initial approach makes more sense to me, as the name simply marks the final piece of knowledge in the puzzle of the mushroom. What is of vital importance however, is the cataloguing of specific physical traits of the specimen. This must be done while the mushroom is fresh, as mushrooms change form drastically with age and degrade very quickly once uprooted from their habitats. One particular mushroom was left overnight for identification, and when we returned to it the next day, it was simply a writhing pile of maggots in the shape of a mushroom. Time is of the essence, and as people return from their excursions they immediately get to work laying out their finds. There appear to be two types of forayers present: those who gather everything and anything resembling a fungus in their path, and those who gather only what they deem to be interesting or relevant to their own research. The room naturally separates into two main bodies of forayers as the specialists find company with a microscope, and the rest chat and wander around admiring the variety of finds.

I feel slightly less adrift after a nap in the car. The hall is familiar and while not cosy is comforting in its childhood nostalgia, and I feel as though I have left the mushroom world behind me. Here, we are bringing them into our turf on our own terms. I am resolute and in control, and though I feel like I am getting in the way of the expert forayers, the company is more relaxed here.

I chat to another British forayer who we briefly came across on our recent foray. I ask him about his finds. He has a small group of fungi to identify, and works with a microscope beside Jon to get to know them at a level not attainable through the unextended human senses. We talk briefly about his apprehension in regards to clearing a forest of its fungi purely for the sake of documenting its diversity. He seems to be at odds with this aspect of the Fungal Foray, but is happy to use it for his own research purposes. A natural silence befalls us as he turns his attention back to his fungi. Without anything else to say, I stand to leave. As I do, I look down at Jon inspecting a *marasmius* fungus on a piece of felled bracken. Some of the fungi here look dead, like cadavers slowly putrefying on their paper bag slabs. But these *marasmius* stand up alert, extending their necks as if eager to be admired. And Jon touches them gently, turning them over to measure their gills, assessing the structure of their stipes, drawing their umbrella-like caps on their ID slip. I watch them from a distance, and I feel them looking back at me. They are asking me to look closer, to hunch over a magnifying lens, and to document their history. I am in my own territory, surrounded by human tools and innovations for our own histories, our own developments. But even here, I feel a pull from the tiny specimens. I turn to inspect another table, hearing again the tinkling of another fungi in my chest.

That night, lying in the bottom bunk of my damp cabin room in the dark, I try to make sense of my emotions. The foray thus far has confounded my expectations. I came here with the intention of understanding fungi as social agents in the creation of social worlds. In a sense, I can see this. The people I have encountered here certainly bond over their finds, and the foray clearly exists to document the fungal diversity of a small region of New Zealand. But there is something else here that is unexpected which I cannot explain. There is a shift in their atmosphere when we seek out fungi. So many things that I had taken for granted as stable change by virtue of their presence: time moves differently, my body changes form, my eyes seek a different depth of inquiry, my ears search for the essence rather than the sound of fungi, the forest urges me onto alternative paths, and even in the midst of human technologies the fungi seem to have a certain control. There is something about the fungi themselves that has lured me into an attunement to life that I haven't felt before. For a short time today, I have been suspended in a layer of the world that fungi have formed. But there is no sense to be made of it tonight, and as I close my eyes I plunge into a heavy sleep.

Introduction

“If we appreciate the foolishness of human exceptionalism, then we know that becoming is always becoming with – in a contact zone where the outcome, where who is in the world, is at stake.”

– Donna Haraway, *When Species Meet*, 2008 (24)

This thesis proposes that the moment of interaction between a person and a fungus is transformative of both subjects. Using new nature writing techniques in tandem with multispecies ethnography, posthumanist theory, and science and technology studies, this thesis seeks to present a rich, autoethnographic account of my encounters with fungi in the native forests of the West Coast of Aotearoa in order to explore both the transformative potential of multispecies encounters for the researcher and the researched, and the literary potential of multispecies ethnography to illustrate, with both accuracy and fantasy, the encounters themselves.

The suggestion that interactions between human and nonhuman species can be transformative is not unique to multispecies ethnography, as is demonstrated by the likes of Donna Haraway (2008), Anna Tsing (2015), Naisargi Dave (2014), Eva Hayward (2012), Matei Candea (2010) to name a few. In addition to drawing on interactions between multiple species, multispecies theorists also situate their work at the intersections of multiple disciplines including science and technology studies, philosophy, postcolonial theory, critical feminist theory, ecology, biology, sociology, and ethics. From the murky spaces where disciplinary boundaries dissolve, the primary goal of multispecies works emerges to break down human exceptionalism in the creation and development of theories of the existence of multiple species, including the human, in the world. Within the same murky space lies the endless potential for integrating new and old approaches to multispecies work. It is within this space that my thesis sits.

Multispecies ethnographic writing has ties that run deep with new nature writing despite their divergent histories. In theory, multispecies ethnography and new nature writing aim to achieve very similar tasks. The first is to bring those who study nonhuman species closer to an understanding of them as they exist in the moment. The second is to position those who study the species within the traditions of their work, and within a broader understanding of the current socioeconomic and environmental climate. The third is to render a version of the species to readers which does justice not only to the experience of the author with it, but to the species in and of itself.

Multispecies ethnographic writing and new nature writing tend to work toward these common goals in different ways. This is due in part to the expertise that has brought them into their encounter with the species, to the traditions of working with other species in the field, and the styles of authorship that the respective disciplines stem from. In the chapter that follows, I will give a brief account of the two theoretical and methodological approaches that underpin this thesis: multispecies ethnography, and new nature writing. I will also introduce Charis Thompson's concept of "ontological choreography" which, while not a product of multispecies research, has allowed me to come to terms with what occurred between the fungi and I during my fieldwork. Finally, I will give an overview of the thesis structure and research question.

Multispecies ethnography

"The term 'multispecies' is only a stand in for moving beyond human exceptionalism. Sometimes individual organisms make drastic interventions. And sometimes much larger units are more able to show us historical action... But of course what units one uses depends on the story one wants to tell." (Tsing 2015, 162)

For those of us who are interested in understanding what a fungus is, there are fewer contexts in the world more appropriate to learn than the FUNNZ Fungal Foray. Every year, the Fungal Foray offers an opportunity for mycologists, biologists, botanists, and fungi enthusiasts to join together for the shared purpose of expanding their understanding of fungi regardless of previous experience with, or knowledge of them. For four out of five days the foraying cohort bands together to collect from and document the fungal diversity of a region and pursue various research interests. In doing so, the national fungal database at Manaaki Whenua is annually updated with new findings, new specimens, and new discoveries. Every year offers a new location for forayers to forage in, and an annual colloquium is held on the third day of each foray which provides space for new developments in the related fields to be aired in a friendly environment. Visitors travel from all over the world to attend the FUNNZ Fungal Foray, with this year's cohort being the largest yet at 65 attendees. I am one of them.

My reason for attending this year's FUNNZ Fungal Foray aligns with the interests of the cohort in general, but I am somewhat of an outlier among the guests here in Moana. While the majority of attendees are either professional mycologists or aspiring amateurs, I have little interest in mycology. Or rather, mycology cannot offer me what I am looking for here. I am here in my capacity as an

anthropologist, and my goal here has been to develop an understanding of fungi that embraces multiple forms of interaction, documentation, and imagination.

My interest in fungi as anthropological subjects began at the conclusion of my honours year, when I was first introduced to the work of Anna Tsing. Unlike any other anthropological research that I had encountered before, Tsing's work showed me a new way of understanding the world around me, and an entirely new direction in which I could take my own research. Captivated by the intricacies of Tsing's cartography of the Matsutake mushroom's journey through our economy in her book *The Mushroom at the End of the World* (2015), and pushed to imagine anthropological research as more radical than I had ever known it to be before, I found myself experiencing my own world with a renewed interest. Every animal around me became a subject for my budding anthropological inquiries; each plant was situated as an agent in the creation of my life. Most significantly, I began to notice fungi everywhere. Whether they were ancient bracket fungi in national parks or tiny bonnets that emerged from the soil beneath my pot plants, fungi had become a site of total fascination for me. I found myself seeking out every opportunity to learn more about their mysterious ways, even going so far as to grow them in my flat. I had what Tsing had identified in her book as 'mushroom fever': an insatiable appetite for the company of any and all fungi, and an urgent desire to understand as much as possible about them.

At the conclusion of my honours year, I had begun to dabble in multispecies ethnographic literature and found it to be a site where so many of my interests in and outside of my academic life converged. Multispecies ethnography is an approach to research which aims to displace the dominant narrative of what Donna Haraway refers to as "human exceptionalism", or the unquestioned assumption that humans are the sole proprietors of what we may think of as 'culture' and 'society' (2008, 24). This exceptionalism has resulted not in the total exclusion of nonhumans from social research but in the erasure of nonhumans as architects of our shared world (Tsing 2015, 162). Multispecies research has emerged in response to these conditions with the primary focus of disrupting human dominance both in social research, and through social research.

While the emergence of multispecies research broadly reflects a growing movement away from human exceptionalism in the humanities, multispecies *ethnography* represents a particular moment in the development of anthropology. As indicated above, multispecies ethnographic work is often more of a collision site of multiple disciplines than it is a singular research process. With this in mind, I will now outline three key facets of multispecies ethnography within which this particular thesis is located: The anthropological origins of multispecies ethnography; the methodological techniques of multispecies ethnography; and the ethnographic writing style employed by multispecies anthropologists. Doing so will not only demonstrate how the diversity of multispecies ethnographies is made possible, but will also contextualise the research that follows.

History of Multispecies Ethnography

Untangling a linear history of the emergence of multispecies ethnography in anthropology is like trying to untangle a cobweb. Its emergence is entangled in its influences, and as such there is no specific starting point at which ethnographies with/about nonhumans became 'multispecies'. As Tsing notes in *The Mushroom at the End of the World* (2015, 162) the term 'multispecies' encompasses a range of literature that disrupts the idea of humans' natural dominance, but is not a 'thing' in and of itself. As such, multispecies theories offer researchers an original way of imagining the (re)production of culture and society as a "more than human" project (Smart 2014, 3). With this in mind, it is possible to locate multispecies ethnography at the intersection of three key interventions in anthropology: actor-network theory; the ontological turn; and posthumanism.

Developed in the late 1970s in Paris and coined by Michel Callon (Law 2007, 3), actor-network theory (henceforth referred to as ANT) is not so much a 'theory' in the conventional sense, but more of a theoretical and methodological orientation away from research conventions which direct authors toward claims and conclusions (Law 2007, 2). Situated within the broader tradition of 'material semiotics' (in which Donna Haraway's work is also positioned), ANT premises that everything in the 'social' and 'natural' worlds is an "effect" of the networks of interactions within which they are situated, meaning that everything is the product of its relation to others within these networks (Law 2007, 1).

Among the key developments of ANT is the destabilizing of the concept of agency. Anthropological conceptions of 'agency' were formerly (and often continue to be) informed by Bourdieu's 'practice theory' (1977), in which it is claimed that human subjects respond to sociostructural formations and in turn reproduce or alter the conditions of their worlds. Social theorist Sherry Ortner extends Bourdieu's theory of 'agency' to posit that agents are not totally free, but are bound by dynamics of power which work in favour of or against the subject's agentic actions (2006). In reaction to this position, ANT's focus on relationality claims 'agency' not to relate to the outcome of human subjects interacting with structures of power, but to networks of human, nonhuman, and nonliving things of which the 'social' and 'natural' worlds are products (Law 2007). The key principles of ANT that pertain to multispecies ethnography are a) 'agency' is not a concept that applies exclusively to human, or sentient beings (Beetz 2016, 110), b) everything that exists is the result of the relational networks of agents or 'actants' (Law 2007, 2), and c) empirical studies and practices are paramount if the 'actants' and their relations to one another are to be understood (Law 2007, 1). These principles are essential in the historical development of multispecies ethnography. The works of ANT and material semiotics theorists such as Michel Callon (1984), Bruno Latour (2002), John Law (1999) and John Hassard (2004), Donna Haraway (2015), and Annemarie Mol (1999) have inspired attention to the materiality of

assemblages of actors in multispecies ethnography. For multispecies theorists broadly, ANT and material-semiotic developments of the concept of 'agency' allowed for the influence of nonhumans in cultivating the conditions of our world to become a focal point for research. For multispecies ethnographers specifically, ANT offers a methodological and conceptual framework for mapping the assemblages of multiple species (including humans) through ethnographic writing.

The second intervention in anthropological theory that pertains to the formulation of multispecies ethnography is 'the ontological turn'. Positioned in opposition to both interpretive anthropology (led by Clifford Geertz' work on semiotics (1973) and cognitive anthropology (concerned with interpreting culture as universal) (Palecek and Risjord 2012, 5), the 'ontological turn' contended the existence of a single reality and the notion that social conventions emerge as a result. According to theorists in the field, realities and social conventions are mutually formative: social conventions allow for the creation of specific realities, which in turn provide the context for new social conventions. (Holbraad, Pederson, Viveiros de Castro 2014). For multispecies theorists, the 'ontological turn' represents a critical moment in the development of social theory in which that which was once seen to exist 'outside' of the human, for example nature, could no longer be understood as distinctly constituted from that which was considered to be 'inside', such as culture. As such, the 'ontological turn' takes seriously the possibility of a shared subjectivity between multiple species. Multispecies ethnography has been influenced by the theorists leading the 'ontological turn' such as Eduardo Kohn (2013), Viveiros De Castro (2015), Marilyn Strathern (1991), and Martin Holbraad (2009), whose work aims to subvert claims that a universally salient experience of the world is possible through objects onto which we project experience. Multispecies ethnography scholars empathise with the proposal of ontological turn theorists that ontology, as well as epistemology, is a culturally specific and produced through networks of diverse agents, both our worldviews and our worlds themselves are heterogeneous.

The final primary theoretical intervention in the development of multispecies theory is 'posthumanism'. Though this label is now often rejected by theorists due to its now multifaceted agenda, the posthumanist turn was fundamental in developing an anthropology of nonhumans (Gane 2006, 140). One facet of posthumanism that influences multispecies ethnography is that of dominance, specifically the dominance of humans over nonhuman and non-living things (Braidotti 2016, 15; Tsing 2012, 144). With roots that lead back to critical race theory, feminist theory, environmental justice, and class politics, posthumanism is also affiliated with research that takes a deliberately political stance against claims of 'natural' authority, or authority that is granted to human *by* humans on the premise of a perceived superiority to other living and non-living things (Braidotti 2016, 15). The implications of this perceived superiority has been essential in developing posthumanist critiques of humans' right to exploit, harm, or destroy the planet (Evans 2015, 377).

Contemporary posthumanism has become orientated toward questions of the technological futures and the place of humans within these (Ferrando 2013, 28), utopic imaginings of posthuman destinies (2013, 28), and the ethics of engaging with nonhumans (2013, 30). For multispecies ethnographers, posthumanist theory serves as a crucial launching point from which to develop the positionality of researchers, the ethics of engaging with nonhumans, the politics of research production, and the possibilities of posthuman futures.

It is important to note at this stage that the history of multispecies ethnography is far more multifaceted than the three key interventions addressed above. However, for the purpose of establishing multispecies ethnography as a theoretical and methodological standpoint for this thesis, the foundations of ANT, the ontological turn, and posthumanism offer enough context with which to move forward in developing the approach employed in my own research. I turn now to the field methods associated with multispecies ethnography.

Multispecies Methodology

For multispecies ethnographers, many traditional anthropological methods continue to be employed in the field. In part this is due to the inclusion of humans in multispecies research, allowing researchers to continue with conventional anthropological field methods, particularly in conversation with human participants (Ogden, Hall, and Tanita 2013, 6). However, with the development of multispecies theory also came an evolution of ethnographic fieldwork as inclusive of nonhumans. Participant observation in multispecies ethnography differs from traditional participant observation in that nonhuman participants are not able to indicate their position through language. What this has entailed is an incorporation of sensory ethnographic practices into participant observation in order to come closer to an understanding of nonhuman subjects (van Dooren, Kirksey, and Munster 2016, 6). Sensory ethnographic techniques such as attentiveness to sounds, smells, temperatures, colours, tastes, and textures become essential in developing understandings of nonhumans (Hamilton and Taylor 2017, 111-128). Beyond prompting a sensory attunement to the field however, sensory ethnographic writing techniques also allow the researcher to reflect on their own subjectivity in relation to those they study. As such, sensory ethnography has become a notable facet of multispecies writing. In the section that follows, I will outline contemporary multispecies ethnographic writing practices, and elaborate on the possibilities of incorporating the results of sensory ethnography into anthropological writing about nonhumans.

Multispecies Ethnographic Writing

While the context for the emergence of multispecies ethnography has allowed for a flourishing of works not only about nonhuman subjects but about the ethics and politics of engaging with nonhumans to produce ethnographic research, relatively little attention has been given in existing

literature to the other key aspect of this rapidly evolving tradition: ethnography. In this section I will address the use of ethnographic writing for producing multispecies work, with particular attention to the thematic possibilities that are made available to researchers when they engage in multispecies research.

Perhaps due to its relatively recent emergence, or perhaps the flexibility of anthropology's written practice, multispecies ethnographic works have only just scratched the surface of the potentials of ethnographic writing in producing literature about nonhumans. While critical reflections on ethnographic writing abound in anthropology broadly, few multispecies texts have been devoted to calling into question the salience of ethnography in making sense of the multifaceted outcomes of working with nonhumans.

Although not a direct exploration of an emerging multispecies ethnographic style, Tsing plays with linguistic forms in her piece 'Strathern beyond the human: Testimony of a Spore' (2014), opening up the binary of fiction and nonfiction writing in order to engage in a Strathernian analysis of 'nature'. Throughout the piece Tsing balances critical analysis with a first person narrative told from the perspective of a spore, using a Strathernian strategy of "reification for the work of comparison" to illustrate how multispecies writing enables a particular understanding of nonhuman subjects agency and actions (Tsing 2014, 223). Though her piece strikes a deft balance between theoretical interrogation and playful narrative, her aim is to conjure a narrative of "a fungal spore as an ethnographic subject" (2014, 223), using the spore as "a device" for both narrative construction and reflection on Strathern's "cultural analogies" (2014, 224). Tsing's piece is an outlier among multispecies works in its effort to explore what multispecies writing can look like. And indeed, it could be argued that everyone who writes a multispecies ethnography is exploring this newly emerging form. However, even Tsing's playful mash-up of fiction and analysis ultimately returns to a conventional anthropological critique of the applicability of a particular way of theorising the subject of her piece, rather than the subject itself or her relationship to it. Yet Tsing is not the only theorist who tends to return to such critiques. The orientation of multispecies ethnographies toward pre-existing anthropological claims, themes, or conclusions is a unifying trait regardless of the actual subject in focus.

It is at this point where we must call into question not only what multispecies research is able to claim about human/nonhuman relations, but also the limits of what constitutes an *anthropological* multispecies account. As claimed by Tsing in the quote that opened this section, the stories that are told in multispecies ethnographic works are largely determined by the subject or "unit" of our inquiry, and the subjects or "units" upon which we focus tend to align with the way we perceive our stories unfolding (2015, 162). In this respect, it is not only the subjects themselves that inspire our

ethnographic works, but also our very foundational imaginings of what stories are *possible* to tell are linked back to how we situate the subjects of our inquiries within the anthropological cannon. This helps to explain why it is that so many multispecies texts tend not to exclusively speak to the researcher and the researched, but also to the context in which the particular subjects came to matter to the researcher in the first place.

Let us take Tsing's seminal text as an example. *The Mushroom at the End of the World* (2015) is one of the most highly regarded contemporary anthropological texts, and brought multispecies research into the focus of anthropologists the world over. The text not only aims to introduce readers to the Matsutake mushroom, but also to tell a story of the global capitalist economy that we as readers may not have considered. In doing so, Tsing is able to both offer up the complexities of our modern economy in a clear linear narrative, while also demonstrating how individual species create their life worlds within this. The story that we read is that of the Matsutake mushroom *as it exists within global capitalism*. For Tsing, the Matsutake mushroom comes into being as a result of its engagement in the reproduction of a global capitalist economy, and in turn needs to be interpreted as an agent in its maintenance and potential future. The Matsutake itself cannot be removed from the ethnographic context in which it exists, because the story Tsing wants to tell is one of the Matsutake mushroom that lives and dies within global capitalism.

Tsing's book is perhaps the most iconic of contemporary multispecies texts for the very reason that she is able to render Matsutake mushrooms as agents within a wider assemblage, as well as assemblages themselves. The story that Tsing aims to tell is one that illustrates what this 'assemblage within an assemblage' looks like in the field, and what it implies about our future. And while each author seeks to tell a different story, the model that Tsing follows is not uncommon in multispecies ethnographic texts. It seems that despite the subject or "unit" of multispecies inquiries, the majority of multispecies texts tend to return to themes, concepts, and foci that have long existed in the anthropological and ethnographic cannon. In Tsing's case, it is a cartography of capitalism. For others like Matei Candea (2010) and his meerkats it is detachment, or for Eva Hayward (2012) and her jellyfish it is perception. Each text serves to render an understanding of the species at hand using anthropological themes and foci to drive the story that is told. While this can be a strength of multispecies writing in offering an anthropological context for the species about which ethnographies are written, alternative stories of the nonhuman subjects with which we work that draw on their tangible life worlds and our emotional, physical, and affective relationship to them remain untold. This appears to be one of the key limitations of multispecies ethnography as we know it: that in deciding on the story we want to tell before we initiate our encounters with other species, we are already

relying on pre-existing anthropological and ethnographic stories to guide us through our work with nonhumans to whom those stories are alien.

What happens if we take Anna Tsing's assessment of multispecies ethnography as a prompt? Is it possible to imagine new stories through our engagements with nonhumans, rather than reimagine those that already exist in anthropology through a multispecies lens? It appears that multispecies ethnography as a body of work is as much an assemblage of converging disciplines and styles as it is a research tradition in its own right. Given the radical developments in *theory* that led to the emergence of multispecies ethnography, I propose that attending to the 'ethnographic' facet of the discipline (namely what we write and how we write it) may hold exciting possibilities for future research in the area. What potentials lie within the grasp of multispecies researchers when we extend the possibilities of our stories through our ethnographic writing? Can multispecies ethnography's status as a site of convergence –as the result of assemblages and as a discipline founded on engagement and detachment– hold the key to extending multispecies renderings of nonhumans beyond conventional anthropological themes? In the following section, I will propose that incorporating new nature writing techniques into multispecies ethnographic research can allow for stories of nonhumans to emerge that engage with both the species and the researcher, and extend the reach of multispecies ethnography beyond the familiar conventions of anthropology.

New nature writing

"The Peregrine is not a book about watching a falcon but a book about becoming a falcon."
(Macfarlane n.d., 34)

During the first year of my undergraduate study, my brother lent me a book to introduce me to 'observation' as a research method. It was not your typical social science text, and did little to explain the fundamental principles of sociological or anthropological observation to the reader. In fact, it was completely removed from the discipline. The text was J. A. Baker's *The Peregrine* (1967), and was the first piece of nature writing I ever read. Baker, an amateur naturalist and ornithologist, spent ten years observing peregrine hawks in the plains of east England and recording his observations in spectacular detail. Unencumbered by disciplinary obligations, Baker's writing offered an evocative year-long account of the life of a single peregrine hawk. In it Baker details the peregrine's hunting strategies, its reclusive character, its navigation of the seasons, its attempts at mating. The book is small, only 191 pages, but within these Baker portrays the peregrine with the brutal, poetic grandeur of Thomas Hardy and the keen observation of a seasoned scientist. He aims not to explain the significance of the peregrine hawk, but simply to imply it through the sheer majesty of its existence. Beyond this however, Baker details his own metamorphosis as a result of his relentless pursuit of the illusive birds. For ten years, Baker found himself not only tracking the bird with disciplined accuracy, but embodying

the experience of the peregrines in order to attune his instincts to them. In order to successfully understand the birds and witness their lives, Baker had to 'become' a peregrine. As a young reader, I found Baker's writing soaring and absorbing. The story of his own transformation was inseparable from the rendering of the peregrines themselves that he was able to offer to readers. The book gave me an appreciation for the species that I had never expected, and though it appeared to be as much about Baker's experience as it was about the birds themselves, I am yet to read a text from any other discipline that gives such a provocative and holistic account of a nonhuman species. Upon returning to Baker's work in search of inspiration for making sense of my own research with fungi, I saw my own experience refracted through Baker's prose. The transformation I had undergone in the short days I was able to spend with the fungi in and around Moana was drastic, visceral, physical, and brought out an attunement to fungi that I felt was simultaneously inherent to my humanity, and completely alien. I wanted to tell the story of the fungi I encountered in the field, taking readers beyond contextual anthropological themes and instead leading them into the extraordinary world of my experience with the fungi, and the transformation that I experienced as a result of their presence. In order for my ethnographic writing to do so, I began to immerse myself in the literary works of contemporary new nature writers for all of whom Baker continues to be an inspiration.

History of new nature writing

Until recently, nature writing and ethnographic anthropological scholarship emerged from two different realms of academic and public writing. *The Peregrine* was written in 1967, and so though it does not itself classify as a 'new' nature text, it is one of many key pieces of literature that inform the contemporary discipline of new nature writing. What could be described as 'classic' nature writing emerged from the debris of the Second World War in Britain, and served not only to recollect a landscape ravaged by industry and destruction, but to call to attention the extent to which attitudes toward 'nature' and relations between humans and nonhumans had evolved over the preceding century. Though many of these texts are now considered to be "nostalgic for a Britain that never was" (Hampton 2012, 454), nature writing in twentieth century Britain gave voice to burgeoning anxieties for the future of the nonhuman and nonanimal species in a landscape that was, at the time, merely at the precipice of the intensification and exploitation that occurred over the following decades. These anxieties continue to emerge through 'new' nature writing, which comprises of a broad body of literature about relationships between humans and nonhumans. Though the exact point at which nature writing became *new* nature writing is indeterminate, the turn of the millennia heralded an enormous surge in both publication and public interest in new nature writing. Contemporary British new nature writing now exists not only as a body of reflexive accounts of interactions between humans, nonhuman species, and landscapes, but also as a body of academic literature which

intertwines social theory with conventions drawn from ‘classic’ nature writing. As arguably the most prominent new nature writing of our age, Robert Macfarlane claims, ‘One might as reasonably expect to meet the geographer Doreen Massey or the philosopher Gilles Deleuze in its pages as Gilbert White or the bar-tailed godwit’ (Macfarlane 2015, 35).

Contemporary new nature writing

Despite the divergent histories of multispecies ethnography and new nature, the similarities that have evolved over the past thirty years between the two disciplines hold great potential for collaboration. This is not purely the result of aspiring to the shared goal of working with nonhuman species, but is also a result of the shared political position of both disciplines. Both share an urgent concern for the wellbeing and endurance of the species with which they work, and seek to empower deliberate systemic change in the global politics of human interaction with nature. Thus, new nature writing’s potential value for multispecies ethnography has only been enhanced in recent years. Its compatibility with multispecies ethnography exists within its methodological practices of observation and reflection, and its written style as thickly descriptive. Like multispecies ethnography, new nature writing positions the experience of the author as a site requiring rich description not only in the form of detailed accurate observation, but through the careful selection of language which will evoke, rather than lay bare, the essential aspects of the experience. Alongside this, new nature writers take amateur observations as sources of knowledge and understanding. No new nature writer is an expert when they begin their journey, and the texts are a linear attempt to demonstrate how their experience with the species or spaces that they encountered enriched their understanding of their place within the world, and role of nonhumans in creating it. Regardless of their distinctive origins the overlaps between new nature writing and multispecies ethnography are considerable. In fact, the extent to which the traditions overlap is almost uncanny so much so that I initially struggled to determine what it was that made the two disciplines distinct. Returning to Tsing and Macfarlane, the distinctions between new nature and multispecies texts became more apparent.

Where new nature writing departs most significantly from multispecies ethnography is in the stories that it seeks to tell. In the same way that Tsing’s book is not about watching a mushroom, Baker’s is (according to Macfarlane) “not a book about watching a falcon” (n.d., 34). However, whereas Tsing’s book returns to the anthropological cannon to illustrate how Matsutake mushrooms come into being and create the conditions of our global economy and shared world, Baker’s text seeks to bring readers closer to peregrines by both offering an accurate and evocative description of their lives, and weaving his own transformation as a result of his engagements with them throughout the text. The story he seeks to tell is fundamentally different from that which has become canon in multispecies ethnography, but it can also ultimately serve the same goal that multispecies ethnography does: to

displace human exceptionalism. It is this that Baker's text achieves with such brilliance, and this that has inspired new nature writers to engage with social theory not as the foundation of their stories, but as tools to bring readers closer to those species to whom they devote their lives. Drawing upon a distinctive history, method, and writing style, contemporary new nature authors are able to write texts which allow readers to become the species that they are seeking to render, and to witness the stakes of the changing landscape as more than abstractly environmental but as visceral, emotional, and corporeal.

Through new nature writing, readers are able to attain an understanding of the species being written about that currently is not accessible through multispecies works, but which deeply resonates with the fundamental reason for the emergence of multispecies ethnography. By placing emphasis on the subjective experience of the author, and employing dramatic and poetic prose as a stylistic intervention into the rendering of nonhumans with emotional and affective as well as literal accuracy, new nature writing techniques offer multispecies ethnographers an alternative way to imagine their subjects, and thus the works that may emerge from their interactions.

Positioning my thesis

After a month or so of coming to terms with my time in the field, I was faced with the prospect of writing my thesis. I had felt that, during my time with fungi and those who are most enthusiastic about them, I had come to an understanding that was neither grounded in scientific epistemology or anthropological discourse. My experience was visceral, and at my desk in my office, I would often drift back to the sheeting rainy forests and recall the smell of rotting, warm earth and thousands of hungry fungi. The sensory aspects of my field research were paramount in my understanding of what fungi are, and my subjective experience of the fungal world that I glimpsed for only five days had impressed upon me the importance of rendering a distinctly personal image of fungi in my thesis. It was at this stage that *my* story of fungi in Aotearoa began to take shape, prompted by both multispecies ethnographic and new nature writing traditions. Drawing on the work of both Anna Tsing and Robert Macfarlane, I devised the following research question:

Can I tell a story of mushrooms, and the assemblages that bring them into being and meaning that draws on my experience of transformation with the species by employing a new nature writing style?

In the section that follows, I will detail the methods that I employed during my time with the fungi on the West Coast. Following this, I will elaborate on the theoretical frameworks that will be employed throughout this thesis in order to come closer to an understanding of fungi rooted in my own experience.

Methodology

My time in Moana was a rich and complex experience as daunting as it was invigorating. I employed a wide variety of multispecies and traditional ethnographic techniques during my time at the foray. Observation in the field became a primary research technique, as our foraging excursions in the surrounding native bush were done in near silence and with the distinct purpose of finding a diversity of fungi to collect for identification. I relied heavily on photography during my fieldwork, amassing over 500 photos over the five days along with 17 hand drawn illustrations of various settings, species of fungi, and human participants. I kept a detailed field journal, which I took with me on our foraging excursions, as well as a reflective diary in which I wrote at the end of each day. I recorded thoughts and comments on a Dictaphone to listen back to in the following months, capturing snippets of information that, in the moment of recording, were the most important things to remember. I conducted four semi-structured one-on-one interviews with separate participants and one group interview with four participants (all human) during the foray, as well as two one-on-one interviews following the foray with attendees now living in the Wellington region ¹. I collected fungi in the bush, and identified them (with varying success) back at the makeshift laboratory in the Moana town hall among the other foray attendees. I took spore samples, learned how to use a microscope to measure and catalogue spore shape, learned two different methods of mushroom cultivation, and attended a conference day in which 17 presenters, myself included, shared the knowledge that we had cultivated about fungi and learned of new research developments in the field of mycology, microbiology, conservation and now, anthropology.

The employment of such a broad range of methods in my field research had given me a breadth of information and ideas that I struggled to form into a cohesive whole. I turned back to *The Mushroom at the End of the World* to see what kind of framework Tsing employed to make sense of her experience. In this text, Tsing coins the term ‘polyphonic assemblage’ to illustrate the complex agency of fungi within capitalism (2015, 23). Referencing the harmonic alignment of independent melodies to form a chord in music, Tsing illustrates that when distinct life trajectories or ‘melodies’ within the ecology of capitalism align, they form a ‘polyphonic assemblage’ which allows certain events to take place, certain objects or things to be given meaning, or certain relations between species to form. When the ‘chord’ has ended, the melodic lives of the individual agents continue on their trajectories until the next ‘chord’, or assemblage, is formed. This framework allows Tsing to demonstrate how many agentic trajectories converge by virtue of the existence and characteristics of the Matsutake mushroom.

¹Ethics consent recieved 09/04/2018, reference: 0000025983.

Tsing's framework offered me a way to understand how a variety of forces and agents were able to bring the fungi in the field into significance upon my interaction with them, and unravel how their 'melodies' were able to converge with those of the fungi. However, the understanding of the fungi that I was able to bring into focus tended to revolve not around my own experience, the transformation I encountered in the field, or the character of the fungi that I encountered, but instead always led me back to themes that multispecies ethnographers have already grappled with through their anthropological research. I found myself questioning the use of the term 'native species', or tracing the origins of landscape surveying to Crown imperialism, or positioning the work of Manaaki Whenua within a broader project of conservation under neoliberalism. Multispecies ethnography had given me the tools to complete my fieldwork and situate my experience within a network of agents through which the fungi came to matter. However it soon became apparent that if I was going to tell the story of fungi that I felt I had experienced, I would need to look outside of multispecies ethnography for guidance to do so.

I should remark at this point that this revelation was not an attempt to discredit multispecies ethnography or undermine its scope. After all, the discipline is so recently emerging and rapidly developing that it would be unreasonable to expect that the possibilities of multispecies work had already reached their limit. And to a certain extent, multispecies ethnographers have a remarkable understanding of the species that they work with in order to genuinely make sense of the context of their life worlds within anthropology. Regardless, I could not help but feel somewhat betrayed. After all, here was a facet of anthropological inquiry that was cognisant of anthropology's historical political function, that was driven by an urgent concern for the future of nonhuman species in a destructive global system, and that sought to disrupt the hierarchy of humans and nonhumans within the social sciences. And yet, at its core, multispecies ethnography seemed to be using nonhuman species not to understand them, but to better pre-existing conversations in our discipline. In order to step away from conventional anthropological concepts and themes as the inevitable trajectory of my thesis, I turned to a framework not dissimilar to Tsing's 'polyphonic assemblages', but which seemed to open up the possibilities of positioning my lived experience as an inherent source of understanding of my encounters with the fungi. Drawing from Charis Thompson's work on 'ontological choreography', I began to develop a theoretical framework which would allow me to understand my experience with and relationship to the fungi in the field, and use this to bring myself closer to an understanding of the fungi themselves.

Theoretical Framework: Ontological choreography

Charis Thompson's ethnography *Making Parents* introduces the framework of 'ontological choreography' in order to account for the interplay of multiple 'ontological orders' in creating the

means by which parents can become parents. Conducting her ethnographic research in Assisted Reproductive Technology (ART) clinics in the United States, Thompson employs analysis from science and technology studies, feminist theory, and anthropology to demonstrate the interplay between “technical, scientific, kinship, gender, emotional, legal, political, financial, and other matters” (2005, 8) that takes place in the process of ‘making parents’ through ART interventions. Thompson’s framework of ‘ontological choreography’ describes ‘the deftly balanced coming together of things that are generally considered parts of different ontological orders (part of nature, part of the self, part of society)’ (2005, 8).

For the purpose of this thesis, I am applying Thompson’s framework in a more malleable way than is currently done in her work. For me, one of the key distinctions between Tsing’s ‘polyphonic assemblages’ and Thompson’s ‘ontological choreography’ is the subject, concept, or ‘unit’ that is considered. While both frameworks allow similar ways to understand the multitude of forces that come into play to bring a thing or a moment into being and significance, they do so in different ways. Tsing’s ‘polyphonic assemblages’ can be applied to understand the moment itself, the significance of an encounter, and the ripples of repercussions that the coming together of agents and forces has across the network that allows for the moment to occur. Thompson’s ‘ontological choreography’ on the other hand seems to be more angled toward the techniques themselves that allow for the moments to unfurl. Thompson’s framework acknowledges spontaneity, mutual dependence, and affect, and evokes an image of the world in the constant process of coming into being. Rather than focusing on the outcome of interactions between actors, “ontological choreography” seeks to understand the agency of the actors themselves and in turn how these actors create the conditions of our world (2005, 9). It is this aspect of Thompson’s framework that I find most provocative, and believe holds potential in situating my own experience without eliding the nuances and details of the moments themselves.

In the chapters that follow, I will be applying Thompson’s concept of ‘ontological choreography’ to understand two forms of ontological interplay. The first is that between ‘knowledge’ and ‘experience’. Throughout the thesis, I will attend to the relationship between these two orders in the minute details of my interactions with fungi, and will follow each evocation by exploring how the interplay between ‘knowledge’ and ‘experience’ allowed for, inhibited, or redirected the transformative capacities of the fungi I encountered. Secondly, I will be addressing the relationship between ‘love’ and ‘detachment’ in learning about and living with fungi. Thompson’s framework will be applied in this instance to an understanding of how a fungal life cycle serves to manage the relations that humans develop with fungi, and this will lead me to reflect back on the place of ‘knowledge’ and ‘experience’ in this interplay. This life cycle will be referred to as a fungi’s ‘technical agency’: the physical and physiological

mechanisms that enable a fungus to live and die, which exist regardless of our discursive engagements with them. These physical and physiological aspects of fungal life are referred to as the ‘technical agency’ of the fungi, to signify that it is these that enable particular ontological assemblages to emerge. As will become apparent throughout, the emphasis of this exploration is not on the repercussions of what we encounter in the field, but on the encounters themselves. In doing this, I hope to offer an account of fungi that shows their capacity not only to transform the ontological landscapes in which we live, but also ourselves.

Conclusion

In the thesis that follows, I will be attending to my own experience of interacting with fungi in the native forests, scrub land, and make-shift laboratories of the West Coast of Aotearoa. The purpose of doing so is twofold: first, to give an account of fungi and my experience with fungi which does justice to their capacity to transform both the environments they occupy and the subjects who interact with them; and second, to continue the legacy of multispecies ethnography in disrupting human exceptionalism by attending to the minutiae of my experiences with fungi, integrating new nature writing into the ethnography in order to prioritise the fungi as the central focus of my story.

Throughout the course of this thesis I will employ two strategies to document my experience and contextualise it within my evolving understanding of the fungi themselves: using a new nature writing style, I will attempt to get closer to an exploratory account of the transformation of fungus and human itself through five thickly descriptive vignettes that are based on five days spent in the native forests of the West Coast of Aotearoa, working with Maanaki Whenua to document the fungal diversity of the region. Each vignette is inspired by a different cornerstone text in contemporary new nature writing.

The first vignette and opening of this thesis is inspired by Helen MacDonald’s acclaimed text *‘H is for Hawk’* (2014), which documents the emotional upheaval and process of healing that MacDonald experiences when training a goshawk shortly after the passing of her father. This text was selected to guide my first vignette because of its focus on emotional transformation as a meaningful way of finding both common ground with, and distance from, nonhuman species. The second vignette takes place at the hiking trails of the historic Arthur’s Pass, and is inspired by Richard Fortey’s *‘The Wood For The Trees’* (2016). Fortey’s book draws on historical documents, artistic renderings, poems, stories, and scientific accounts of a small area of woodland which was bought collectively by members of his community to protect it from redevelopment. This text inspired my reflection on the history of multispecies encounters in Arthur’s Pass, and the sense of communion I experienced with the fungi as proprietors of the multispecies culture of the forest. The third vignette occurs on the day of the FUNNZ conference, and is thus inspired by Oliver Rackham’s *‘Woodlands’* (2015) which gives a thorough and

indispensable multidisciplinary history of British woodlands and their contemporary significance in the shared imagination of the British people. Rackham gives readers a foundational understanding of how British woodlands have evolved in relation to the species that have constituted them over time, in which humans are one of many. My vignette is inspired specifically by the first chapter, 'The Constant Spring' (2015, 15) and draws on Rackham's style of evoking an accurate illustration of woodlands using historical, scientific, and linguistic discourse while remaining cognisant of alternative (but no less accurate) renderings. The fourth vignette brings us back to the forests at the Pororari River Track, and uses Dave Goulson's '*A Sting in the Tail*' (2013) as a way to focus in on the personal effects and affects of working with a single species. Goulson's book is a story of the love, frustration, determination, and hope required to carefully engage with a species at risk of extinction. In telling this story, Goulson captures the nuances of his personal relationship to the species at hand, and the effect this has on his understanding of their significance and status. I use Goulson's work to explore my response to a single species of mushroom, the *entoloma hochstetteri*, and evoke the complexities of my emotional transformation with the fungi throughout my fieldwork. In my final vignette, I draw on Roger Deakin's '*Waterlog*' (1999) to allude to themes of sensitivity, attunement, and writing my experiences into the space that I occupy on the last day of my fieldwork. Deakin's celebrated work speaks to the transformative capacities of multispecies spaces and 'habitats' with specific regard to sensory and emotional attunement. This final vignette speaks to the upheaval of my subjectivity that is detailed in prior vignettes, and takes pause to consider what the prospect of reconciliation feels like after such an experience.

In using carefully selected new nature texts to guide each of my vignettes, I hope to enrich a growing body of multispecies literature that emphasises the personal affects of encounter that researchers must confront when working with nonhuman species. The purpose of the vignettes is thus not to give context to further analysis, but to foreground the fungi that I encountered and my experiences with them.

Following each vignette is a critical reflection that aims to untangle the implications of the transformations themselves for myself as a researcher, the fungi that were involved, the emergent potentials of multispecies work that are made possible both through the interactions, and the process of documenting them in a new nature writing style. I begin my reflections by introducing the work of Charis Thompson. Though not a multispecies ethnographer, Thompson's framework of 'ontological choreography' (2005, 8) allows not only for the tracing of 'how a multitude of organisms' livelihoods shape and are shaped by political, economic, and cultural forces' (Kirksey 2010, 545) as is currently given providence in multispecies works, but also for a rendering of fungi to be brought to the fore that emphasises the personal, existential, and corporeal transformations that I experienced with fungi. I

follow this reflection by addressing the interplay between ‘knowledge’ and ‘experience’ in generating of understandings of fungi, with particular attention to the kinds of understandings that are given purchase at the foray. The fourth reflection addresses how the experience of the individual in the field enters into these understandings, and employs Evelyn Fox Keller’s concept of ‘dynamic objectivity’ and love (1995) alongside Matei Candea’s concept of ‘detachment’ (2010) to explore how affective and emotional transformations that occur upon fungal encounters contribute to distinctive understandings of fungi. Finally, I return to Robert Macfarlane and J. A. Baker to reflect on what new nature writing has allowed this thesis to do, what is at stake in introducing this literary style into multispecies ethnography, and what possibilities are opened by telling a different story of fungi.

As a cohesive whole, this thesis proposes that multispecies ethnography does not currently tell stories of nonhumans that demonstrate the profound impact that the species with which we work have on us as researchers. In turn I suggest that by employing new nature writing techniques alongside multispecies ethnographic research, anthropologists may be able to gain a closer understanding of what a species is, what it does and has the capacity to do, and what it means to us to become immersed in their lives. Further, I contend that Thompson’s framework of ontological choreography can be applied to the interplay between knowledge and experience, and love and detachment, to better understand the psychological, corporeal, and emotional transformations that occur between the researcher and the researched. By making visible the threads and pockets, the connections and departures, and the realities and abstractions of working with fungi, I hope to bring a new story into the catalogue of multispecies ethnographies and new nature texts which pulls readers into the murky understory of a life briefly lived with fungi. But for now we return to the soaked autumn air of the West Coast, the sound of rain on a forest canopy, and the smell of a landscape alive and boiling with the activity of fungi.

Tuesday 8th May 2018.

"Identifying mushrooms uses all the senses, other than hearing – although if I am completely truthful, I should admit that some fungi do actually speak to me." (Fortey 2016, 159)

December 1863. Steady rain falls through the dark night, bouncing off of the abandoned whare roof and running in a steady waterfall onto the forest scrub below. In the Arnold Valley northeast of Moana two men lie on either side of a low fire. The first man, Terapuhi, is one of the most revered chiefs of the West Coast. The other, Arthur Dudley Dobson, is a British surveyor employed by the Crown to explore and document the rough landscape of the Southern Alps and adjacent coastline. Dobson arrived in Nelson harbour thirteen years prior after completing his education in engineering and surveying in Nottingham, England. Under the apprenticeship of his father he is paid by the Crown to survey the West Coast region, and has since employed Terapuhi as his guide. The two men are alone, waiting for the storm to pass before continuing their survey of the valley.

The rain in the valley falls straight and heavy in a stream undisturbed by wind or thunder. Both men, having finished their tea, lie under woollen blankets in flannel pyjamas, warming their feet and watching the curling flames of their fire slowly lower. Nothing in the long night stirs as the rain covers the valley with an unbroken pattering hum.

The stars rise and the whare begins to cool as the fire dies away, leaving nothing but the smell of damp ash and the faint glow of the embers for the men to find comfort in. "Friend," says Terapuhi, interrupting the silence, "I am afraid. Some evil thing approaches. May I come and lie by you? (1930, 94)" Dobson beckons Terapuhi to his side, whose trembling indicates a serious danger unbeknownst to Dobson himself. Terapuhi explains what he sees thus:

"Tae-po, the evil spirit, now comes. He comes in the form of a little pig. He often comes like that. He is now putting his snout in between the bundles of raupo, and pushing his head right through, now his body, now he is all in. Cannot you see him? Now he is turning into a little man, now he is coming to the fire-log; alas, we shall perish. Now he stops, now he is sitting on the log warming his feet. It is well he is not looking this way...Now he is looking this way, and warming his hands, now he is getting fainter, now his head is again looking like a little pig, now he is changing all over, now he is the pig again, now he is squeezing between the raupo and going out. He is gone, we are saved... Tae-po does sometimes come like that, and not do any harm, but I told you this is a bad place." (1930, 95)

67 years later in 1930, in an account of his night with Terapuhi in the beech forests of the neighbouring Arnold Valley, Dobson reflects: “I cannot account for this vision of Terapuhi's; it was not a dream, as he was wide awake all the time. Of course I neither saw nor heard anything, but it was a solid reality to Terapuhi, and he considered that we had had a miraculous escape” (1930, 95-96).

* * *

I turn the page of Arthur Dudley Dobson's book, 'The Reminiscences of A. Dudley Dobson, Engineer' (1930), hopeful of finding some explanation of the happenings at Arnold Valley. How could it be that both men could experience the same moment in space and time, and yet live two totally different realities? Is it possible that some kind of ontological plurality allowed for the same event to be understood in two equally plausible ways? To my disappointment however, I find Dobson continuing on his account of the Arnold Valley survey that he and Terapuhi undertook together in 1863 without regard for the events of the previous night. For Dobson it seems there is no 'question' about the possibility of two overlapping ontologies, rather this is the very nature of subjective realities and there need be no further inquiry into how and why this occurred. The mundanity with which Dobson acknowledges Terapuhi's experience as as real as his own is unexpected. As a man trained in the art of rationalizing a landscape through surveying, employed by the Crown to assist in the colonisation of Aotearoa, I had assumed he would be dismissive of any rendering of the world that could not be explained with a Western enlightenment rationality. And yet here in his own words, Dobson was happy to acknowledge a plurality of existing in and understanding a moment in time without question.

I think back to the kahikatea forest yesterday, and the swirling vortex of smells, sounds, textures, patterns, colours, and shapes which plunged me into an entirely new way of interpreting the world around me. I think of Jon and Samwise standing at the picnic table at the lake front engaging in light and charismatic conversation while I turned inward upon myself with trembling hands and a deep set sense of existential turmoil, having emerged from a forest that transformed my perception of reality. I still feel shaken at the prospect that perhaps I am the only one who has witnessed this alternative. Perhaps the existence of a different rendering of the same world came purely down to my own warped psyche? And yet Dobson's biography would lend me to think otherwise. Here was a man whose encounter with a forest occurred over 150 years before mine, and who despite his standing as an agent of the colonial nation of New Zealand on behalf of the British Empire, gave rational testimony to the existence of two different realities occurring at once: an overlapping of ontologies.

Dobson's rendering of his night with Terapuhi gave me hope that perhaps there was more to be understood about the plurality of being in these forests, but my curiosity extended further than what was offered by his account. Something is happening here in these forests, with these fungi. Only time

will give me the chance to live it again, and hopefully bring me closer to understanding how both Dobson and my own experiences are made possible.

I rouse from my vivid daydream as the tyres of the 4x4 hit the gravel of the carpark behind the main village of Arthur's Pass. 153 years ago, Arthur Dudley Dobson and his brother Edward traversed the mountains ahead of me in search of a route through to the West Coast, where gold lay trembling beneath a thin crust of earth. Only one year before, Arthur and Terapuhi had been camped less than 80km away on the other side of the Pass, waiting in the dark night for the rains to clear for their journey ahead.

The rain today is temperamental. The sky is a white-grey, the altitude drawing me closer to the searing bright blanket of swirling fog and cloud that shrouds the peaks of the mountains either side of me. The shingled rises of the mountains seem to groan ever upwards, and as I step out of the car I feel myself shrink in their enormity. I am with a different group of forayers today, all here to represent Manaaki Whenua. I feel somewhat more at ease with the company, eager to relax into the role of naïve student among such experts in the field. Three young women named Shara, Sofia, and Isobel are past interns, invited along as part of a summer research scholarship. Another woman in her 30s called Jasmine and a man in his 40s named Yeonjun are employed by Manaaki Whenua full time, and guide the younger four of us in our second day of foraging.

Despite a fresh sense of comradeship, my deep sleep the night before has not erased the eerie companionship that I have acquired from the fungi we have gathered. As I walk away from the car door I feel a wash of heart pounding awe as I confront once again the gaping jaws of another thick forest. We leave behind the car and our packed lunches and walk across a small patch of grass; a doormat to the forest. Ahead of me, the light is dim. Unlike the warm yellow-greens of slime and thin leaves of the kahikatea forest, the white tree trunks here starkly contrast the emerald green floor and black, sharp canopy.

Today we are foraging among native silver beech. Unlike kahikatea forests, beech forests do not play host to a great variety of plant species. Due to our altitude ice, wind, and humidity combine in this forest, creating an ideal climate for hardy, brittle native shrubs to cluster at the feet of the wiry trees. These natives will never grow into the towering 60 metre giants that kahikateas can become, but instead will spend their whole lives clinging to the rocky mountains, reserving every little bit of energy they can to survive these harsh and seemingly inhospitable conditions. The white, thin trunks of the silver beech are more carefully spaced than deciduous or northern forests, as their thick canopy

discourages the rapid growth of young saplings. Instead, the forest floor is carpeted with thick cushions of milk moss which hide the gnarly contours of the roots beneath. The serrated leaves of the trees are small and dark green, hardy from their upbringing in the hostile conditions of the Pass. I have never seen a forest like this before. I look down to my boots, and watch my right foot as it passes from the familiar, crystal light of the lawn into the shadow of the forest, soaked into the soft mossy floor. I have never *walked* on a forest like this before! My knee doesn't know how to respond to the springy mattress beneath my foot, and I instinctively splay my arms, palms down, to balance myself. I take a few steps forward, looking up ahead of me in alarm to observe the forest ahead. Its silence radiates back at me, the same piercing tone that filled my mind in the forest yesterday. I look back at the light behind me. My eyes have adjusted to the unbroken shadow beneath the trees, and I have to squint to make out the mountains as they interrupt the horizon. The rest of the party has moved ahead, remarking on the beauty of the woodland but otherwise unfazed by its oppressive majesty. It is unquestionably stunning. The colours, the symmetry, the way the trees seem to guide you through and around the forest floor in a waltz. Eyes closed, the moss beneath me feels like a soft carpet. A bed that lulls me into a trance in which I feel the forest before I see it. It is intuitive, and for a brief moment I forget that there is something else here, waiting to be seen, waiting to be touched, and smelt, and brought forth from its mossy bed into our cold hands.

The mossy ground of the silver beech forest is littered with clusters of Little Brown Mushrooms, colloquially known as LBMs. They erupt in various forms from ruptures in the moss, forming bouquet-like assemblages on the forest floor. No matter which direction I look I can see tiny indistinguishable clumps of them, huddled together like a family portrait in the fuzzy undergrowth.

LBMs have earned themselves a reputation in the fungi-enthusiast community for being particularly tricky. Without microscopic interrogation, the hundreds of species that are classified as LBMs are virtually indistinguishable. Foragers the world over are routinely confounded by the similar appearance of most mushrooms that fall into the LBM category, and as such many edible species are avoided completely. At first glance, one may not notice that in fact this mushroom has rust-brown vertical fibres running up its stipe, whereas that mushroom's fibres are more of a terracotta colour, and seem to be running down rather than up the stipe. But, their gills connect to the stipe the same, they are the same tone, their cap is the same diameter, and they appear in the same formations at the same time, on the same substrate. How can this be? Perhaps they actually are the same species. The only way to tell is to identify the exact size and shape of the spores produced by the mushrooms, and even then DNA sampling may be required if the spores appear to be almost identical. The whole ordeal seems like rather a lot of effort for a little brown mushroom. In this forest, they seem to tease us with their similarity. We are after all here to document the fungal diversity of a region. It seems

typical then that the most labour intensive mushroom to identify would suddenly crop up in the most enthusiastic numbers.

In saying this, not every LBM is *completely* identical to the next. There are many shades within the seemingly monotone palette of the subgroup, and in some cases seeing the fungi side by side can be enough to determine them as separate species. This unfortunately is still not enough to begin the process of identification, but is just enough of a launching point for foragers in the field to avoid gathering too many duplicates of the same species. Ahead of me, Shara crouches down in front of a small cluster no larger than the palm of my hand that sits in a cradle formed by the roots of a silver beech. Placing an ID slip beside the cluster, she takes a photograph of the fungi in situ with their newly assigned numerical identification tag. With a sleek pen knife, she cuts away at the surrounding substrate, giving the fungi a generous perimeter so as not to disturb the mycelium keeping the cluster intact. Once she has lifted the small colony from the moss, she places it upright in her hand, gently elevating the cap to look at the gills underneath and turning the fungi as though displaying them to the faint light above. A great deal of time will be spent poring over these specimens later on, so after a brief moment of admiration she carefully shuffles the fungi into a white paper bag, and stows this in the canvas shopping bag that our party has reserved for specimens. She stands up, looking ahead to the other foragers with a smile, before returning her gaze to the mossy floor to attend to the other little gems that stipple the ground.

I observe her with care, eager to mimic her routine by scanning the floor of the forest for any visual indication of fungus to be meticulously collected. After all, the end goal today is not discovery or engagement, rather it is collection: without evidence of its existence, a mushroom may as well not exist. I find it difficult to keep this in mind as I try to focus on what I can see. The forests here wage an assault on the senses, and it seems to counter the very nature of the environment to have such a distinctive goal. I try to divorce my senses from my intention here and instead focus solely on achieving a visual confirmation of a fungus. I keep my eyes down to the ground and frown in concentration. My head feels heavy, but I try not to notice its weight. I need to focus on finding the fungi, but the sounds and smells of the forest seep into me with dizzying effect and I feel once again the panic of giving myself over to the forest. The mundanity of the routine does not help to keep my resistance sharp either. For such a complex organism in such a complex ecology, the approach we take to engaging with them here is remarkable simplified: see a fungi, take a photo, and take the fungi. Over and over again, I repeat the gestures that I have learnt from the forayers. Look down, crouch, stand up. In the repetition of the exercise, it is easy to forget that there is anything *but* fungi in the forest, and it does not take long for my boredom in the task to lull me into a vulnerable curiosity about the fungi at hand.

In an attempt to refresh my senses I stand upright and look around, watching the forayers digging in the ground, moving heads down to the next patch of fungi. Ahead of me, I see a white, porous bracket fungus emerging from a tree trunk. Its mycelium must run throughout the tree, as it has produced multiple fruits which stick out like miniature bookshelves from the tree's bark. Many brackets that make their homes in native forests in New Zealand demonstrate their age like the trees that host them, with visible 'rings' forming with each passing year. The more ripples in the fruit of the fungus, the older the fruit. This fruit is small, no larger than a cabbage moth, and looks as cool as glass. I pull out my mushroom knife and, as if peeling a potato, I hold my knife between the bark of the tree and my thumb to cut loose a sample of the fungi.

As soon as the surface of my knife touches the surface of the tree, my stomach shrinks in disgust at the prospect of slicing into what far away appeared to be a clay model of a life form, but which up close is strikingly alive. I lower my hand slightly to graze the surface of the mushroom protruding from the tree. The texture of these white brackets is closer to that of an ear lobe than any plant I have ever felt. For a fleeting moment I visualise blood spraying out from the tree where I intend to remove the fungus. Resisting the urge to close my eyes, my knife curls through the bracket that the flesh of the fungus has burst from, and the pale young bark beneath gleams stickily as sap rushes out to protect the newly exposed wood. Around the edges of the shaven wound are white specks of severed mycelial strands. And in my hand, the pulsing living form of a soft bracket fungus. I wonder if the mycelium feels pain as my knife slices through each individual tendon that, through an enormous force of energy, compacted its stringy form into a fruit. I follow my usual routine, fumbling with one hand to open the specimen bag. This time however my hand is clammy, and I struggle to separate the leaves. I can feel the fungus watching me from my other hand as my heart pounds with fearful urgency. Finally, I shake the bracket fungus into the bag and quickly roll the top over, squeezing it tight as if enclosing it completely will contain my disturbance. I turn and walk away from the tree while a glistening scab forms over the stinging lesion, angry at myself for slipping once again into the hyper sensory realm of the fungi here. Inside me, a pure white bracket drifts down, plinking as it taps against the brown striped mycena, and Jon's marasmius.

We have been foraging for a little over an hour, and my determination to remain objective has since allowed me some reprieve from the haunting of the fungi. The scope of the forest that we have managed to sweep is small in the context of the Pass, but we have had no shortage of unusual and exciting specimens to preserve our interest. Isobel walks ahead of me, past the closed entrance to The Devil's Punchbowl track and through to another secluded area of forest. She has a light and charming air about her, and as we laugh our way through the forest I feel the anxiety melting off of me. Slowly

our party drips through to this new terrain. The ground in this part of the forest is less mossy, in part due to its relatively sunny position. The exposed roots of the trees somehow seem more hospitable as the colour pallet of this forest moves from dark greens and greys to warm brown. There is a small makeshift shelter set up in a clearing. Logs the thickness of arms have been leant against a central beam supported by two exterior poles, forming a tent of wood. Fern fronds, now dried and curling up into themselves, have been woven between the thick branches to form an insulating blanket. It must have been left by a group of scouts.

We continue our routine, wandering to patches of decaying leaves, ferns, slimes, and shade to catch some mushrooms in the act of existing. The atmosphere in this part of the woods seems warmer, and more inviting. I walk down a small shelf created by a tree's roots, and begin pulling aside the curtains of ferns that offer shade and shelter to this part of the forest floor. I have relaxed into my attention now, happy to be attuning to a less hostile environment. I begin to scour each square metre with a renewed care, employing all of my senses and instincts with a control that I have not yet experienced. Using my fingertips I gently brush over the soft leaves. I am not hoping to disturb the ground. I'm not even trying to brush the leaves aside. My fingertips have eyes of their own, and if I displace my depth of visual focus even slightly, the fine sensations of the forest humus crackle and light up on my hands. I can feel the tiny hairs of miniscule mushroom stipes on the surface of leaves. The different textures of coarse, wet, velvety, papery, dry, gritty, and fragile each communicate a fresh understanding of the forest in front of me. The smell of the earth beneath the dissolving leaves is fruity and fermenting, a heady and thick aroma that I wade through, sharpening my mind's eye to focus only on my fingertips as they glide over the surface of a fern frond, a fallen leaf, a slime mould, a stone, a lichen. My eyes are directed at the ground that I am touching, but I am not looking at it. I am living it, swimming through the array of sensory experiences and noting each one, ordering my attention to make sense of it. I am in a trance once again, the lively earth beneath me pulsing with the mycelium of a million fungi. My instinct directs my hands, my senses stretch and contort, my lungs fill with soupy winter forest air as I haul myself along the miniscule tracks of the undergrowth.

Ahead of me I hear Isobel exclaim. She's obviously found something adorable, because she calls out in a high pitched squeak and giggles. Snapped out of my trance, I meander across the forest to join her. A small cluster of jelly babies stand before her, peeping out of a patch of soft moss. Only an inch or so tall, the tiny fungal fruits lean their caps aside, as though intrigued by our presence. Jelly babies are a curious fungi that defy some of the aesthetic laws that we have come to expect of mushrooms. Their translucent yellow stipes are fairly thick in proportion with the rest of their features, and are speckled with miniscule scales that give them a texture reminiscent of tiny bubble wrap. Their caps sit atop them like pillowy bread rolls assembled in a lopsided flower shape, and radiate a deep, glowing

emerald colour. Rather than having gills on the underside of their caps however, jelly baby spores are produced just beneath the surface of the podgy caps, and are dispersed through fine pores from the top of the cap. As such, jelly babies are technically cup fungi.

Due to their slimy outer membrane and squat stature, Isobel takes out a small paring knife to assist in retrieving a specimen. I jolt slightly at the sight of the shining blade, but she inserts it calmly into the moss at a low angle and with one deft push, she releases them from their substrate. Seeing Isobel lifting them from the ground is like seeing a parent lift their new-born from their cot. The jelly babies exude innocence, and Isobel's gentle demeanour with them seems to be a response to their inquisitive nature. They lie in her hand, radiating bemusement and naive optimism from their brightly coloured, squidgy-looking bodies. We admire them for a moment, complimenting their appearance and character. Before long we return to our foraging routine, but I feel the yellow-green glow of the jelly babies with me as I smile down at the earth, riddled with the possibility of more fungi.

We return to the town hall and begin our identification routine again. Specimens are removed with varying degrees of care from their baggies, but none are so revered as the adorable and remarkably well preserved jelly babies. Isobel treats them with great care, like new-borns helplessly flopping about on their paper blanket as they are passed around those of us seated at the wooden folding table. They are not hard to identify. A quick scan of the introduction to many fungal identification books leaves us with very few options. Isobel explains to me how she uses the books, 'It's like a Goosebumps novel. You choose your own adventure.' This is done by following the list down based on the morphology of the fungus, tracing its physical traits until only a handful of possible genera are left. Then, when we have narrowed our fungus down to a possible selection, we move to the big books to check the specific traits of our specimen against the book's descriptions. Because jelly babies are distinct in that they have no gills, identifying them takes a matter of minutes and is fairly fool hardy which is a great relief to us as our skill in inaccurate mushroom identification is soon becoming infamous among the more attentive and experienced mycologists of our cohort.

We begrudgingly work our way through our specimens, identifying what we can and roping experts in wherever possible to assist us. I am delaying identifying the white bracket fungi I have collected. I am certain that I will open the white paper bag and out will fall a severed ear. At last I cannot delay it any further, and I withdraw the fungus from its casket.

In the light of the town hall, it seems rather pathetic. It has lost the glow with which it lured me in the forest, and instead retains a number of small bruises where it has been banged about in the collection bag. Its brilliant white has become grey with time, and bits of bark have become embedded in its

degrading flesh. Above all, it is cold. There is no life left in this fungi. It has officially become a specimen, and I am relieved that I can continue with the identification process with an objective distance from it.

I quickly learnt that this little fungi has some unique characteristics that make it difficult to identify. For one thing, it has very fine pores that are evenly spaced across its smooth underside. Pores on bracket fungi are not unusual in and of themselves, but on such a small specimen their shape is difficult to determine. In addition, the cool white colour is unusual among brackets which often turn grey or brown with age. This particular specimen is thick and spongy, but distinctly fleshy: not like other hardy brackets that grow tough and dry in the harsh conditions of the forest. Yet the largest barrier I encounter in identifying it is coming up against the borders of my own knowledge. Turning to identification books has given me little direction, and I feel the high ground of my objective knowledge begin to crumble beneath me. Even in death, this fungus has found a way to soil my enthusiasm, and with a resigned huff I take the unidentified specimen to the public table to be examined by more advanced mycologists. I had expected to reign supreme over the fungi before the evening was out, but to my surprise few of the mycologists that remained had seen the fungus before, and it was soon taken to a microscope for thorough inspection. I waited for some time for the identification of the fungus to be announced, but dinner was calling to me. At half past five, I joined the slow migration to the pub across the road before dinner where we bask in the glow of the jelly babies, the eerie ringing of the mysterious white bracket fungi long forgotten.

Later that night, I talk to Keira, Shara, and Isobel about our forage and my dismay at the white bracket fungus as the night's steady rain generates a crackling hum on the cabin roof. They are all in agreement that identifying a fungus is a necessary evil, one of many stepping stones on the path to more knowledge and speculation about the mechanisms of the natural world. But if anything my time in the forest thus far has shown me that there is more than one path of understanding through the world of fungi. A scientific interpretation of fungi may well offer a useful path for some through it, but the temptation of the other paths and the experiences that await down them are tempting to me. The possibility of so many other ways of understanding fungi is as exciting for me as it is intimidating. Out of curiosity, I ask why they bother to venture out into the wild West Coast forests in the decline of winter if the ultimate goal is knowledge, rather than experience. They pause for a moment in confusion. The sentiment is unusual, as the two goals seem both intertwined and quite different from one another. In time, Shara remarks on the tenuous thread between excitement and boredom that all fungi occupy to varying extents and I nod in agreement, remembering how easily I slipped between the two at Arthur's Pass. The environment doesn't necessarily demand enthusiasm, but it requires that each person makes an effort to attune to a unique way of being with the fungi in the forest that

can only be attained through physical presence there. When you're in that, there's nothing else quite like it. 'That's the thing,' Isobel remarks, reflecting on her most joyous encounter of the day. 'You might be staring at the same patch of moss for over ten minutes, and suddenly "oh look, it's a jelly!"'

A warm, happy glow settles over us as we huddle on bunk beds around the small fan heater. Eyelids are drooping, and I totter back to my cosy cabin bed, chiming with the sound of jelly babies with each step. In bed that night looking up at the slats on the underside the bunk bed above me, I think of Terapuhi and Dobson lying beside the fire as the rain falls heavily on the wooden whare roof. One world, with two realities happening at once. And as I am absorbed by the fuzzy darkness of a deep sleep I think of the glowing white brackets and jubilant jelly babies in Arthur's Pass ringing out in the night, and the new world that was beneath my fingertips only hours ago.

Theorising fungi

“Just as field scientists become knowledgeable about a field, ethnographers see more in their immediate surroundings over a period of time and develop an ability to see patterns of which the ethnographic site is a part.” (Thompson 2005, 79)

Introduction

In the preceding vignette, I documented my experiences with two different fungi with attention to the minute details of my interactions with them. In this chapter I will unpack the physical, physiological, emotional, and affective reaction I had to my encounters with the fungi in the forest at Arthur’s Pass with particular emphasis on my interaction with the white bracket fungi, proposing that my responses constitute an ontological order that we can interpret as ‘experience’. Following this, I will reflect on the practical interventions that took place with the fungi as a part of an ontological order of ‘knowledge’ and knowledge production. I will then apply Thompson’s framework to propose that fungi ‘choreographed’ the above ontological orders to produce both my experience with them, and my knowledge of them. In turn, I suggest that fungi can be understood as ‘ontological choreographers’ in the production and manipulation of the conditions of our shared world at the moment of my encounter with them.

So far the two initial days of my fieldwork have left me with a recurring sense of apprehension that could loosely be summarised by the phrase ‘what the hell is going on?’ On Monday at Lake Kaniere among the kahikatea trees I found myself thrust deep into an unfamiliar attunement to the world of fungi that provoked more fear than enthusiasm for my research. Tuesday morning in Arthur’s Pass began much as the previous day ended, with the white bracket fungi elevating the eeriness of my encounters to another level. For a brief moment with the jelly babies, I caught a glimpse of the possibility of having a positive encounter with the fungi that had, until that point, occupied a sinister place in my mind. Even so, the snatches of excitement that have emerged thus far have been far outweighed by a kind of ominous curiosity that continues to draw me into an understanding of fungi that is more unsettling than enlightening.

Still, I continue to return to the serenity of Dobson’s autobiography to alleviate my concerns. The steadiness of his account of the night at Arnold Valley with Terapuhi gives me reason to believe that having your world twisted into something unfamiliar does not necessarily have to result in hostility toward the thing that initiated the twist. Dobson’s cool manner of gliding over his experience with Terapuhi indicated a kind of ease with the possibility of multiple realities that I am yet to come to. But whereas Dobson was happy for his encounter to end in speculation, I find myself leaning into my

curiosity with the intention of coming to an understanding of what has happened between myself and the fungi I have encountered so far at the foray.

Upon my first reading of Dobson's account, I had interpreted his experience as a kind of 'splitting' of one single reality. On the one side was Dobson's own experience of comforting a man frozen in terror under a dying fire light, with nothing but the company of the forest around him. On the other side was the experience of a revered chief stricken with fear at the tangible presence of an evil spirit. Like Dobson, I had played with the idea of the world splintering in two for a moment, for two realities of the same moment to occur at once. But reflecting on my experience in the forest has lent me to question whether that was the case. After all, Dobson did not care to elaborate on the specifics of the encounter, but rather acknowledged that he had his understanding of the events, and Terapuhi had his, and they were both respectively 'real'. Does that necessarily defer the existence of two separate worlds? I think of my time in Arthur's Pass. I had only one mind and body with which to experience my encounter with the fungi, so it would seem that only one physical reality occurred. Perhaps I experienced two conflicting ways of coming to terms with the moment. Is it possible that Dobson and Terapuhi's two different *ontologies*, that is the two different worlds that they occupied, lent them to experience one reality in two tangibly different ways? And if that was the case then, is it possible that I experienced the same duplicity of ontologies when I encountered the fungi at Arthur's Pass?

In the field

'Experiencing' fungi

My most striking encounter with a fungus in the native beech forest was with the porous white brackets that protruded from the spiny trunk of the silver beech. It was during this interaction that I felt a distinctive split begin to form between the possible interpretations of this moment that I had available to me. Whereas in the kahikatea forest of Lake Kaniere I had felt a melting of my grasp on reality, in the bush at Arthur's Pass I began to see two distinct means of understanding fungi begin to form. All of this began with my first sighting of the fungi on the silver beech tree.

The white brackets glowed against the dark trunk from which they had burst. At first glance, their porcelain flesh made them appear cold and sturdy. Their form appeared to be so final, so complete in beauty and development, that somewhere in my mind I was expecting them to be manmade. Despite all of my preparations in etiquette regarding the fungi in the forest and all of my understanding of their life cycles and morphology, I was not prepared for the purity of its appearance, nor for the physical interaction that I had with its warm, soft flesh. Against the tree it seemed to pulse with life, and its tender texture could not be summarised with mere description. In feeling the fungus, I came to understand its life and its significance in a new way. I was encountering a living creature, entering

its territory, and my senses heightened in response. I felt cautious, as though it could lash out at any moment. Yet in the same instance, I felt like a threat to its liveliness. Grasping a knife and poised for collection, the fungus seemed to radiate life that I was about to interrupt simply for the sake of acknowledging its existence elsewhere. I had not expected to experience such a pronounced internal conflict, and it gave me reason to believe that perhaps my initial plan for engaging with fungi as an amateur mycologist was flawed.

This physical response to the fungus evolved yet again as I raised my knife to the trunk of the tree. When the moment came to collect a specimen from the tree, the forest seemed to fill with a distinctly clinical, cold feeling. I felt the force of my hubris as I took the steel blade to the tree and carved sliver of the bark containing a single bracket. It was not a butcher's work – perhaps had I been less prepared for the practicalities of fungal collection, I would have felt more blameless in taking a sample of the fruiting bodies as though my naivety would excuse my action. But in this moment I was a surgeon, equipped with the most specialised tools for slicing into the trees, piercing the mossy ground, and removing fungi wherever they fruited. My preparedness only served to make me feel like more of an imposter as I tried to approach the fungi with the impersonal objectivity of a clinician. The forest seemed to shrink into darkness until all that I could see was the pristine white fungus below my knife, and all that I could hear was the deafening, ringing silence that radiated from it. The hairs pricked up on my arms as I realised that I had once again been pulled into the unique charisma of the fungi here, only this time I was aware of its nature, working through the confusion to see clearly what I was doing. The kind of violence I was exerting onto the fungus was calculated and precise, taking no more than what I needed to complete my work and leaving what remained open and exposed to the elements of the woodland. In this moment I felt unease with the power I had endowed myself to interfere with such an exquisite life form. At the same time, I was struck by the impression that the fungus had on my psyche. As I placed the bracket into its paper bag, I realised that the understanding of fungi that I had garnered from text books was not the same as the one I had lived.

From that moment until the fungus arrived at the makeshift lab in the Moana town hall, my understanding of it had come almost entirely from my emotional and sensory intuition. This was also the case after our foray at Lake Kaniere, but the blurring of my understanding had lent me to dismiss this affective shift as nothing more than a response to my first day in the field. Here at Arthur's Pass however, I stayed with the feeling more, trusting that my suspension in a different way of being with and responding to the fungi would help me achieve a different understanding of them to what was offered by my fieldwork preparations. And this was ultimately the case. To this day I do not know the name of the fungus that I collected from that silver beech tree. What I can recall however is the smell of the rotting mossy floor, the smooth waxen texture that possessed an unnerving warmth against the

cold mountain air. I remember the slowing down of time as I carefully approached the tree, and the moment's hesitation I felt at the prospect of turning this ephemeral creature into a specimen for our inquiry with the stroke of my knife. I remember feeling that there must be some place for this understanding to sit, some point of convergence that can explain how what was supposed to be an objective encounter became such a subjective one.

‘Knowing’ fungi

Had I been in the forest purely for the sake of experiencing the company of fungi I could have stayed suspended in their curious trance for hours, learning all that I could about them not through a lens of scientific inquiry but through my immersion in the unique atmosphere that they cultivate. But I was not in the forest purely to nurture my own understanding of fungi, and one moment in particular with the white bracket fungus shifted the nature of our engagement radically.

After carefully slicing away at the surprisingly fleshy body of the bracket, I placed a specimen of the fungus into a paper bag. In this moment, two crucial changes occurred in my understanding of the fungus:

First, I felt for the first time an emotional consequence of imposing scientific objectivity on a nonhuman life form. As it travelled through the air on my hand and into the paper bag, the fungus became a ‘specimen’. No longer connected to its place of origin, nor significant in its own right, the fungus that lay at the bottom of the paper bag had become merely a representation of our dominant way of understanding what we may think of as ‘the natural world’. In placing the mushroom in the bag I was radically altering my relation to it. No longer lulled into a sensational trance by the singular curiosity of this fungal body, I became dominant over it and in my possession, its singularity dissolved into a broad project of knowledge acquisition. This knowledge being acquired for the sake of gaining more knowledge rather than for the sake of the individual specimen in my possession, I was immediately struck with the desaturation of agency that had occurred as a result of my action against the fungus.

The second change occurred over the following hours as the fungus seemed to mutate before my eyes. What I had initially taken as a breach in the agency of the fungus as a result of my intervention was a reflection of my binary interpretation of the ontologies at play in the field. When I first saw the fungi in the field, Yeojun had made a passing comment that it seemed to be a rather unusual fungus. Thin, very bright white, with fine smooth pores on its underside and a waxy appearance. Later at the town hall, the fungus proved to be too difficult for me to identify and I relinquished it to the senior mycologists who spent time poring over a microscope to try to identify its genus. Even then, its species

was never identified. Even against the most sophisticated technologies available to us in our makeshift laboratory and among some of the country's leading mycologists, this little white bracket fungus could not be fully absorbed into our scientific discourse. I had not initially come to appreciate how the enduring behaviour of the fungus had also encouraged a very specific response from our cohort as researchers. Though the fungus became a specimen as it transitioned from the forest to the lab, it was still able to disrupt the knowledge hierarchy that was being actively constructed through our interactions with it.

Situating my understanding

And so it came to be that I developed two distinct ways of understanding the fungi that I encountered in the field so far. One emerged from a distinctly scientific ontology, seeking regular points of knowledge acquisition in order to claim an understanding of fungi. The other was more informed by my experience, and had no tangible achievements of knowledge but rather resulted in developing an instinct for being with fungi. Despite coming to a clearer understanding of these two points of view, I continued my struggle of reconciling the position of the fungi within this understanding. During my time with the fungi in Arthur's Pass, I was struck by the determination with which I had to distinguish between my purpose in the forest as an anthropological researcher, and my purpose in the forest as a forager for Manaaki Whenua. On one hand, I wanted to tell a story of fungi that foregrounded my experience with them. As such, I wanted to employ all of my senses, my emotion, and my intuition in seeking out and engaging with fungi. On the other hand, I needed to accumulate as many examples of fungal specimens as possible for later identification, leading me to rely on my knowledge of fungi's life cycles and habitats, and my interpretation of the practices of other foragers around me in appropriately collecting fungi. My encounter with the white bracket fungi had left me feeling confused as to where one practice began and the other ended and whether, among all of the different elements of my experience, I was getting any closer to fungi by employing both.

Theorising the influence of fungi

'Experience' and 'Knowledge'

What I knew so far was that my experience had been influenced by two primary perspectives. The first we could refer to as 'experience': the sensory, affective, and intuitive responses I had to the field and the fungi within it. This 'experience' perspective was not informed by any anticipatory knowledge of fungi beyond my own cultural background, and was rather an unexpected physical and psychological response to my engagement with them. The second perspective that effected my relationship to fungi in the field could be described as 'knowledge', and made up of two influential facets: the former being

my reason for attending the foray in the first place in assisting Manaaki Whenua develop their fungal database and their wider goal of increasing the volume of data on fungi, and the latter being the scientific epistemology of fungi that rendered a distinct version of what fungi are, and how we should perceive them. Despite my impression that these two perspectives of 'experience' and 'knowledge' could be thought of as distinct, I was unconvinced that this was the case for the fungi I encountered. My initial response was to think of being in Arthur's Pass as 'experience', while being in the lab fell under 'knowledge'. But oversimplifying my encounter did not allow me to get any closer to an enriched understanding of the fungi themselves. In reality, each field site provided a unique space in which both perspectives existed simultaneously. Most importantly, it was the fungi that existed within each field site that allowed for the spontaneous interplay of these two points of view to emerge.

Ontological Choreography

Ontological choreography is a framework coined by Thompson to better understand how emergent forms of parenthood are the product of the dynamic interaction of 'ontological orders' previously assumed to occupy separate realms, which takes place at and through ART clinics in the USA (Thompson 2005, 8). Ontological orders in Thompson's work can be understood as the categories that social scientists have used in the past to delineate particular aspects of our societies and cultures. Thompson's 'orders' include law, ownership, sex and sexuality, emotion, technology, kinship, capital, finance, gender, and human rights (2005, 8).

According to Thompson, the conception of ontological orders as independently formed is not an accurate representation of how things come into being in our world. Thompson instead proposes that particular aspects of these ontological orders allow them to interact, assemble, disconnect, shift, and evolve to produce particular outcomes (2005, 8). For example, certain aspects of what we might consider to belong to the realm of gender such as normative parental roles also allow for certain aspects of the law to come into being such as gendered rights of individual parents (2005, 8). In addition to demonstrating how the interactions between ontological orders allow for the production and reproduction of norms and values, Thompson demonstrates how the specific interactions between ontological orders can produce particular ways for humans to exist in the world (2005). Here, we can see how the idea of 'making parents' emerges from Thompson's work: the making of particular parents in a particular way is the result of the dynamic interactions of ontological orders.

For Thompson, the existing of forms of parenthood that are developed through interactions with ART clinics are a direct outcome of the interplay between these ontological orders that occurs as a result of ARTs. As such, there is no specific starting point for the ontological orders or the technologies of ART clinics, as the technologies are contingent on the ontological orders, and the ontological orders

are contingent on the technologies (2005, 32). In the same way, there is no singular starting point or locus which initiates parenthood. Rather, the constant interplay of ontological orders allows for forms of parenthood to emerge that are unique to the experience of people who engage with ART clinics. This is what Thompson refers to as 'ontological choreography': a mutual, contingent production and reproduction of lives and technologies that are the product of a carefully balanced choreography of ontological orders (2005, 8).

Thompson's concept does not originate in any form of multispecies analysis, but there are striking similarities between her concept of ontological choreography, and Tsing's 'polyphonic assemblages' (2015, 23). Both frameworks allow the authors to demonstrate the interwoven life trajectories of agents to varying extents. Each recognises that the many 'orders' that are at play in allowing an event or object to come into being are multifarious and dynamic. Both also seek to position specific agents, whether living or non-living, within the ontological contexts of their existence. However, while Tsing's framework implies that each individual agent in the 'polyphonic assemblage' remains stable while the 'melody' it follows mutates, Thompson's 'ontological choreographers' respond spontaneously to the ontological orders that converge or break apart as a result of their existence, and as such the agents themselves are constantly evolving through their relations with one another.

Fungi as ontological choreographers

As I entered into my encounter with them initially, the fungi manipulated my experiential understanding. My senses responded to the physical form of the white bracket fungus, the environment that it cultivated around it, and to its appearance. My first engagement with fungi can thus be positioned within the ontological order of 'experience', and as a result of this I came to understand fungi through my affect, my physical responses, my senses, and my emotions. As my encounter continued, my attunement journeyed from awe to intrigue and admiration, then on to apprehension, and a deliberate attempt at objectivity. In addition, I attempted to divorce my 'experience' of the fungi from my goal in acquiring 'knowledge' of it. This attempt was initiated by the fungi's position in a 'knowledge' ontology of scientific interrogation and knowledge acquisition as a potential 'specimen'. Ultimately, my attempt in divorcing the 'experience' and 'knowledge' ontologies proved futile as the fungi continued to evoke an experience of discomfort, while simultaneously transforming in subjectivity from an unknowable life form to a fungal specimen. Finally back at the lab, when I believed the 'knowledge' ontology to be as divorced as possible from my experience, the fungus yet again brought together my dual understandings. In being returned to the forest as an unidentified specimen, the fungus remained 'unknowable' within a scientific epistemology, and yet through my encounter with it had already become 'known' in a different way through its connection with an 'experience' ontology.

Conclusion

In this chapter I have applied Thompson's framework of 'ontological choreography' to propose that the conditions of my interactions with the fungi at Arthur's Pass are the results of the spontaneously produced and deftly balanced ontological orders of 'experience' and 'knowledge'. I have reflected on the significance of my physical, physiological, emotional, and affective experiences in informing my understanding of fungi, and begun to extrapolate how these experiential aspects of interacting with fungi ultimately inform the knowledge that is produced as part of a scientific body of work. In doing so I have also advocated for the significance of experiential understandings in developing holistic interpretations of fungi beyond what scientific discourse currently has the capacity to offer. By interpreting the fungi that I have encountered thus far as 'ontological choreographers', fluctuating between and bringing together the 'experience' ontological order and the 'knowledge' ontological order, I have attempted to depart from the human exceptionalism that disempowers nonhumans and instead built upon a multispecies positionality to emphasise the agency of fungi in cultivating shared worlds through the choreography of multiple ontological orders. In the vignette that follows, I will attend more closely to the 'knowledge' ontology that has brought me to the Fungal Foray in Moana, will offer a rendering of fungi that is typical of this space and epistemological position, and will detail how I experienced this site of knowledge production both corporeally and intellectually.

Wednesday 9th May 2018.

"Each species has its own agenda and its own interactions with human activities." (Rackham 2015, 16)

The third day of the fungal foray is upon us, and I wake up slowly. I won't be going out into the bush today. Instead, I will join the rest of the foragers for a day of presentations pertaining to current research in the fields of mycology and microbiology. The informal conference has been taking place since the foray's conception, and each year colleagues from around the world look forward to a day of networking and conversation. Overnight the thick blanket of rain that has swaddled us since Monday has lifted, and the morning sky is a watercolour palette of warm lilacs, pinks, and blues. The sun will come out today, and the forest floors will be steaming with energy. Meanwhile I will be under the cold lights of the hall, silently freaking out about my first conference presentation.

I arrive at the hall to find chairs being laid out for the audience. Everyone is dressed in a more urban variation of casual today, leaving behind the forest adventure attire of the days preceding in favour of comfortable indoor gear. The microscopes have been packed in together behind the chairs, and as always, David (one of the country's leading fungal taxonomists) is peering intently into one while the hall is transformed into a conference centre.

As the morning shuffles on, forayers slowly drip in through the heavy wooden double doors and take a seat. We face the east wall where there are no windows, and sit in individual chairs arranged in rows that have been positioned directly in front of a projector and laptop. I am not the only one to have brought a book with me to take notes in, and as we assemble for the first presentation the familiar hush of a lecture theatre settles between us. We are no longer in the forest. We have entered a new terrain: one more deliberately designed for the formal dissemination of knowledge. Presenters walk up to the front one by one, each with fifteen minutes to relay as much relevant information about their research as possible to the throng of serious expressions before them. Each talk focuses on the development of, or the results from, the presenter's own research. The crowd listens intently to the barrage of statistics, figures, graphs, and findings of research so finely tuned that it is difficult to position each presentation in relation to the next. Although I haven't the vocabulary to understand much of the detail of the talks, it is refreshing to hear just how diverse the mycological discipline is. But as the presentations go on through the day, I begin to feel increasingly nervous.

At a guess, I would say that within the fifteen minute time frame offered by the foray organisers, each researcher has included approximately 10,000 slides in their PowerPoints. The sheer volume of information that has been displayed so far is dizzying. I, on the other hand, have only five slides, which are interesting pictures of fungi that I have encountered while planning my thesis. People have been offering findings of such scientific rigour that I wouldn't even know where to start in understanding it.

My presentation is in essence a story that walks people through the idea that anthropology can be an appropriate discipline to study fungi. I have nothing to say about fungi that does not come from my own experience, I cannot offer any proof or evidence for my point of view, and I don't even have any research of my own to confirm that my perspective is relevant. I haven't even given my talk yet and I already feel like a hopeless amateur. The talks make less and less sense as my heart rate increases, and the prospect of being outed as fraud draws closer with each incomprehensible slide.

The presentation before me is about fungus that grows on kiwifruit. Or is it a fungus that grows on the roots of kiwi plants? I can't remember. All I can focus on is how dry my mouth feels. I've barely said a word all day. What if I get up there and I can't even speak? No one here will agree to participate in my research if they think it's all fluff. This was the worst idea I've ever had. I wish the ground would open up and swallow me whole.

David, the foray head organiser, calls my name. I suppress the urge to scream and run away, instead opting to walk towards the front of the room. As I do, I see Isobel grinning at me from her seat. In fact, there are a lot of people grinning at me. Are they already laughing at me? Oh god, this is a terrible idea.

I start my presentation with a story. I tried to grow oyster mushrooms last year in my laundry, and to say it was a success would be an understatement. It was so 'successful' that I had spores all over my laundry and oyster mushrooms colonising every surface they could. As I recount my tale, the foragers laugh. Everyone here knows how aggressive oyster mushrooms are, but they've all been there to one extent or another. I look around as I talk, smiling at people who are entertained by my naivety. I begin to talk about my research, and the energy in the room elevates. I talk about Anna Tsing, and the networks of social and cultural life that are influenced by fungi. I talk about the historic relationship between the sciences and the humanities that have formed through mushrooms with the likes of Minakata Kumagusu. I talk about how my goal is to find a way to understand the fungi that we will encounter at the foray from an anthropological point of view. And I end with a poem:

"There is a pleasure in the pathless woods, there is a rapture on the lonely shore, there is society where none intrudes, by the deep sea, and music in its roar. I love not Man the less, but Nature more." (Byron, 1818)

The applause that follows washes me with relief. There are a handful of questions regarding my research plans to conclude my talk, but as I return to my seat, a handful of eyes follow me around the room from the smiling faces. Sinking into my chair, I make a mental note that perhaps there is a place for research like mine in this field. For now though, I breathe deeply, smile, and try not to notice how clammy my hands are.

Their enthusiasm is contagious. After a quick lunch break and a cup of gumboot tea, I return to the hall with a refreshing sense of focus. I still don't understand everything that is going on, but the reception of my research has empowered me to believe that the experiential understandings of fungi that I am trying to give legitimacy to here may have a place amongst the graphs and charts and statistics. I take notes on things that seem to challenge what I have read in books, or which strike me as unusual. I listen intently to the questions asked by the audience, and watch as the presenters break down their research and reassemble it in accordance with someone else's point of view. I feel alert and capable, and over the remaining hours of the conference I don't think about the sensation of the forests from the previous days at all. Instead, I am submerged in a new informational context, and I take the opportunity to absorb an understanding of fungi that is unique to the scientific disciplines present in this room.

Before I attended the fungal foray, I tried hard to develop a scientific understanding of fungi. Beyond wanting to gain access to people's conversations during the excursion, I did not yet have any alternative tools at my disposal to understand the fungi that I encountered in my meanderings around Wellington. Before I had any confidence that my experience was actually useful in establishing an anthropological perspective of fungus, I attained all of my information from book and articles about fungi. At first, I plunged in a little too deep. The language of academic science was completely alien to me. It may as well have been written in Vulcan. It was disheartening to think that perhaps writing about physical, emotional, and affective experiences with fungi could not bring anything of value to the existing body of knowledge that I encountered through mycological texts. That all changed when I came across Antonio Carluccio's *'Complete Mushroom Book'* (2003).

Considering his position as the godfather of Italian cuisine and one of the world's most admired chef's and authors, I feel a surprisingly personal connection to Antonio Carluccio. My father is a gardener, and from a young age he would grow vegetables for us to cook and eat together. Antonio Carluccio was our guide in developing healthy food habits as a young family, and was a figurehead in sparking my animistic admiration for plants and fungi. His grinning face would regularly grace our TV screen and his cookbooks took pride of place on the kitchen shelf, each page corner softened by thumbs that regularly sought the perfect recipe. I used to watch in awe as he admired every ingredient, telling the story of its origin as though it were as important a part of Italian history as any politician. His books were as much love letters to the landscape and ingredients around him as they were instructional cooking guides. When I first caught sight of his *Complete Mushroom Book* (2003), it felt like a hand was outstretched. I trusted instinctively that he would be able to walk me through what I needed to know about fungi to begin my research journey with them. Reading it with his voice in my mind, I

slowly began to settle into a basic understanding of fungi that drew on cultural histories and science, and challenged me to think differently about both the fungi I encountered, and the knowledge I had wrestled with not long ago.

The first thing I learnt about fungi is that just when you think you know a fungus, something happens that puts you back to square one. In an ideal world, the life of the fungal kingdom would be routine, constant, and stable. On the first day of autumn, fungi would pop up on the forest floor like little industrious donuts. They would get on with the laborious business of digesting dead and decaying matter in designated natural spaces, mainly in woodlands and wild fields. Fungi would have access to whatever substrate they need to survive, would bloom regardless of the conditions, and would die quietly and dissolve back into the evermore fertile earth. They would release a steady source of nutrients into our soil, clear the forest of logs, leaves, and dead animals, and would tidy themselves away when autumn was over. If we wanted to see them, or for a brave few forage for them, we could pick a day in the three month span of autumn and hike into the centre of a secluded woodland and encounter an array of colourful, easily identifiable forest gems. And when we left, they would simply grow back again and repeat their daily lives until winter frosts killed off the last of the fruits.

Our interactions with fungi would be limited to the human-initiated realms of medicine, food, and narcotics. Edible fungi would be easily identifiable while toxic ones would sport gnarled caps, repulsive growths, or alarming colours to warn of their toxicity. Humans would be able to choose the extent of their engagement with them as they would not interrupt our lives by colonizing out houses, gardens, and fruit bowls, but instead would remain at an accessible distance. Fungi would serve to support our industrial societies by recycling the by-products of production, supporting our designated natural spaces, and digesting our excess of food and resources. In all, fungi would be well supported to survive, would be happy to live alongside but separate from human society, and above all would serve an array of human needs.

For one thing, studying them would be a hell of a lot easier if this was the case. Unfortunately for me, we do not live in this imagined world. Across the planet, the fungal kingdom is so diverse, dynamic, and intricate that mycologists who dedicate their entire lives to studying fungi will be the first to tell you that the more we find out about them, the less we seem to know. Like Oliver Rackham's note on woodland trees, each species of fungus "has its own agenda and its own interactions with human activities" (2015, 16). Their diversity is inspiring, their mystery is exciting, and their complexity is infuriating. Despite this, there are some things that we are pretty sure we know about fungi. Like with anything else there always seems to be an exception to the rule, but laying down some basics is a good place to begin.

The earliest fungi recorded in the kingdom's history dates back some 455-460 million years ago (Deacon 2006, 2). During this era of fungal development, the largest living plants to occupy the earth's surface were bryophytes, or what we commonly know as mosses (2006, 2). Since this era fungi have developed to be one of the most diverse kingdoms in the world, at least doubling the diversity of animals and plants (2006, 1). The fungus itself is a body of what is known in mycology as mycelium. Mycelium can perhaps be understood as the physical nervous system of the fungus, used to expand the fungi's access to nutrients and space by developing individual strands called hyphae with which to absorb nutrients and excrete digestive enzymes (Ridley 2006, 4). When the mycelial body senses that environmental conditions are adequate to support reproduction, the mycelium begins the energy intensive process of producing a fruit. Mycelial strands are forced together, compacting to form a fibrous fruiting body that erupts from the substrate and protrudes from the mycelium in the form of what we commonly know as mushrooms (Deacon 2006, 31). The term 'mushrooms' largely refers to the fruiting bodies of a class of fungi known as basidiomycetes (Buczacki 1989, 231), and are the sexual bodies of the mycelium, allowing the original mycelium to continue its growth with minimal competition, while still distributing its offspring liberally across its environment (Ridley 2006, 4). As the fruiting body of the fungus develops, unicellular reproductive organs called spores are formed in a process called meiosis (Buczacki 1989, 227). Once the mushroom gauges that the environmental conditions are fit for the survival of its offspring, it begins producing a staggering number of spores (Buczacki 1989, 231). Developed under the protection of gills, pores, or a porous membrane, the millions of spores cultivated in the fruiting body are then forcefully ejected, to be carried by animals, plants, wind, rain, or water away from the central mycelial form (Deacon 2006, 32). If conditions are inadequate for growth as they often are, the spore simply expires and is added to the general mulch of their environment. But if a spore happens to encounter adequate conditions for life it germinates like a seed, and the cells begin to divide and grow a new mycelium to begin the cycle of fungal life again (Buczacki 1989, 249).

The conditions for life that a fungus requires are specific to each individual species. There is a general understanding that fungi will either grow on decaying matter in forests, or from grassy fields. Though there are many species of fungi that do exactly this, fungi will fruit in a variety of conditions that plants and animals consider uninhabitable. Take for example the pyrophilous fungi. The name of this subgroup of fungal genera is named for its love of habitats that are prone to fires (Deacon 2006, 186). Forest fires can cause surface temperatures to exceed 800oC, annihilating many plant, animal, and fungal species in the vicinity. However, those fungi which have developed deeper in the soil where temperatures remain extremely hot but not hostile to life forms are triggered to fruit by the rise in

temperature as the fires sweep across the landscape (2006: 186). Once fires end, the spores of pyrophilous fungi germinate, and the fruiting bodies of these fungi are among the first life forms to grow on the recently scorched earth (2006, 188).

On the opposite end of the spectrum are marine fungi, which are often found on living animals that occupy fresh and salt water habitats, and can be defined as fungal specimens which complete their entire life cycle in marine environments (Wang, Wang, Liu, & Li 2012, 72). Approximately 1,500 species of fungi make up this dynamic and diverse group of fungal organisms (Sharma 2012, 244). Fungi in this subgroup reproduce in a variety of ways, with some capable of sporulating underwater while other mitosporic or asexual fungi produce genetically identical offspring without the production of spores (Sharma 2012, 288).

On land in temperate conditions, fungi also form relationships with living organisms beyond simply digesting decaying matter. One such example of these obligate relationships can be found in one of the most commonly recognisable and prestigious edible mushrooms in European cultures: the porcini.

Porcini mushrooms (otherwise known as *Boletus edulis*) form 'symbiotic ectomycorrhizal' relationships with a variety of species of trees, but largely with deciduous trees originating in Europe and introduced across the colonies. This means that the relationship between the tree and the fungus is reciprocal, and while the network of mycelium forms underground the fruiting body of the fungus emerges above the surface of the soil, much to the delight of many mushroom foragers (Sharma 2005, 292). When a porcini spore germinates in a woodland suitable for survival, it begins to develop its mycelial body in association with a neighbouring tree. The mycelium of the porcini wraps itself around the young, deep root growth of the tree, fusing itself to the growing tips of the roots (2005, 293). The fungus can then access the carbohydrate-rich sugars from the tree, ensuring a steady means of essential nutrients so long as the tree survives (2005, 293). For the tree, this obligate association offers a plethora of complex nutrients in the surrounding soil that the fungus can break down, which would otherwise be inaccessible to the tree. As a result the tree receives a steady source of diverse nutrients to support its health over time so long as the fungus survives. These symbiotic mycorrhizal relationships can last for centuries if both parties involved are in good health. And for foragers lucky enough to discover a colony of mycorrhizal tree-fungi relationships, a steady annual supply of porcini is also ensured by these mutually beneficial relationships.

Regardless of the environments that fungi occupy, and the relationships they form with species around them, all fungi serve one unifying and vital role in the ecosystem: the digestion of carbon. Without fungi in our marine, forest, field, coastal, and alpine environments, all dead matter would remain on the surface of the planet. Fallen trees would not be broken down, dead leaves would pile

up higher and higher with every passing year, the remains of dead animals would lay in waiting never to be returned to the earth, and every living thing that ceased to be alive would simply remain, dead.

The indiscriminate digestive habits of fungi are massively significant to the ongoing health of the planet. Fungi, like animals, produce digestive enzymes to digest their food sources not dissimilar to those found in the human gut. Rather than these enzymes being stored in an internal digestive system like animals however, fungi excrete their digestive enzymes in order to break down the nutrients externally (Deacon 2006, 114). The digested food is then absorbed back into the main body of the fungus through the mycelium below the soil (2006, 144). The more dispersed and robust the mycelium is, the more nutrients can be broken down.

It is not hard to imagine the extent to which our worlds would change if fungi ceased to exist. Without the vital work of fungi, the living world would have no renewable source of nutrients upon which to grow. Fungi do not just remove the dead from the living. They are nature's recyclers, and through their consumption reintroduce the valuable nutrients stored in the once-living body back into the ecosystem to be taken up by other living species. And when these living things die, fungi treat them with the same care as every dead creature before them.

I think of a recording taken of Antonio Carluccio walking through an autumn oak forest in England, shared by his colleague one year after his death in 2017. 'This is my cathedral,' he says, looking around at the trees in admiration. 'This is the world that I understand. A world made of nature, where mushrooms are the kings... This you can see really the eternal cycle of life. Death comes down, something else is built up, life comes back again, and continues and continues and continues.' (Contaldo 2017) Carluccio understood the fundamental mechanisms of fungi that mycologists have established over time, but in this moment he expresses a more emotional, personal connection with them, and the significance that fungi bear in his conception of his own life forms another layer of his understanding of them. His understanding of them is not only of his own making, but is also formed by the fungi who balance between the scientific knowledge that has enabled one particular understanding of them, and the experiential influences they invoke that goad him toward a familial engagement with them. His warm smile illuminates the wood around him as he reaches down for a pile of leaf litter, lifts it to his nose, and with his eyes closed breathes deeply through the mass of spores, mycelial strands, rotting leaves, and sticks.

'Ah, the smell! It is death and life together. But the *smell* is almost edible! Viva la natura!' (Contaldo 2017)

Antonio Carluccio's book weaves together multiple ways of understanding fungi. He begins with a history of fungi in Italy and England, identifying the unique cultural contexts that spark particular engagements from foragers. He then lists some of the most common edible and poisonous fungi that foragers in Europe are likely to come across, noting their morphological features, seasonal appearance, and toxicity. Finally in typical Carluccio style, he lays out a variety of recipes that include wild fungi, noting not only how to cook them and how they will taste, but why each recipe is significant on a personal and cultural level. It would be easy to say that this is where the mastery of Carluccio is most visible, in his ability to give a holistic impression of fungi that remains accessible to a large readership. But to credit Carluccio alone would be an injustice to the fungi that he writes of, and would undermine his point about them. Fungi are creatures capable of bringing together the worlds of history, literature, culture, science, cuisine, and experience. These worlds converge around and through fungi at various points in our engagement with them, but while some may be more prominent than others in each context, they are all always there. Carluccio acknowledges that fungi are not only imbued with different kinds of significance by virtue of our means of understanding them, but are also key actors in the creation of the very worlds that our understandings emerge from. 'Death and life together': the choreography of the living and the dying world. The convergence of time, experience, emotion, knowledge, and understanding comes from the fungi themselves, who bring into being the world that creates them.

My presentation at the foray has given me a fresh perspective on my experiential understanding of fungi. The scientific knowledge laid out before me today is certainly impressive, and the importance of the foray conference in distributing that knowledge and the empowerment that comes with it to the attendees is clear. But what is clear to me now is that I did not need to underestimate my own interpretation of the fungi here. That is not the *point* of getting to know fungi. Sure, the scientists before me have such an impressively nuanced knowledge of fungi as to be intimidating. But we are speaking a different language, and seeking a different form of engagement. Within their discipline a shared language and ontological foothold is essential to getting any work done, but I am here to challenge both in current ethnographic stories of nonhumans. What is most exciting about today is that our excitement at the prospect of learning from one another is mutual. By presenting today I was able to open up a new conversation at the foray about the sociocultural influence of fungi and the importance of our experience in understanding them. In turn, I was offered a view of fungi through a scientific lens and was able to make sense of aspects of their lives that I could not otherwise have. It is only through the virtue of the fungi that these perspectives could be brought together: that an anthropologist could walk into a science conference and without an ounce of evidence to run off,

prompt a unique curiosity from the audience. The fungi today have proven my concerns wrong, and have showed me a way to understand how ontological orders that have previously been interpreted as distinct could be seen alongside one another, over the top of one another, merging with one another, and indistinct from one another. My 'experience' with and 'knowledge' of fungi are formed by one another, and are constantly in the process of becoming through the ontological choreography of fungi.

Knowing fungi

"[T]he scientist employs a form of attention to the natural world that is like one's ideal attention to the human world: it is a form of love." (Keller 1995, 117)

Introduction

In this chapter I will employ Evelyn Fox Keller's concept of 'dynamic objectivity' (1995, 116) to elaborate on the relationship between 'experience' and 'knowledge' in the cultivation of understandings of fungi at the Fungal Foray. I propose that rather than being inherently distinct ontological orders as I had previously conceived of them, 'experience' and 'knowledge' are fundamentally intertwined in research with nonhumans, and are mutually constitutive. I discuss the constraints of relying entirely on scientific discourse to produce an accurate rendering of fungi, and the limitations of experiential understandings in getting to know fungi in the forest and the laboratory. By way of understanding the blurred boundaries between 'experience' and 'knowledge' when working with fungi, I reflect on Keller's position on the place of 'love' in scientific research and find it to be a common ground and site at which the convergences of 'experience' and 'knowledge' ontologies become most profound, and most useful in understanding fungi. I conclude by reflecting on my own incorporation into the ontological choreography of the fungi that I have encountered thus far.

FUNNZ Fungal Foray Conference Day

Lecture theatres seem to have a distinct smell. The metal fittings of the projection equipment, the fluorescent lights warming the dust particles that drift through the stale air, papers fresh from printers left scattered across tables, ink on the furniture, wooden furnishings laminated with grey and blue plastic. Their singular purpose cultivates an atmosphere so tangible that one can feel it filling the sinuses and sense instinctively that in about 20 minutes, you'll be wishing you'd slept in. It is remarkable how drastically the atmosphere shifted in the town hall once we had transformed it into a conference room. Just as the physical layout changed, so too did our response to the space.

From my vantage point at the entrance, I could still see the microscopes and plates and other various pieces of equipment stacked at the back of the hall, but this was not the same hall that I had left the night before. The texture of the air had changed. It was no longer thickened and warmed by the rotting organic matter and spores, but felt sterile and clear as though all distractions had been removed from it. We were here to share our knowledge, to learn from one another, and to do so in a way that fit in with our purpose here.

I had initially been jarred by the hall's radical transformation into a space of knowledge creation and dissemination. I had only been in the field for two days, but by the end of our Tuesday excursion I had

developed a tingling excitement at the prospect of my newfound appreciation for fungi. I was eager to return to the forests and sink myself back into the earthy, dark, warped world that lurked in the shadows there. Despite my initial fears, I was beginning to enjoy my macabre fascination and was relishing the unexpected confidence with which I was embracing this unknown experience. Entering the town hall on Wednesday morning was an unwelcome reminder of our collective purpose here in Moana.

The room felt constraining. For all the fear that accompanied it, the freedom that the forest afforded me in exploring new ways to engage with fungi had been an essential part of coming to a satisfying understanding of them over the past two days. When I was out there, I felt as though I was stepping into a different world where it is fungi and not humans that decide the terms of engagement. I was beginning to enjoy the sense that other forces were at play that I had no part in controlling, and during my final encounter with the jelly babies I had at last found satisfaction in the 'fungi-ness' of the fungi around me. Even when it came time for us to identify our finds, simply having the fungal specimens all laid out on tables across the hall was enough to absolve us of some of our hubris. Their persistence in being difficult to identify, their distinctive smell that fills the room and totally transforms the air, it all comes together to create a unique place and moment in time. But now that the fungi have been cleared to make way for the regimented rows of stackable wooden school chairs, the authority of our knowledge seems to have been enforced. I feel a pang of sadness, and I am surprised by the realisation that I regret re-entering my old perspective. I miss the environment that fungi offered me, and the release from something 'normal' that came only for a moment when I was at the whim of the white brackets and jelly babies.

The day is filled with exciting new research prospects, highlights from Fungal Foray veterans' careers, and ground breaking discoveries. We all come out of the conference feeling both excited and exhausted by the amount of information we have collectively digested, and I have forgotten to feel anxious about my research for most of the day. In fact, today has gone in quite the opposite direction to what I had anticipated. Far from being labelled as irrelevant humanities fluff, my research was received with acclamation. As we loiter in the pub before dinner is served, I am approached by five or so different forayers who are eager to talk at length about their *love* of fungi. Glad to have surfaced their enthusiasm as an important site of understanding, I listen intently to the forayers as they wax lyrical about their very first encounter with a fungus, or a surprising twist in their research journey, or even just their admiration for the minute details that make their particular fungal interests so fascinating. It is an evening filled with celebration of the fungi that have brought us all into this shared feeling of joy and excitement.

Pursuing new perspectives

It takes me a little while to see what was going on in the context of my research. In the wind down from my presentation-induced adrenaline rush, it hadn't occurred to me that anything of significance was happening other than that the forayers around me were being kind and generous with their compliments and interest. As I quietly eat my dinner at the long catering tables in the meeting room of the lodge, I realise that the people here aren't only interested in my research out of graciousness. They are hungry for new perspectives. They are scientists after all, and they are as intrigued as they are entertained at the prospect of a radically different interpretation of fungi. I come to see that the curiosity that is endemic to their discipline is not necessarily limited to it, and perhaps the recurring curiosity of our cohort is what keeps each of us coming back for more of the fungi we study.

As I come to terms with this, I am struck by a thought. Seated around me are some of New Zealand's most brilliant mycological minds. People have travelled from Australia, Europe, North America, and Asia to a town with a winter population of 30 to be with fungi here. The diversity of interests within this field is enormous, and even within the space of a single day I have been exposed to more interpretations of fungi than I have ever encountered before. Yet my presentation was singular in the way that it sparked people's imagination before it sparked their interrogation, and raised the possibility that our experiences outside of our respective disciplines could offer us just as valuable an understanding of fungi as scientific inquiry ever could. More importantly, the forayers that engaged with my presentation were *excited* to talk to me about their experiences, and relayed them to me as though they were fundamental of their understanding of fungi. It seemed to me an obvious in road to understanding fungi. So why is it that nobody else here has considered doing their research like that?

Scientific epistemology

What does science do?

During the conference talks, the room we occupied created an environment in which particular forms of knowledge freely emerged and situated themselves naturally, while others were more akin to an injection of new perspectives. It was clear simply by the character of the majority of presentations that took place that in addition to creating a unique atmosphere, the space was also integral in making room for a particular form of dialogue. Within this dialogue, one point of view may seem more legitimate than another. The trick is to be able to see that it is not the dialogue itself that is more or less legitimate, but it is the circumstance that it emerges in that renders some more legitimate than others. In the context of the foray, scientific discourse was the primary means for people to share and create their understandings of fungi. This in and of itself is not a problem, but it is important in

understanding why what I thought was an exceedingly amateur presentation was received with such fervour by the brilliant mycologists and microbiologists that surrounded me.

Mycology presents one interpretation of the world of fungi. The idea that any scientific discipline rests on a unique set of values, skills, and mediums of expression is not a unique idea in either science or anthropology. However, while it is good to acknowledge this, acknowledgement alone cannot address the limitations that this places on a given discipline. Even if mycology has its own language, values, traditions, and practices, why is it that disciplines outside of the Western sciences were so drastically underrepresented at a publically accessible conference?

Though this certainly does affect how mycology is positioned in relation to other understandings of fungi at the Fungal Foray, what seems to be a larger issue here is that there is something about scientific epistemology that positions it at the very forefront of knowledge, as though seeing the world in other ways is illegitimate in the face of science. The discourse of science is perfectly positioned to produce an interpretation of the world that can only be thought of as credible when produced through the medium of science. In turn, the boundaries of what knowledge can qualify as worthy of attention are limited in the sciences, mycology included.

I think of the way that fungi seem to peak in their lifetime as scientific subjects, or 'specimens'. Identifying a fungus has little to do with the character of the fungus, or its influence on the environment, the feeling of the space, or the emotion of the researcher. Step one of the official identification process is always the labelling of individual components of a fungus that have been refined slowly over time by mycologists, botanists, and biologists. This may begin with the scientific approach of categorisation. In one of the talks, the presenter quotes Ernest Gellner in stating that, 'scientific enquiry requires the separation of all separables' (Gellner 1998, 92) This is true for much of the work we are doing here. In identifying the various elements of fungi deemed relevant to a scientific understanding of fungi, we are gaining a rationalised picture of a being that did not begin its life as a collection of individual parts. In reality, our journey of identifying the fungus before us may have started back in the forest when we first stepped on it and watched it shred into a thousand strands, or saw it peering out from a rock face, or smelt the rich bitterness of leaf mould on the ground.

Unfortunately the way a fungus makes us feel, and the sensory variables that we experience upon our first encounter never make their way into the official scientific identification process. There is no place to write that the appearance of the fungus made my hairs stand on end. I cannot make a note that I could sense that I was holding jelly babies not by their stipe and spore shape, but by their timid demeanour and playful air. In telling a new story of fungi, this experiential information strikes up an image of the fungi from my encounters that cannot compare to a purely morphological description.

However, in order for our knowledge to be shared at the conference today, this 'separation of all separables' (Gellner 1998, 92) is a necessary means to an end.

In my previous conceptions of scientific discourse, I have highlighted the objective orientation of knowledge production. Juxtaposed against an 'experience' of fungi, I had cultivated an understanding of scientific knowledge that positioned it as a binary opposite to the knowledge we are capable of acquiring through a more visibly 'human', intuition-based model of understanding. However, this 'symbolic reductionism' (Knight 2005, 1) of fungi became less evident in the field than anticipated, when I witnessed the care with which the scientists at the foray treated their subjects. Isobel's tendency for animistic interpretations of the fungi seemed to counter the narrative of science as inherently domination and thus inherently oppressive, as it became clear that the knowledge she produced as a result of her interactions with the fungi was as influenced by her adoration of them as it was by her commitment to objective science. Thus, the 'objectivity' with which she interacted with the fungi was inherently positioned within a wider choreography of her affect, emotion, lived experience, and intuition. As a result of the fungi's choreography of her knowledge and experience, her 'objectivity' became a single surface of her multifaceted approach to knowledge production about the fungi before her.

Dynamic objectivity

Evelyn Fox Keller defines objectivity as 'the pursuit of a maximally authentic, and hence maximally reliable, understanding of the world around oneself' (1995, 116). In her work *Reflections on Gender and Science*, Keller discusses objectivity as a concept consisting of two primary facets: the first is 'static' objectivity. This facet of objectivity is what I have become most familiar with in my studies, and encompasses an objectivity which is most closely related to 'objectifying', in which the aim of the inquirer is to grant the object of inquiry a clear autonomy from the context of its existence, instead seeking to see it as a stable and inherent entity. The second facet of objectivity is 'dynamic'. Rather than attempting to divorce it from its context as a means of understanding it, the concept of 'dynamic objectivity' seeks to reinforce the relationship of the object of inquiry to its context, and to position the experience and emotion of the researcher within this. 'Dynamic objectivity' is thus not an exercise in separating the object of inquiry from ourselves, but rather serves as a way to acknowledge our position in relation to the thing itself and use this as a way to enrich our understanding of, and appreciation for, that which we study.

Keller's concept of dynamic objectivity is a new and profound revelation for me, and offers an avenue by which I can understand the positions of the scientists around me at our conference day. The admiration of the fungi that have been studied is apparent from every point of view, and people's

enthusiasm to emphasise their experience in their understanding of their fungal subjects is an indication that their scientific objectivity comes not from a place of domination (Keller 1995, 103), but of care. What is expressed in the town hall today is a glimmering dynamic objectivity, in which the experiences of the scientists is sparkling at the edges of their presentations. Hidden behind the statistics and graphs and charts and diagrams is a wonder that has allowed all of us to come together in celebration of the fungi we seek to understand.

I ponder Keller's positioning of the individual researcher in her definition. My own goal of this research has in part been to offer what I consider to be a 'maximally authentic' (1995, 116) rendering of fungi by integrating new writing techniques into my ethnography of fungi. In a way, what her writing has emphasised is that the intentions of science and anthropology are not as divergent as I had first assumed. The respective discourses of the disciplines seemed so at odds with one another upon my early encounters with them that it became easy to forget that they are each in essence aiming to achieve the same goal – to authentically render the world in which they have lived and worked. Like the divergence of multispecies ethnography and new nature writing, the difference between scientific and anthropological renderings of nonhumans appears to be in the stories we choose to tell and the way we choose to tell them. What we consider to be 'maximally authentic' and thus 'maximally reliable' in developing our understandings of and relationships to nonhumans hinges on this.

For me, the concept of authenticity is inherently personal. In the past I would have equated this as implying that authenticity is thus inherently subjective. However, Keller's concept of dynamic objectivity does not seek to erase the self from one's authentic and accurate understanding of the world. Rather, it employs the subjectivity of the self and the self's experience in said world in order to develop this 'authentic' rendering of the world (1995, 116). Implying that an authentic rendering of the world is one that exists in a void and is entirely untouched by those who research it in turn implies that the world we seek to render is static. To deny the self and our relationship to the world which we seek to render is in effect to deny the authenticity of said world. As such, in order for objectivity to be best applied in both scientific and anthropological research, it must take into account those who study it, their experience of the world they study, and the way that the objects of our inquiry come into significance as a result. In short, objectivity at the foray is dynamic.

Scientific discourse relies on the accurate identification of individual components of the subject of its inquiry, and in achieving this, a great many doors to new ideas open. The implication of this is that scientific inquiry ought to be able to give us all of the information we need to understand a fungus in a useful way, thus rendering other approaches unnecessary regardless of their decorative qualities. What is less recognised here is that when scientific discourse delegates other forms of understanding as inferior or irrelevant, and portrays its subject as a collection of parts that can be easily categorised,

the kinds of knowledge that a scientific approach can *produce* becomes limited to that which already fits into this existing model of knowledge. If the science stagnates, we will only ever know about a fungus what we already know exists within mycological discourse. Further, the separation of understandings that occupy ‘cultural’ or ‘social’ or ‘experiential’ realms from the ‘scientific’ realm means that only one version of a fungus is represented within this discourse. This dilemma is reminiscent of the continued return to conventional anthropological conclusions in multispecies ethnography. When this happens, all of our interactions with fungi become determined by the limitations of this point of view. And perhaps more significantly, we can become closed off to the excitement that intuition can stir in us.

Fortunately, curiosity is a fundamental tenet of science and mycologists are no exception to its allure. At the fungal foray this year, I was the only person who spoke in an academic capacity about the value of non-scientific knowledge in cultivating an understanding of fungi. Yet I also received a great deal of positive affirmation from forayers and mycologists, and the relief at the audience of hearing a more ‘entertaining’ talk was tangible. But beyond this entertainment was the spark of curiosity that had brought us all to this place to begin with. It was clear to me that people were hungry for a new take on the fungi that we would encounter, but that the new take may have to come from outside of the established discourse in order to be applied within it. Though the interest was there, the disciplinary cues that I had inherited from anthropology were not, and as such our perspectives and our engagements with fungi differed too.

Understanding fungi differently

Different approaches

I think of my first impression of the white bracket fungi in Arthur’s Pass in comparison to that of the other foragers. While the first thing I noted about the white brackets was an atmospheric change and a sharpening of my senses, Yeojun immediately took note of its morphology as a way to interpret it. For Yeojun, each fungi encountered at the Pass followed this pattern. Each was interpreted as a ‘specimen’ from the outset and as such, every engagement they had with fungi from that moment until it was either discarded or preserved for the collection aligned with the traditions of scientific practice. As a result, Yeojun’s understanding of fungi was as specimens.

My experience on the other hand rendered fungi in a different way. Fungi began their journey with me as active participants: agents in the cultivation of my affect and encounter. My lack of scientific knowledge meant that I did not have a choice in developing a different understanding of them, relying instead on my intuitive response as a way to interpret them. While I was aware of their context within

a scientific ontology as specimens, to me they were agents of my experience which, through their 'fungi-ness', were able to manipulate a spectrum of my senses and impress upon me a distinct rendering of each environment that I encountered.

There is, however, a common ground which Keller addresses as key to developing a kind of 'dynamic objectivity' when working with nonhumans: love. Behind both my and Yeojun's impression of the fungi that we encounter is a shared admiration for them which is rooted in a love of fungi. What Keller identifies as 'dynamic objectivity' does not clash with this. On the contrary, acknowledging objectivity to be dynamic is also an acknowledgement of the love that is required from scientists and anthropologists alike in order to make sense of their subjects, and their relationship to them. While it is certainly true that in translating objective knowledge into words the love that initiated the research may become veiled, the objectivity with which Yeojun interacts with the fungi here is as much an expression of love as my experiential response to them is.

Ontological choreography

Here at the town hall, one particular kind of understanding of fungi is being overtly and deliberately cultivated. However, another more subtle understanding is taking place for all of us throughout this foray. At the heart of our knowledge and experience is a profound love of the fungi that we are interacting with, and it is this that each of us, regardless of our disciplinary traditions, seeks to develop above all else through our work with them.

Each respective ontological point of view gives a unique rendering of what fungi are. From the knowledge ontology, fungi emerge as subjects of scientific inquiry, or specimens. As such, the kind of knowledge that is produced as a result of the specific interactions that take place with them in this role can produce a specifically scientific interpretation of what a fungus is. From the experience ontology, fungi emerge as agents in the manipulation of the senses, affect, and attunement of those engaging with them. The resulting understanding of fungi aligns specifically within this experience ontology. In this regard, the respective ontologies are fundamental in producing 'a fungus'.

But the agency of the fungus is not limited to responses to pre-existing and purely human-developed ontological orders. Due to their position as either specimens or experiential agents, fungi also reproduce, alter, adapt, and shift the foundations of the ontological orders themselves. Fungi challenge the salience of scientific objectivity through their illusive morphology, their resistance to being simplified, and their complex relationships with other species. As such, the knowledge that is sought through scientific discourse and its traditions is driven not by a desire for a true understanding of the reality of a fungus, but rather by an innate curiosity about their lives. In fostering this curiosity,

fungi are able to make the boundaries of what can constitute scientific knowledge, and what can be incorporated to strengthen the validity of a scientific inquiry, more permeable.

In addition, the agency that fungi employ shapes even the most fundamental or instinctive means that we have at our disposal to form an experiential understanding of fungi. Both the diversity of the kingdom and the intricacy of the individual fungi make for an experiential ontology that is constantly in flux, and constantly developing to respond to the moment of an encounter. In turn, the understanding that is developed of each individual fungi, or fungi as a whole kingdom, is constantly evolving with the individual and collective traits of the fungi themselves whose countless other interactions leave them in a permanent state of mutability. By constantly adapting to the changes around them, fungi are also constantly adapting the experiential ontology that my initial understanding came from.

Conclusion

In this chapter I have proposed that the ontological orders that have thus far been identified as 'experience' and 'knowledge' converge through the researchers 'love' of the fungi they study, regardless of their disciplinary standpoint. By applying Keller's concept of 'dynamic objectivity' to the understandings of fungi being produced at the Fungal Foray, and reflecting on a shared 'love' of fungi as a potential site of fungal 'ontological choreography', I have addressed the salience of giving purchase to multiple means of engagement in developing understandings of fungi. Regardless of the engagements that I had experienced at the foray thus far, I could see the continued interplay of the two ontological orders that I sensed on my first day in Moana. At the centre of each of these engagements were the fungi that are my focus. In each moment of interaction, I was able to witness the choreography of ontological orders that took place in order to bring each fungus into significance, and thus into being, and in turn could also witness the regeneration of the orders that are constantly being choreographed by those fungi. Both the scientists here and myself are wrestling with how to express our love of fungi within the limits of our disciplines. There is no beginning to the choreography, and there is no end. Instead, what I find as I reflect on the past three days, is that I have been incorporated into a cyclical dance. In the vignette that follows, I will explore some of the unexpected repercussions of becoming immersed in the ontological choreography of fungi, and begin to engage in the technicalities of fungal life that allow such choreography to take place.

Thursday 10th May 2018.

"I began studying bumblebees not because they are important pollinators but because they are fascinating, because they behave in rather interesting and mysterious ways, and because they are rather loveable." (Goulson 2013, 236)

In the decade of 1860, Austrian geologist and amateur field mycologist Ferdinand Von Hochstetter began recording some of the fungal specimens that he encountered throughout his time surveying the landscape of the newly colonized Aotearoa. Among his field notes was a description and depiction of a remarkable native fungi, which caught the eye of globally renowned mycologist Erwin Reichardt. In 1866, Reichardt imbued this fungus with the binomial name *cortinarius hochstetteri* in honour of Ferdinand. For the next century, the taxonomy of native fungi of Aotearoa remained largely unexplored and the *cortinarius hochstetteri* continued to fruit, year after year, in relative peace and quiet.

In 1962, Dr Greta Stevenson revisited Hochstetter's fungal finds, and found that what had been thought of as a member of the *cortinarius* genus had been previously misidentified. Stevenson recorded additional drawings of the fungus and descriptions of its physical attributes, and updated its binomial name so that the fungus was reassigned to the *entoloma* genus. Stevenson's name for the fungus has remained, and the attention of both the scientific community and the public was brought to the *entoloma hochstetteri*.

In the fifty-six years since Dr Stevenson's encounter with Reichardt's work, the *entoloma hochstetteri* has become one of the most iconic fungi in Aotearoa. Known colloquially as the Sky Blue Mushroom, it now features on postage stamps, bank notes, and a plethora of tourist paraphernalia. Through its other-worldly appearance, the *entoloma hochstetteri* effortlessly straddles the tensions between fear and intrigue, and fantasy and reality which dapple the public opinion on fungi, and has become an icon of Aotearoa's knack for producing rather odd nonhuman species. To come face to face with such an extraordinary fungus is a delight. To stumble across one in the wild is a privilege known to only a handful of people, and the encounter is all the more prestigious for it.

Yeojun, Shara, Keira, Chris, Isobel and I climb out of the 4x4 into the Pororari River track carpark at about 11am. The skies over the West Coast are grey today, but the rain is intermittent and the briny wind from the sea keeps the humid air from stagnating. We gather our foraging supplies and make our way across the gravel path and around a small gathering of trees. Taking a slight right-hand turn, we find ourselves in the voluminous chasm of the track. Cliffs rise either side of a grassy valley with a

weaving gravel path. Lined with broadleaf-conifers, nikau, and huge grasses and flaxes, the valley feels like a film set: a perfect replica of Jurassic-era bush. As we venture deeper into the valley, the river begins to carve another vein through the forest. The trees are on our right, our path a smaller cliff above the river to our left. On the other side of the river, severe cliffs without tracks creak up to the white-grey sky. The further into the bush we get, the more this feels like a time warp. With each rounding corner I expect to see some ancient bird, or a dinosaur wading through the river to eat at the glossy forest canopy.

I find it hard to adjust to the childish wonder I feel in this reserve. This particular kind of bush is incomparable to the dank, dim landscapes that I have encountered before on the foray. The forest here is familiar to me in an unexpected way. I have seen this kind of bush on advertisements for our National Parks. It appears on postcards and keychains in over-saturated colour. Films from youth spring to mind as the childish colour palette of lime greens, bright blues, clean greys, and copper browns spread across the crayon landscape. But unlike the media that I was raised on years ago, this bush is here in front of me, and I can reach out and touch it. It feels like a game in which I am the protagonist, a headstrong explorer of untouched worlds. I can't help but wait for the illusion to break, and for the scenery to dissolve into the heavy green greys of our previous forays. For now though, there is a tingling static of excitement between each of us as we elevate our enthusiasm to match the atmosphere of the forest around us.

We continue along the track, scanning fallen logs, tree trunks, and adjacent leaf litter for any signs of fungal life. Keira and Isobel stop by a log that juts out from the path to overhang the river below. Plump orange-brown mushrooms protrude from the moss forming in the crevices of the log. A small cluster is removed and pocketed for identification later, although we all agree that it will be a tough one to lay claim to with any accuracy. We wander on, more enthusiastic about the landscape than the fungi that we do see.

It doesn't take long before we sense that we are not the first to forage here. For such a fertile and well maintained forest, there is a stark lack of fungal fruiting bodies adorning the trees and forest floor. We all silently share the impression that foraging here is a futile task. It feels inappropriate to take more of the same fruiting forms from fungi who have devoted such an enormous force of energy to reproduce. Perhaps we are simply getting in the way. Perhaps, in our attempt to secure our own future knowledge of this landscape, we are merely interrupting its possible future. As we walk the track, scanning the surface of our visual field for signs of fungal life, we notice the signs of the foragers before us. Tree trunks with slices of bark shaved away at eye level. Pockets of disturbed leaf litter like craters. Scabs of sap or liquid mulch among the miniscule pins of future fungal fruits where mature bodies have been removed. As I begin to see more and more frequent signs of the human impact of the foray

in this forest, a sense of unease begins to brew in my stomach. This is the first time that the impact of our imperative to document the fungal diversity of the forests on the West Coast has made itself so visible. With this visibility of our work also came the visibility of the potential ethical obstacles that need to be overcome in order to justify stripping a forest of fungal life for the sake of documenting its previous existence there.

The realisation is disappointing. We have developed a taste for the thrill of being the first to break the untouched ground of a forest but today, we will have no such luxury. Sixty five foragers are currently meticulously raiding a small area of native bush, leaving no specimen undisturbed. Even those fungi which managed to conceal themselves from us in Arthur's Pass may now be being plucked from the earth by other foragers determined to document the diversity of the area. Of course, removing the fruiting bodies of the fungus does very little damage to the mycelial body beneath the surface, so next year the fruit is likely to reappear. We are simply removing the latest attempt of the fungus to reproduce. Nevertheless, it is jarring to see how extensive the impact of our foraging quest is. For all of its majesty and floral diversity, this forest feels empty.

I think of the ontological choreography I have witnessed from fungi over the past three days. Previously, fungi's apparent involvement in the production of knowledge was so captivating that I had no difficulty in thinking of fungi as agents of creation. I feel no such enthrallment here, namely because there are hardly any fungi left. Their absence establishes an eeriness that points to our role in interrupting a fungal choreography that could have outshone our already high expectations of this landscape. Instead, because of our interventions for the sake of maintaining our own knowledge ontology, there are very few fungi left here to create the wonder that we hope to participate in. This forest is in effect a ghost town.

My train of thought is interrupted by the sounds of tentative enthusiasm coming from a fallen tree up ahead. The tree is still rooted to the ground, but has arched over the cliff that falls down to the river. Ahead of me, Keira had climbed up the trunk on all fours, and is inspecting a lone tattered mushroom that stands at about 8cm tall. She climbs down from the tree, beckoning Shara to offer a second opinion on the fungus. After a moment of close encounter, there is no doubt in her mind that Sophia has found an *entoloma hochstetteri*. Eager for a look, Isobel walks to the end of the tree trunk, peering through the overgrown blades of thick forest grasses that have made their homes in the rotting wood. I follow her, hanging back as the three eagerly assess the specimen before them.

While Isobel hunches over the little mushroom, I have a moment to imagine what this will mean. On the first day of the foray, someone returned from the bush with an *entoloma hochstetteri* specimen so astonishingly beautiful as to appear transcendent. It appeared to hover above its brown paper bag

on the glow radiating from its brilliant cap and stipe. It was perfectly formed, a specimen of undeniable perfection that could have emerged straight from the pages of the identification books that were scattered about the hall. Resplendent in the deep velvet of the azulene pigments, the Sky Blue Mushroom was a dream come to life. It had well exceeded the expectations set by Hochstetter and Stevenson, and seemed to more than earn its place on our cultural mantle as one of the most important species in Aotearoa.

If I closed my eyes, I could still see the shining blue of the specimen I saw in the town hall on Monday. Yet here I was, in the almost disconcertingly radiant Pororari River track, about to see an *entoloma hochstetteri* in the wild. My heart rate began to rise as I imagined the implications this would have on my experience. If an ordinary brown *mycena* or an unidentified bracket could send me into a spin of sensory, emotional, and physical turbulence, imagine what an *entoloma hochstetteri* could do!

Isobel stepped aside with a puzzled expression. It should have been the first indication that something was amiss with this particular specimen, but I brushed aside her reaction and prepared to be amazed. It took only a split second for me to realise the reason behind her expression. We had all been imagining the mushroom as I had been, with the splendour and admiration that had been showered upon it by mycologists over the years. Here, however, the *entoloma hochstetteri* lacks the glamour and intrigue of the first specimen of this species I saw.

First and foremost, this *entoloma hochstetteri* is old. Very old in fact. It stands at a typical 8cm tall, but appears sinewy as it stretches upwards, wrinkling with the effort of staying elevated. Its pigment is faded giving the tattered, stringy hem of its cap an anaemic look. The stipe looks as though it could crumple at any minute despite the lightness of a cap that has long since ejected all of its spores, giving the entire body of the fungus more of an ashy brown hue than a blue one. It is days, maybe even hours away from decaying completely.

This isn't what we expected our first wild *entoloma hochstetteri* encounter to be. I feel confronted by this imperfect specimen, almost offended at the prospect that it has fallen so short of my expectations. We were supposed to see one deep in the wilderness, uncovered in the dark leaf litter and glowing like a beacon. It should have sung out to us, lulled us into an eerie trance, illuminated the dank undergrowth with its pure blue aura. Instead, this dilapidated fungus seems to be letting out its last rasping breath as it clings onto the tree trunk for dear life.

We take a moment to sit in the confused silence. We have not yet got the confidence to appropriately distinguish between specimens that are worth collecting and ones which are best left to shrivel back into the earth. As such, nobody here is sure of how to proceed.

On the one hand, this specimen is not worth taking. We can see from its distinctive shape and the last remains of its pigment that it is in fact an *entoloma hochstetteri*, but we can hardly claim it to be a specimen that does credit to our foraging skills. Removing it from its perch on the log would serve no purpose now. This mushroom has effectively crossed the rainbow bridge as far as I am concerned, and we all agree that it's no shining trophy.

On the other hand, we are not supposed to collect only those fungi which we deem to be of importance. In theory, we ought to collect and identify anything and everything that we can get our hands on. We are after all supposedly aiming to document the fungal diversity of this region, not just the presence of fungi which we already value. In reality however, we are at a stage in our foraging practices where some fungi remain in situ by virtue of their mundanity. There are many interesting fungi to be collected, and those that we have seen many times before, or those among the LBMs that pose an almost impossible path of identification for us, are simply left alone. But this is no ordinary mushroom. This is an *entoloma hochstetteri*, one of if not *the most* prestigious mushroom in Aotearoa. Sure, it's not perfect. But who among us is? Surely if we were to consider the code by which we have all gathered, we should collect the specimen regardless of its condition? All fungi have a value, and this one even more than the rest. So does the name of scientific rigour not demand of us that we take this decrepit specimen back to the hall for identification and cataloguing regardless of its appalling condition?

We ponder this for a moment. A big decision lies ahead of us. Do we take this disappointing, tattered crust of a specimen with us? Or do we leave an example (albeit not a great one) of one of the most highly admired fungi in our country in this forest to be churned under the indiscriminating wheel of life? Does the *entoloma hochstetteri* have value simply by virtue of its existence, or does it only come to matter when it brings us information, understanding, and prestige? Why is it so difficult to decide whether to collect this particular fungus?

After a few minutes of our muted deliberations, it is decided that Keira will collect the *entoloma hochstetteri*. She climbs back up onto the fallen tree and like a hot knife through butter, slices away cleanly at the mossy substrate to very carefully remove the *entoloma hochstetteri* from its mycelium. Its identification number is noted and kept with it in the white paper bag, and we continue on with our foraging with the muted enthusiasm of people who are unsure whether they have made a mistake.

Later that day we sit in the town hall. I have learned by now to bring a hot water bottle with me, and I sit in my jeans, woollen sweater, and beanie at our specimen table. Today more than ever, the chill feels like a reflection of our feelings. The *entoloma hochstetteri* doesn't take pride of place today as

its predecessors did. Instead it lies on its paper ID slip like a corpse on a cold stone slab. Nobody wants to touch it, and nobody stops to admire it. It is pale and dry, with spore dust emphasising the fibrous tendons that wrench up its stipe to its cap like a strained, wrinkled neck. The hall has become a crypt. It makes me uneasy, being in the company of something so decidedly dead. In comparison to the other fungi I have encountered here, this mushroom is profoundly disappointing. Beyond this however is the disconcerting sense that my interaction with this mushroom has fundamentally altered what was supposed to be a majestic choreography of my knowledge and experience, turning it instead into an un-ceremonial death for which I am the body collector. I feel a loss in my agency here that lacks the glamour of previous encounters. I am an unwilling subject here, unable to connect with this mushroom on any level that feels appropriate. I do not want to look at it or smell it or touch it. I do not want to fill out the identification slip, or acknowledge its existence on any database. Instead, I busy myself with identifying our remaining finds. It doesn't quite feel like a defeat. More of a resignation to the fact that this fungus could not meet my expectations of it.

The *entoloma hochstetteri* is eventually transported to the cataloguing table with a number of other successfully identified fungi. Even from its new position on the other side of the hall, we are all acutely aware of its presence. Death is in the building, but we would each rather go about our business in false obliviousness than acknowledge it. We leave the hall for dinner, and in the bliss of the warm pub we are washed of the feeling of unease that has accompanied our time with the *entoloma hochstetteri*. When we return to the hall to complete our identification of a few remaining stragglers, nobody notices that the *entoloma hochstetteri* from the Pororari River track is in the bin. It doesn't make any sound as it brushes past the hollow in my chest, trailing the dust of long dead spores as it drifts silently down into the darkness. That night, I sleep deeply. I do not lie awake thinking about our forage, and I do not dream. I wake the next day to a clear, watercolour sunrise over the lake, forgetting to think of the little blue mushroom that never made a sound as it vanished from my mind, and from the Porirari River track.

The *Entoloma hochstetteri*

"In a world of potential threats and predators, ignoring another living being is a contingent and revocable achievement, one in which engagement and detachment, action and inaction, are inextricably entwined." (Candea 2010, 249)

Introduction

In the vignette that precedes this chapter, I detailed the confusion, frustration, and heartbreak of my first unrequited engagement with a fungus. In this chapter I will turn to Matei Candea's application of 'detachment' as conducive to nurturing multispecies relationships (2010). I begin by attending to the ontological choreography that took place at the Pororari River track, discussing the complex question of the agency of fungi in conducting this. Following this, I introduce the concept of 'detachment' as a necessary facet of realising and exercising a 'love' of fungi in research. I then introduce the notion of fungal 'technical agency' which refers to the physical mechanics of a fungus' life cycle, to reflect on 'detachment' as an unavoidable aspect of working with nonhuman species. I then reflect back on our decision to collect the *entoloma hochstetteri* with reference to both 'love' and 'detachment', concluding that these two aspects of our understanding are also choreographed by fungi through their technical agency. I conclude by reflecting that my experience of 'detachment' is just as significant in understanding in developing an understanding of fungi as experiencing engagement in their life worlds.

Just another mushroom

In seeing the tattered *entoloma hochstetteri* on the fallen tree at the Pororari River track for the first time, I felt a pang of betrayal. For the first time during my excursions into the world of fungi, a mushroom appeared entirely unremarkable. And not just any mushroom, but one of the most prestigious mushrooms in our cultural ontology. In all of the anticipation that surrounded it, I had conjured an impression of the *hochstetteri* that even the most exquisite specimen would struggle to uphold. In the moment of encounter, I could not help but feel frustrated that this particular fungus on this particular day in this particular part of the West Coast had skirted around my expectations. Looking back now, I can see the somewhat endearing pettiness that shows the flipside to my adoration of fungi. My initial response to the *entoloma hochstetteri* was in effect a lover's quarrel.

Beyond realising the pettiness of my frustration however was a more distressing discovery. Since coming to terms with the mechanisms of ontological choreography employed by fungi here and grasping onto what I had hoped was a final understanding of fungi, I had only had encounters with fungi that seemed to elevate them from the mundanity of reality and reinforce my love of them. Upon encountering a fungus that seemed to have missed the memo, I was faced with the realisation that

the understanding I had cultivated with such enthusiasm in the day's prior was still too narrow to render an impression of fungi that was both rich and accurate. If I was to employ the same framework in this situation, what I would have to say about the *entoloma hochstetteri* would be this: everyone thinks it's really great but really, it's just another mushroom.

This was a wholly unsatisfying conclusion to come to about the *hochstetteri*, and one that seemed to clip my enthusiasm short. And yet there was something else at play within this notion that spurred me on once again. I had expected the *hochstetteri* to transcend my expectations, to hurl me into an experiential whirlwind of sensation and emotion. With the others in our foraging posse, I anticipated it would at the very least present itself as an optimal specimen for scientific inquiry. In sum, I thought I would love the *entoloma hochstetteri*. What I found however was just another mushroom, going about its life cycle without any regard for the ontological orders that surrounded it which desired its attention and conformity.

At first, I thought that this was a kind of resistance to the model that I had been working with. After all, the two main ontological orders that I had been developing my understanding of fungi with had seemed to cover the primary bases of fungal life. Perhaps I had been too eager, and in my elation of realising the place of my adoration of the fungi here, I had forgotten how to love them. Perhaps the *hochstetteri* was not a choreographer after all. But this did not explain how other specimens of the same species of fungus had managed to perform so adeptly in the choreography of their existence at the foray so far. And it certainly did not explain how the species had become so highly regarded across the world by mycologists, botanists, and biologists. Clearly *some* *hochstetteris* are choreographers. So why did this one seem so unexceptional in performing the mundane business of living and dying as a fungus? And where was the choreography that had helped me to understand all of the other mushrooms I had encountered on the foray so far?

Fungal ontological choreography

Detaching from fungi

Contextualising the love that is cultivated between the fungi and those of us who study them had until this point, appeared to offer a solution to the disjunction I perceived between scientific and experiential understandings of fungi. Back at Arthur's Pass, the manipulation of Isobel's objectivity was exciting to observe as it attributed to the fungi involved a kind of agency that did not appear to fit into the two dominant conceptions of agency in anthropology: The fungi were neither acting with preconceived intent in the Ortnesian model of agency, nor were they made agentive exclusively through their relation to and interactions with others in the Latourian sense. Their agency seemed to

be entwined with yet distinct from Isobel's reverence of them. Her relationship to the jelly babies, founded on an affection for them rather than a dominance of them, allowed for a particular kind of objectivity to emerge that we can now read as 'dynamic' (Keller 1995, 116). The choreography of the fungi was not only endearing, but also empowering for us as researchers.

What occurred with the *hochstetteri* was thus jarring. Rather than empowering our relationship to them, it seemed that the *hochstetteri* was disinterested in our intentions. Through its decay we were forced out of the intimacy that we had anticipated. Initially, experiencing this led me to interpret the *hochstetteri* as deliberately resistant to forming a relationship with us. However the work of anthropologist Matei Candea on engagement and detachment has since allowed me to understand my experience with the *hochstetteri* as yet another facet of an increasingly complex relationship.

Candea proposes that in the recent developments of posthumanist and multispecies theory, anthropological conceptions of our relationship to nonhumans could be loosely divided into two schools of thought. Stemming from a Durkheimian account is the position that, as nonhumans and objects are the mediators of social relations, it is essential to treat them as 'subjects', or rather, to treat nonhuman subjects as though they were human (2010, 243). Latourian scholars, on the other hand, place more emphasis on the networks of associations formed by and between human and nonhuman 'actants' (2010, 243). Rather than seeking to address why and to what end individuals contribute to the generation of social relations, this approach asks *how* such social relations emerge from relations between 'actants'. As such, nonhumans and objects are not treated as though they are humans, but rather humans, nonhumans, and objects are positioned on the same plane of agency in the constant negotiation of social relations. As Candea rightly highlights however, both approaches seek to understand how the relations between the agents involved (be they human, nonhuman, or object) allow for specific realities to emerge (2010, 243). Underlying both approaches is the assumption of a binary of involvement that each agent is either engaged in, or detached from. What is not addressed by either approach is whether a black and white distinction between engagement and attachment is valid, or even necessary, in developing an understanding of how and why social relations emerge as they do.

Using ethnographic research conducted with the Kalahari Meerkat Project (KMP), Candea suggests that engagements and detachments between researchers and their subjects are always together at play when conducting research with nonhumans, and are both necessary for cultivating meaningful relationships to research subjects from a position of respect and mutuality (2010). Candea reflects on the positionality of volunteers who monitor the activity and health of the meerkats at the KMP. In order for the work of caring for and monitoring the meerkats of the KMP, volunteers must constantly negotiate between their subjectivity and objectivity (2010, 244). As explained by Evelyn Fox Keller,

these two positions that have been theoretically established as irreconcilable as a result of power dynamics, are in fact intertwined in practice (1995). Volunteers orientate the extent of their engagements with the meerkats around both an ethics of care, and an ethics of scientific objectivity. While it is apparent from the affection that volunteers express to the meerkats that their engagements are constantly mediated by their subjectivity as researchers, this negotiation of objectivity and subjectivity also occurs during detachments between the researchers and their subjects. These detachments can become a necessary aspect of working with nonhuman animals to the extent that it allows the animals to live as 'naturally' as the circumstances allow. In turn, researchers are able to detach from their subjects enough to attain data that is as objective as possible and thus applicable outside of the confines of the KMP. This detachment thus served not to reinforce a human-nonhuman hierarchy in the research, but to allow for a respectful coexistence between human and meerkat while also enabling researchers to learn from their subjects without positioning them as either passive or agentive in the relationship between them (2010, 251).

Positioning myself

Until my encounter with the *hochstetteri*, I had found myself comfortably in the midst of the ontological choreography of the fungi I encountered in the field. The ontological orders that I had witnessed in motion were accessible to me not only as an observer, but also as a participant. I had a degree of agency within the choreography itself, able to pull myself out of the murkiness of my experience when I found myself overwhelmed, and later able to enjoy the suspension that fungi offered in a new way of being in the world. I was able to actively participate in the collection, identification, and cataloguing of the fungi that was an essential aspect of the foray, and enabled a choreography of knowledge by the fungi themselves. Of course, the dynamism of the fungi never failed to impress me, and at times I found myself toeing the line between exhilaration and terror as I explored the different facets of fungi's influence on me and the world that surrounded me. Despite this however, I was still able to maintain a sense of involvement in the choreography that fungi were performing. Beyond offering me an anchor point for my immersion in it, this had also given me a sense of purpose in my research journey, and a kind of comradeship with them that could only come about through realising that our lives were co-dependent.

Some fungi performed this relationship exceptionally well. Through our encounters with fungi we are offered an opportunity to participate in their choreography of our experience. When we respond to their offers with affirmation, we are able to experience a unique understanding of fungi that is the direct result of our being there with them, and can only be attained by going along with their choreography. By harvesting fungi in the field, we are asking them to participate in the choreography in a new way, this time as specimens. Some fungi do this very well. The very first mushroom I saw in

the kahikatea forests of Lake Kaniere was easy to identify as a mycena on the spot, and as such instantly shifted us into a different motion in the choreography of our knowledge ontology. Others appear to be less compliant, such as the illusive white bracket fungus, but ultimately allow for the choreography of knowledge to endure as it awaits our ongoing scientific engagement with it as an unidentified specimen.

The entoloma hochstetteri

Choreographing a life cycle

The entoloma hochstetteri was seemingly the least compliant of them all. Unlike the other fungi which had surprised me in their aptitude of choreographing the knowledge and experience ontological orders that I had identified, the hochstetteri defied my expectations entirely. Rather than participating in the choreography that I had already established as prevalent among all fungi, the hochstetteri was pulling away from the ontological orders that I had come to understand during our encounter and instead was immersed in the techniques of its own natural life cycle.

The hochstetteri neither offered itself to us, nor remained ambiguous. It seemed to exist in a kind of murky liminal space between agency and disempowerment, wherein it responded to my expectations passively, but did not *fulfil* them by engaging as I had hoped. It was compliant in that we knew what it was within a moment of seeing it. But the intricacies of the hochstetteri's own choreography, such as its response to the forest and its life cycle, meant that it was reaching away from our position in the choreography. What we were a part of featured more on the edges of the fungi's choreography, and our own interactions with the hochstetteri were mere echoes around the technical agency of the fungus in performing its life cycle.

Positioning ourselves

This was an uncomfortable position for myself and the other foragers to be in. Despite their interpretation of all of the fungi here as specimens rather than ontological choreographers, everyone in our cohort could see that we were meeting this fungi at a crossroads. We could not go back to a time where we hadn't encountered the hochstetteri, and so the fungus saw to it that we were faced with a difficult decision. Should we leave it in situ to carry out its technical choreography, in turn choosing to disregard the imperative of our being here for the purpose of accumulating knowledge? Or should we remove the hochstetteri from its technical choreography, and like a square peg in a round hole attempt to force it into the ontological orders we had established despite its prior rejection of them? This was not a straightforward decision. Emotionally and physically, our disappointment at

the *hochstetteri* indicated that it had not operated within our experience ontology as we had expected. Scientifically, the fungus was not in an ideal enough condition to readily fit the mould of 'specimen'. But my foraging companions were driven by a desire to find knowledge in even the most unlikely places, and I was ill at ease with the possibility that I had no part to play in the lives of the fungi here. If we did not take it, we would be rejecting all of our reasons for being here.

We discussed our options. We could leave the *hochstetteri* in situ, document its existence and photograph it, and leave it to rot on the forest floor. By doing so we would be fulfilling the minimum brief of the foray, and allowing the fungus to go about its business. This seemed like a reasonable option until we concluded that the practice of the foray demanded an actual physical specimen to be verified at the hall. We were all amateurs after all, and this mushroom was so decrepit that no photograph could confirm that this was actually a *hochstetteri*. Besides, if it was simply going to rot anyway, what would the harm be in taking it? Surely there was no down side to collecting what was in essence the fruit of the fungus. But the *hochstetteri* itself was old and sad. In the context of the forest around it, it seemed to be completing its final stage of life. It would not only look out of place among the other perfect specimens in the lab, but would also *function* out of place there too in that it was so far past its 'use-by' date as to be irrelevant beyond a simple acknowledgement of its past existence in the forest. It seemed that it really didn't matter either way and yet, we were stuck. The choreography of the fungus was happening around us but we were engaging from a precarious position, and we did not know what to do next.

The third ontological order

At this impasse, I was forced not only to reflect on the agency of the *hochstetteri* in its independence from my personal conception of its place within a choreography of ontological orders, but also to reflect on my own agency and subjectivity in relation to the fungi, which had dramatically shifted with the revelation of the imperfect *hochstetteri*. It highlighted how much my own understanding of being in the field had become wrapped up in the ontological choreography of knowledge and experience. My experience with the fungi thus far had been inseparable from my knowledge of them, and my emotional, physical, sensory, and affective experiences were wrapped up in developing a scientific interpretation of them as well as an anthropological one. I had not yet been forced to see the ontological orders as being forced apart by fungi, or rejected by them either. Previously, the physical and physiological or 'technical' aspects of the fungi's life had all become mechanisms for the choreography of knowledge and experience to take place. These technical aspects of a fungi's life were

simply the movements that blended the knowledge and experience together to give significance to the fungi.

Now, the technical aspects of the fungi's life seemed to be the thing that was slowly unsticking them from the choreography of knowledge and experience. In its decay and death, the *hochstetteri* was detaching itself from the possibility of participating in a scientific ontology. In addition, in presenting itself as a near-departed figure, it was challenging my experiential response to it, in turn become removed from my sensations, emotions, and physical presence with it.

In deciding whether or not to harvest the *hochstetteri*, we were deciding whether or not to attempt to falsely cultivate the ontological choreography of the fungus ourselves. Would I leave it to complete its technical mechanisms and accept myself as a reject from the fungi's choreography? Or would I prioritise my hubris in interrupting the agency of the fungus, and fall back onto the understandings that I had tried over the past three days to reimagine? Our shared apprehension regarding whether or not to harvest the fungus was rooted in the instinct that when asked to comply with a science ontology and an experience ontology, it would not. So what should we do?

Responding to ontological choreography

Ultimately we chose our hubris. We relied on the justification that in the name of scientific integrity, it was our duty to document the existence of every fungus we encountered regardless of its condition. But we all knew that in addition, the prospect of offering our colleagues the evidence that we had been privy to the life of an *entoloma hochstetteri* was too tantalising to resist. And so we harvested the mushroom. We each of us could tell as soon as the knife came out the other side of the bark that this encounter had tainted the day. But what choice did we have? All we could do was push the recurring disappointment out of our minds, and try to treat the *hochstetteri* as we have been trained to do: like just another mushroom.

Our dejection at the town hall was an obvious sign that we had interrupted the complexity of the fungi's choreography, and thus it became even less magnificence as the hours ticked on and the fungus shrivelled on its paper bag casket. No longer fulfilling its technical choreography in the context of its life, it became a creature drained of the essence of its agency and its valour. It continued to die as it was always going to do, but we were persistent in our attempts to remove it from its own choreography and reposition it in ours. I *wanted* to see it as influential over my senses. I craved the experiential suspension that I felt deprived of, and I tried to find a way to initiate it myself. We did the same with our knowledge ontology, attempting to make a specimen out of a creature that was going about its own independent choreography. Neither attempt worked of course, and the resulting dejection that we all experienced was hard to shake.

It was at this point that I came to terms with the effect of the emotional, affective, and physical understanding that I had developed. In attempting to foreground this experiential understanding I had disconnected fungi from the tangible realities of their own lives. By trying to continue the legacy of multispecies and new nature works of displacing human exceptionalism through a heightened recognition of my own experience with nonhumans, I had actually reinforced the hierarchy I sought to disrupt. Because I had restricted my understanding to the two ontological orders that I could readily conceive of and participate in, I had no means to develop an understanding of fungi outside of myself. The *hochstetteri* changed this, prompting me to consider not only how my prior understanding had come about, but also how acknowledging the significance of technological choreography of the fungi's life cycle could lead to a more complex understanding of them in the future.

Repercussions of our response

It would be wrong to say that what the *hochstetteri* was doing was a deliberate resistance to being incorporated into the ontological orders of experience and knowledge, as doing so would imply a kind of intentional agency that is drawn more from my own experiences of participating in the choreography than from the fungi's. Rather, in previous encounters the fungi were performing a choreography and an agency that I happened to be a participant in, and in turn my interaction with them served to create the conditions for the specific choreographies to emerge. During this interaction, the *hochstetteri* was not making a deliberate attempt to reject our offer of being a scientific specimen. To an extent, it complied with this ontological order just enough to be taken back to the makeshift lab in the town hall, to lie like a cadaver on its paper bag, awaiting its autopsy. Predominantly however we had refused to detach ourselves from the choreography of the *hochstetteri* and the technicalities of its existence. We instead imposed our own ontological choreography on the mushroom, relying on domination rather than love to guide our response to the fungus. Lying there like an abstraction of an *entoloma hochstetteri*, uncanny in its resemblance yet something else entirely in spirit, the mushroom came to represent how our interruption could forever alter the essence of the fungi that we were each seeking to understand. In my attempt to force my way into the life of the *hochstetteri*, I had not only betrayed the intention of my research but also the fungus itself.

This was a bitter pill to swallow, and a moment of being put in my place by the fungi here. The *entoloma hochstetteri* is one of the most admired fungi in Aotearoa and as such, the impact of its detachment from our lives was most sorely felt. Having said that, the interaction was fundamental in solidifying in my mind the necessity for a multifaceted approach. The convergence of the two ontological orders was apparent to me before we had made our decision – science cannot be purely objective if it takes four amateur foragers so long to decide whether or not to harvest a mushroom.

Our sensory, physical, emotional, and affective response to the fungus was fundamental in challenging science's static objectivity regardless of whether or not we chose to interrupt the technical choreography of the *hochstetteri*. More than this however, the *hochstetteri* demonstrated the value of interpreting fungi as ontological choreographers. Without this approach, I could not explain why it was so hard to decide, why it was so disappointing to act on our eventual decision, and why in retrospect our experience had become too entangled with our knowledge. Most importantly, it had demonstrated the ontological choreography of the fungus as it plays out outside of my own existence in the world. The fungus went about the technical aspects of choreographing its life regardless of my own rendering of it. The techniques of decay had no meaning, there was no greater function, and in a strange way, when it did *not* comply with my expected understanding of it, the mushroom was most agentive in death.

It takes some time for me to realise that one of the consequences of loving fungi, as either an anthropologist or a scientist, is that this love does not necessarily translate into joy. As my previous interactions with the fungi at the foray evolved, I began to feel an endearment toward them which was obscuring one of the most important aspects of their existence: their techniques of living. Detachment thus became a necessary step in my journey of understanding fungi, as it reminded me that seeing fungi as they are also requires taking off the rose-tinted lenses and bearing witness to the less enamouring facets of fungal life. Candea witnesses this detachment among the volunteers at the KMP, and experiences it himself during his time with the meerkats (2010). In line with Keller's approach of 'dynamic objectivity' (1995, 116), Candea proposes that detachment can be, and often is, an expression of a scientist's love for that which they study (2010, 255). The scientists around me are well aware of the utility of detachment in conducting research, and their discipline is well equipped to approach the technical aspects of fungal life with a 'dynamic objectivity'. Yet while it would seem that detachment is just as important in cultivating an authentic multispecies account of fungi as it is in developing an accurate scientific one, realising this has come at an emotional cost. I am thus not only learning to love the fungi here, but also learning *how* to love them.

Conclusion

This chapter has proposed that 'detaching' from fungi is yet another aspect of developing a multifaceted understanding of them, and an essential practice in working alongside them. By applying Candea's concept, I have reflected on the tensions that can arise in the field when exercising a 'love' of fungi exclusively through engagement. In response to the difficulties of this unexpected detachment, I have introduced the concept of fungal 'technical agency' and begun to understand the means by which fungi choreograph between 'experience' and knowledge, 'love' and 'detachment'.

My encounter with the *entoloma hochstetteri* was crucial because for the first time since my immersion in this new landscape and subjectivity, I felt like an outsider in the ontological choreography of a fungus. Aside from the kind of emotional response that this evoked, it begged a larger question in the context of my purpose at the foray. By experiencing this exclusion, I had come to understand more of the choreography of fungi than I had before. But in being excluded from its processes, I felt as though the *hochstetteri* had more to it than I was capable of understanding, and I questioned whether the understanding of the other fungi that I had developed in my time here had any realistic purchase. Did my experience with the fungi actually pertain to them as nonhuman species? Or was my thesis ultimately returning to the hubris I had wanted to avoid? Without being an active participant in the choreography, I could not tell whether I had gained a more nuanced understanding of the fungi, or whether I had lost the understanding of fungi that I had so painstakingly sought to develop over the past four days.

When I realised that the *hochstetteri* was performing a kind of choreography that I had no access to and no part to play in, it was not only my research that felt at stake. It was also my relationship to the fungi themselves. I was forced to confront in this moment how significant it had been for me to participate in the choreography of knowledge and experience, and how that had influenced my perception of what was happening. There was nothing profound in this moment, no meaning behind the techniques of the fungi's life. In realising this, I also realised how much meaning I had imparted onto the fungi that preceded the *hochstetteri*, and how much this had likely influenced my understanding of them

To make sense of this through the unexpected emotional turbulence of being rejected by a mushroom, I return to Candea. In the heat of the moment I had interpreted my interaction with the *hochstetteri* as an entirely detached one. The fungus' life had appeared to unfold in such a way as to exclude me entirely from its choreography, regardless of my 'knowledge' and 'experience'. Candea's approach would however dispute this reading as being more representative of a binary model of engagement and detachment than of the interaction itself.

My encounter with the *hochstetteri* involved both my engagement with it as a meaningful subject, and my detachment from it as a living creature. In this interaction I was able to experience a form of 'dynamic objectivity', in which my love of the fungi was translated not into an elevation of the subject, but into a realistic, accurate, and evocative account. As such, my understanding of the fungi at the foray comes from a delicate balance between love and detachment, knowledge and experience, all of which are painstakingly and tenuously choreographed through the technical agency of the fungi. In the vignette that follows I return for the last time to the visceral environment of the kahikatea forests in Hokitika, and the fungi that live there.

Friday 11th May 2018.

"You lean into the water and feel its even gentleness lifting you as you steal through the surface. The secret is to respect it but never fear it, so you can relax and sense the molecules moving around you as you swim." (Deakin 1999, 345)

It is six months to the day that I began my fieldwork in Moana. The winter chill of May has long since melted into spring, and spring is now rolling on into a languid, dry summer. In the comfort of an office, tucked behind a desk, I get itchy feet writing about my time in the native forests of the West Coast. It seems as though it was a different world to me now. And yet the more I write about my time there, the more impressions left upon myself I discover. If I listen closely, recalling the thick heavy rain and the smell of active earth, I can still just about hear the ringing mushrooms that have settled in my chest. Writing has not just been a process of documentation; it has been an exploration of the impact that fungi have had on me during this time, and a chance to understand why fungi have come to matter so much in my engagements with the world. The more I write, the more I wish to wake up once again in the damp, dark lodge cabin to step out into the watery lilac sky of a morning lively with the activity of fungi. It was one such morning that began my last day of mushroom foraging on the West Coast.

My alarm wakes me from my heavy rest at half past six. The sun is yet to rise over the dewy mountains, and I begin my bleary routine of layering various woolly and waterproof clothing items in the dark. A cup of Bell tea and a bowl of muesli awaits me in the town hall, and when I arrive there the most eager mushroom foragers are already congregating around the breakfast table discussing their final excursion.

I sit at breakfast with what has become my usual crew, and we decide to foray together again. Shara and Keira have left to attend their exams and Isobel and I fall into a morning routine together, gathering supplies for our last day. People say the rain will be coming in heavier this afternoon. The sky is certainly heralding a downpour. Curling walls of dark grey clouds slither over the crest of the mountains, blocking out any sun and warmth from the soupy air. The humidity is high today too, and it is hard to know whether our clothes are already damp as we pile into the 4x4 once again and make our way to the township of Hokitika.

The drive to the small coastal town is familiar. The rain comes down as we take the coastal road, watching the green-grey swell of the western sea take the beach. Beyond the cradle of Lake Brunner,

the wind rises into a heavy, boisterous dance that slams into the side of the car as Yeonjun drives along the road, each of us aware of the cautious urgency with which we await our destination.

Were it not for the ever-diminishing work opportunities on the West Coast, Hokitika would be a town blossoming with the promises of the early 1950s. Quintessential local bakeries and cafe's with faded hand-painted signs boast the best hot bread rolls and custard squares in town as we roll through the quiet thoroughfare of the main street. There are no boutiques or bookshops. Instead, chain stores that I recall from the shopping centre in my home town occupy dilapidated buildings erected in the town in the 50s and 60s, when opportunity was ripe and Hokitika was on the rise. A small part of me wished it felt more eerie here. But small towns like this exist all over the country, forgotten in the rush of inner-city development and left to make do with whatever was established here when the quarter acre dream was the foundation of our national identity. As we pass through the suburban streets lined with old state houses, we see the occasional pedestrian out walking dogs in heavy overcoats and waterproof trousers. People here are prepared for the weather, and the horizontal walls of rain driven in from the wild coast have not deterred the determined few for whom Hokitika is home.

We come to a stop at small grassy park and wooded inlet beside a commercial railway track. Prosser's Bush is a historic site, and home to the variety of nonhuman species that favour kahikatea woodlands. From our perspective beside the car at the entrance to the bush, the forest is roughly the size of one of the adjacent state houses. It is by far the smallest area of bush that I have foraged in on our foray so far, and I feel apprehensive as I make my way through the torrential rain to the dark entrance of the tiny bush.

I realise as my heartbeat slows to a throb behind my ears that I am never prepared for the feeling of entering a forest. Behind me is a white-grey small town. People come to this reserve to play rugby on a Saturday morning, to walk their dogs, to have a coffee and a cheese scone with neighbours. Ahead of me is the lulling rhythm of a wild life cycle. An entire ecosystem spinning in the cycle of birth, violence, growth, competition, death, and decay. The forest, small as it may be, groans as it opens up like a chasm in the town. I cannot hear the passing cars only metres away. The sound of their tires rumbling over the tarmac roads cannot penetrate the many layers of thick trees, curtained ferns, and fuzzy moss that insulates us from the world outside.

Isobel walks ahead of me, and the usual hush falls over our party. Today even the black canopy of the kahikateas cannot stop the falling of raindrops fat as plums from tumbling upon us. The cold immediately hardens my muscles, and my neck creaks as I lower my head. Looking for mushrooms on the forest floor seems to be the only option today if you want to avoid a pool of chilling rain water rushing down the back of your hood. Every glance ahead washes my face, and it doesn't take long for

the end of the raincoat sleeves to begin soaking up the water than runs down my shoulders to the ground below. Unlike the others, I stick largely to the path. There is something about the rain today that is rinsing me of the necessary enthusiasm and energy to delicately clamber among the undergrowth in search of the illusive fungi that lurk there. Instead, I look to the elbows of tree roots that line the path in the hopes of finding a fungus just as I did on my first day foraging in the kahikatea of Lake Kaniere.

Forty or so minutes pass, and I have found nothing of interest. A few slime moulds here and there which we have been deterred from collecting, and a handful of LBMs, but on the whole, what was only days ago the roaring bonfire of my excitement has dwindled to a small, smouldering lump of coal that weighs at my feet, rooting me in place out of a combination of sheer exhaustion and boredom. Behind me, I hear Carol talking to a stick on the ground. Carol is a primary school teacher, and is on placement with Manaaki Whenua to bring fresh insights about the environment back to her school. She is a grandmother, and her nurturing sensibilities scream of primary school teacher from a mile off. I turn to look at her while she expresses her admiration for a small mushroom that I had passed by. I watch as she grooms the fungi, complimenting it and reminding it of how interesting it is, and how much value it has even for a dinky little thing. Old habits die hard, even in the forest.

I turn back to the forest track ahead of me, absorbing just enough enthusiasm from Carol to muster the energy to care for the next two minutes of my life. I try to shimmy my raincoat hood further over my head without using my hands so as to avoid filling my sleeves with the steady running rain from the trees above. My nose has a constantly dripping drop of rain running down its bridge. Even my eyebrows are dripping. This is ridiculous.

I give up on staying dry and instead opt to risk the drenching rain in order to give my neck a break. I wander through the bush looking right ahead, keeping track of the sodden bark of the trees around me. A rare waxgill, which gets its name from the colour of its meaty flesh when sliced open, worms up from the moss blanketing a tree nearby. The mushroom is a mere 3cm tall, but glares at me with a brilliant red cap and stipe. It's a stare that I cannot ignore, even though at this point I do actually want to. I wander over to the mushroom and examine it critically. It's a stocky young thing, with translucent flesh that gives the illusion of blood pumping through its body. It seems reproachful and arrogant as it smirks at me from its perch on the tree. I am unimpressed. I've seen waxgills of almost every imaginable colour on this foray. Hell, I've seen waxgills that glow in the dark! I am determined to maintain my air of reluctance in the face of such an apparently exciting fungal find.

Blinking back at the forest, I come around to the absurdity of my mood. The forest cannot help the rain, or the light. In fact, there is something deeply satisfying about being at the mercy of the elements

and persevering in an activity that is by many accounts largely recreational. I am tired, it is true. My bones are aching with the familiar chilling damp that hasn't abated since my arrival in Moana. But there is beauty in this forest. I have just lost the will to find it. I return to the rare waxgill. It isn't at all stropy. It didn't choose to be such a red colour. It simply exists, and will die eventually like all of the fruiting bodies we have seen. Apologising to it in my head, I take a photograph of it in situ, and harvest it for identification later.

The rain is setting in so heavily now that even breathing in through the nose is a choking hazard from the waterfalls that adorn all of our coat hoods. Isobel tells me that she is turning back to the car. We might find another handful of fungi if we keep going, but in this weather, is it really worth it? I offer a confirming 'mmm', and turn to retrace my steps back to the car. As I do, the hairs on the back of my neck prick up. I feel the atmosphere of the untouched forest behind me wrap around me, holding me in place. It is as though I am pressing against a sheet, unable to return to the car until I walk the remaining track. This path is shaped like the eye of a needle, with an ovular loop at the far end. I am at its fork, and need to choose. Do I push away and return to the car? Or do I heed the atmosphere of the trees that draw me along their path to completion? Isobel has wandered off ahead. If I don't follow her soon, I'll be delaying everyone in the car. I have to make a choice now.

I turn back to face the untouched track and march onwards, head tilted up just enough to see ahead of me. Everything around me is dark, and the rain creates a white noise that seems to hide every sound but that which is radiating from the trees and forest floor. My ears sharpen, and my footsteps squelch into the leaf-littered path with such electricity that each step feels like a deeper plunge into the presence of the forest. Here I am again, not quite drifting passively, not quite in control. I know there are fungi in here, off the track. I can smell them. But this forest feels like a trap. I don't know how much time has passed since I entered this track. Twenty minutes? Three hours? Is it getting darker because of the rain, or because of some rising moon? I march on with fearful determination, keeping my head down and my eyes slightly out of focus in order to resist the temptation to stop walking. The rotting forest floor is sinister, and I want only to get out. Why did I choose to walk this track? Still, how could I leave without knowing what was around the corner? Without responding to the pull of the dark wood? My breath is cold and heavy, and my heart quickens as it pounds behind my ears. It all looks the same. The faster I walk, the less distance I seem to get from where I was. Or is it simply that I can't tell this tree from the next? This loop seems to go on and on-

I stop suddenly at the tree that was once home to the waxgill. I recognise the exposed wound in its bark where I have extracted the mushroom. I look past it and see Carol on the ground, still examining the same area of earth. Isobel's laughter sails around the track and over my head. Through the ponga tree fence line I can see Yeojun's fluorescent vest as he begins to pack the car in the pouring rain.

Around me, the white noise has stopped. I can see the light from the sun glinting on the wet leaves. The air is clear and cool, and I stand blinking for a moment as I adjust to being back in a familiar moment. The feeling is less surprising now, but it is no less surreal to be plunged into the thickness of an altered attunement to the forests.

I leave the forest with a sigh. We're almost done. Only the Hokitika gorge track remains for our exploration, and then it'll be over. I strip off my waterproof layers and pile into the humid car to wait for Carol. We huddle around a bag of scroggin, planning our next excursion while we wait for her to return. When she does, she is as unfazed as everyone else. I will never understand why some people seem to be accepted by the forests here, while others do not. Jon was the same as Carol; one foot in and the door was opened wide. We open the car door to Carol's warm smile and woolly sweater. We laugh, remarking on her ability to see endless beauty in the smallest patch of even the most mundane places. Yeojun starts the car, and we drive away from Prosser's Bush without looking back.

The afternoon at the town hall drags on, but I feel languid in the reaching time. After a hot shower my muscles are radiant, and I insulate myself with layers of wool and fleece to keep the fleeting warmth in for as long as possible. I look like a human burrito, wrapped up tight in my jumpers, scarf, hat, and socks.

Sitting at our IDing table, I smile down at an LBM. I notice the glow of happiness that couples with the glow of warmth around my body, and I reflect on how deeply sad I will be to leave this brief window of my life behind. But there is no need to savour this moment. Here and now, the afternoon will haul itself along into another cosy night at the lodge pub. I have hours to relax here, slowly chipping away at our stash of unidentified fungal objects. Isobel and I occasionally chime up to comment on the idiosyncrasies of a particular fungus at hand, exchanging stories of growing up, studying, and working. But for the most part we are quiet as we share a cosy communion with the fungi in front of us.

Behind me I can smell the rotting fruiting bodies of fungi not worth preserving for the Manaaki Whenua collection. I think back to the first day of the foray, and my first encounter with the giddy aromas that fungi filled the hall with. I can still smell the decay, and it is no less concerning. But I feel a great sense of warmth, of quiet comradeship with the fungi now that I cannot explain. The fungi in front of me now, anticipating their judgement day on their identification slips, will rot. Within 24 hours, there will be nothing here to remember the fungi by, nor the people who shifted their worlds if only for a short time, to be with them.

I think back to a conversation I had the day before with a young and boundlessly enthusiastic forager. There is, as he said, a transience to fungi that offers an unexpected comfort. One day they are here, and the next they are gone. Their life rhythm fosters a way of seeing this brief encounter, this fleeting

relationship with nonhuman species, not as a task that requires constant work, nor something that has to be constantly present, visible, tangible, stimulating, and exciting. The absence and separation can build anticipation, but it also offers reprieve, distance, reflection. And when the fruits of the fungi emerge, life shifts into a pace and a presence that only they can conjure. We share excitement, wonderment, repulsion, confusion, laughter, frustration, knowledge, and time with creatures which, by virtue of their phenomenal lives and deaths, create an orbit of interactions among human and nonhuman species that can only exist around them. And when the fruits are gone, that's it. The storm has passed and we are left to gather our thoughts, return to something of a normal life, and wait for the rising hairs on the back of our necks that tell us that yes, the mushrooms are back!

My eyes soften into a warm gaze of admiration at the LBM in front of me. I'll never really know what this mushroom is. Hell, even if they sample its DNA and give it a name, I won't be any closer to really understanding it. But there comes a point where understanding these fungi through any account simply cannot be compared to the feeling of being absorbed into the life worlds they cultivate around them. Each fungus I see on the table I see with fresh eyes. Eyes which gave up long ago trying to rationalise the subjectivity I had encountered. Eyes which in this moment I use not to learn, or to know, or even to understand, but simply to be present in the calamity of entanglements that have allowed me to be here, now, sitting at a table of fungi beaming up at me.

Isobel's chair scrapes along the sticky varnish of the hall floor as she announces her departure for dinner and a pint or three. She looks tired and happy. I stand up too, leaving the LBM on its paper bag, and make my way to the pub where the rest of the forayers are gathering for one last celebration of our time with the fungi.

Writing about fungi

“Wherever he goes, this winter, I will follow him. I will share the fear, the boredom, of the hunting life. I will follow him till my predatory human shape no longer darkens in terror the shaken kaleidoscope of colour that stains the deep fovea of this brilliant eye. My pagan head shall sink into the winter land, and there be purified.” (Baker 1967, 41)

Introduction

In this chapter I will return to the question of writing about fungi. The five days I spent in Moana generated a radical displacement of my prior understanding of fungi, and indeed of my desire to formulate a conclusive understanding at all. Instead what this thesis has worked toward is generating an account of fungi that is informed by: the practices, environments, and dialogues of science; the concepts, positions, and intentions of multispecies ethnography; and the reflexivity, positionality, and style of new nature writing. In this chapter I will attend to the understanding of fungi that I developed throughout the course of my fieldwork. I will reintroduce the work of J. A. Baker, and discuss how his distinctive style and influence in contemporary new nature writing enabled me to render a story of fungi that does not ultimately return to conventional anthropological themes and concepts. I will also confront some of the challenges that I encountered throughout the writing process with regard to the impossibility of distinguishing between the realities of my interactions with fungi and my interpretation of them. I conclude by proposing that the writing styles that we choose to render our understandings with are crucial in developing the understandings themselves, and suggest that a new nature writing style can offer multispecies ethnographers not only new ways to write about nonhumans, but new ways to imagine the possibilities of their interactions, experiences, understandings, and futures with them in their research.

My understanding of fungi

The premise of the FUNNZ Fungal Foray itself makes one thing clear: scientific knowledge offers us one way to understand fungi. However, one element of this that became apparent throughout my experience both in the forests with fungi and in the make-shift laboratory at the town hall, was that the knowledge that is cultivated through the scientific traditions here bears a connotation of finality, despite it being generally accepted by the cohort here that there is nothing ‘final’ about fungi. This finality does not come from the way that knowledge is applied, but rather comes about through the mechanisms of the discourse and practice that require intuition and instinct to be supplemented by objectivity and rationalisation, or ‘the separation of all separables’ (Gellner 1998, 92). In reality, the love between the subject and the scientist prompts a more ongoing curiosity and commitment than

is portrayed in scientific literature. Experiential forms of understanding that exist outside of an assumed 'reality' of existence simply cannot be integrated into the data that is produced or stored, as the way of accumulating the knowledge through online databases, scientific texts, and mycological traditions rely on separating the components of a fungi and abstracting them with scientific discourse. As such, scientific knowledge of a fungus can really only offer one limited rendering of what that fungus is, or may be.

What is also clear however, is that experience is an essential aspect of science. Instinct and intuition are experiences that everyone at the foray feels when interacting with fungi, and often throughout the collection, identification, and categorisation process, these elements of experiential knowledge are the first port of call to developing a scientific account of a given fungi. However, experience is never visible when the final 'piece' of knowledge is committed to the discipline through the database, or through a piece of academic research. What happens when this experience is taken into account, is that the impression we can attain of the fungi we work with is different. The knowledge we cultivate can no longer be isolated from our lived experience, and thus from our senses, our emotions, our preconceived expectations and our responses on the ground, our affective responses, and our corporeal experience. Through my experience I developed an embodied understanding of fungi which at first, seemed to conflict with an understanding that came from a body of scientific knowledge.

What I came to understand within a few days in the field, however, was that a fungus isn't either known or experienced depending on which rendering we choose to rely on. The fungus is in fact the site at which both forms of understandings converge. Certain mechanisms such as a scientific ontology enable certain forms of understanding to precede and even undermine others. Regardless, both forms of understanding are always there, and the fungi that we encountered during our time in the field were always the site of these convergences.

Before long, however, I realised that this impression of fungi as sites of interaction was simply a repetition of what I was hoping to avoid in the field. By interpreting them in this way I had been able to position my own understanding, and develop a context from which fungi seemed to emerge with meaning and significance. But this rendering did not allow me to come closer to understanding what fungi are in and of themselves. I was determined that a fungus is not simply a fungus by virtue of its relation to me and the forms of understanding that I have familiarised myself with. And in addition, I saw quickly that to a fungus, my understanding of them really does not matter for their existence. They will continue to exist regardless of how I make sense of them, and so there must be some site at which my lived experience and knowledge could come into contact with the fungi themselves.

As I continued in the field, I began to realise my understanding to be more than a spontaneous convergence of knowledge and experience at the feet of the fungi I encountered. Thompson's framework of ontological choreography offered me a way to see fungi as more than passive recipients of my design, and brought to the foreground the prospect that perhaps the technical agency of the fungi in going about their life cycles despite my intervention might hold a key to how my knowledge and experience converged.

The technical agency of fungi was difficult to identify outside of a knowledge ontology. After all, the largest body of knowledge I had encountered which had engaged in a fungi's life cycle stemmed directly from mycological and scientific discourse which forms a fundamental aspect of a knowledge ontology. But the same reassurance endured throughout my meddling with this concept: regardless of whether I could categorise and label and define every aspect of a fungi's life cycle, the fungi would continue to live and die. An *Entoloma hochstetteri* does not care whether or not it presents itself as a perfect specimen, whether it will be identified correctly, and whether it will be preserved for all time in a fungal collection. The *Entoloma hochstetteri* doesn't care at all. Care is not a concept that enters into the technical agency of a fungus. There are of course instances where our care of a fungi will interfere with the techniques of the fungi. Collection itself is an example of this, whereby removing the fruiting bodies of the fungus from a forest will directly impact the ability the mycelial body has to produce offspring. However, the techniques that fungi employ to survive are also the very techniques that choreograph ontological orders together and apart. Thus the techniques of the fungi are the mechanisms through which they are able to choreograph ontological orders. Our interactions with fungi thus require both love and detachment alongside knowledge and experience.

Translating understanding into verse

As I pondered my fieldwork in the months that followed, writing poems and vignettes, drawing images that flickered across my memory, walking through the bush beside my house in the freezing rain to seek out the smells and sounds of the West Coast forests, I kept recalling J. A. Baker's work. His seminal text *The Peregrine* (1967) had not only struck me as a fascinating account of the life of one of Britain's most precarious birds of prey, but also stood out to me as an artefact of Baker's personal investment in the species. In his desperate concern for the endurance of the species in the ever-diminishing wild habitats of English high-country planes, Baker's writing was wrought with emotional crescendos, feverish pursuits, and haunting encounters through which he brought us to the very precipice of understanding, and never further. The species itself, for us as readers, is never completely understood, and yet his writing prompts us to empathise with his experience of becoming otherwise through his engagements with them. By projecting ourselves into a peregrine world and a peregrine subjectivity, we are able to grasp at a different kind of understanding than what a purely knowledge-based

rendering could offer. The heart-breaking fervour that kept me turning page upon page of painstaking description told of more than the birds' lives, but also of Baker's relationship to them, and the shaping of his life around them for the decade that he devoted to them.

The Peregrine

I return to his book on another unremarkable day at my desk in an attempt to process my feelings about the fieldwork that seems to have taken place so long ago. I have turned down the corner of the page that marks the second section of the book, entitled 'PEREGRINES'. A small pencil asterisk marks the opening line. For all of the soaring romance that seems to elevate the book above the rest I have read during my research, Baker has a sharp mind for pragmatism, which this line exemplifies. It is perhaps the least remarkable, yet most profound line in the entire text: 'The hardest thing of all to see is what is really there.' (1967, 19)

I have read it more times than I can count, but this time it resonates deep within me in some unexplored channel of my understanding. For Baker, there is some tangible truth to this. Peregrine's are the fastest birds of prey in Europe and are notoriously elusive. All evidence can point to the presence of a peregrine and yet one may go a lifetime without ever seeing one in the flesh. To some extent, the fungi of my encounters are the same. A single patch of moss may hide a plethora of fungal specimens, but actually seeing them takes a different kind of attunement which can only be attained by trusting the intuition that there are fungi there. At times, we must be satisfied in trusting that even if we cannot see them, they are there. But beyond the pragmatism of the phrase hides a mantra that informs Baker's writing, and has in turn informed mine.

Writing about fungi

What happens when we go looking for fungi? The details of our ventures are easy to ignore in the excitement of unearthing a specimen, and the drive to be conclusive about our findings. But it is the work of new nature writers to resist the temptation to rush to closure, and instead to ponder with a fine-tuned attention to detail what is really happening when we engage with nonhuman species. Baker's rendering of peregrines illustrates this with profound success.

Baker understood this necessity to render the species of his interest not as a being in and of itself, but a being brought into meaning through the contingent and ever-evolving subjectivity that they provoked in him. Through my own writing about fungi, I have worked towards the same. When we go looking for fungi, we are usually hoping to find mushrooms. But what we also find along the way is a new way to attune to the world around us, a new sense of belonging among a cosmos of living and dying agents and forces. In many ways, when we go looking for fungi we are inadvertently looking for the fungi inside of us, the particular version of ourselves that is revealed through our pursuit of them.

We are looking to resurface our fungal selves, or in my case during my time in Moana, allow that self to rise to the surface for the first time.

Rendering this as a way of ‘understanding’ fungus proved to be a difficult task. I am still uncertain whether this thesis is in fact about fungi or about myself. But perhaps this is the point that Baker elicits in his work. Through his engagements with peregrines, Baker’s entire subjectivity changed. For ten years he experienced an all-encompassing adaption to the lives of the birds he tracked. His intuition sharpened in the endless silent dusks and dawns on the fens of East Anglia, his sense of time stretched out until each day was indistinguishable in his silent hunt, his senses heightened in the primal landscape of the untamed animals. His hands even became curled like talons as his arthritis took hold. Throughout his work, we learn about peregrines through our empathy with his own transformation. His writing allows us to project ourselves into their world, and imagine becoming something entirely new. By the end of his book, the boundaries between human and peregrine have dissolved as Baker’s new subjectivity allows him to stand before a male peregrine, bloodied from his most recent hunt, and watch as it falls asleep in his company. His subjectivity has become so entwined with that of the birds that he becomes an accepted part of their world. As such, the book is neither about peregrines nor people, but about the possibilities of interspecies bonding, transformation, and transcendence of the human self into something otherwise.

Writing new nature texts about nonhuman species is not an exercise in capturing reality. Accuracy is, of course, a necessary facet to the process. But writing itself is an exercise in untangling the messy webs of our knowledge and experience, and the lives of our subjects from it, in order to make sense of a moment without compromising accuracy. In part, what is ‘really there’ is the hardest thing to see because once the moment has passed, we are adrift. Writing is the anchor of our past encounters, and the lens through which we recall and render our experience. In the process of doing this rendering, ‘what is really there’ becomes inseparable from what we are capable of writing. Baker’s experience of transformation with peregrines was impossible to untangle from the reality of ‘what was really there’, and so it is only through his writing that we are able to understand for ourselves the multiple facets of these remarkable birds. I find myself empathising with the desperate, almost contorted tone of Baker’s work. He and I sought to achieve very similar tasks: to offer what we felt was a more accurate rendering of a nonhuman creature, by allowing our subjective experience to fall into step with the lives of those we study.

Conclusion

In this chapter I have returned to my initial research question, and addressed the possibilities of telling alternative stories about multispecies engagements using new nature writing. I have reflected on the

understanding of fungi that I developed during my fieldwork, and have discussed the significance of writing about fungi in developing this understanding. Using J. A. Baker's work, I have advocated for the incorporation of the researcher's experience of uncertainty and transformation as a result of their engagements with nonhuman species into multispecies ethnography. In turn, I have suggested that new nature writing, in its emphasis on the author's experience with the species and employment of rich, poetic description to illustrate the minutia of a multifaceted understanding, is an ideal format for exploring the possible stories that can be told in the ever-evolving literature of multispecies ethnography. I have concluded by emphasising that what I have achieved throughout this research is not a complete understanding of fungi, nor even of my relationship to them. Rather I have suggested that it has been through new nature writing techniques that I have been able to come close to an accurate rendering of my knowledge of and experience with fungi at the Fungal Foray, and that the brilliance of working with nonhumans species is in the infinite potentials of our engagements, understandings, and appreciations.

Conclusion

“In my diary of a single winter I have tried to preserve a unity, binding together the bird, the watcher, and the place that holds them together. Everything I describe took place while I was watching it, but I do not believe that honest observation is enough. The emotions and behaviour of the watcher are also facts, and they must be truthfully recorded.” (Baker 1967, 14)

Over the course of the last year I have attempted to work, think, and write in such a way as to pay homage to Baker’s account of peregrines. Baker acknowledges the necessity of taking the author’s experience into account, detailing with precision every aspect of his time tracking the illusive birds across the landscapes of East Anglia. The resulting account is not simply one of peregrines, but also of the process of transformation that researchers go through in their pursuit of understanding those creatures who live just beyond the edge of our own lives. Understanding nonhumans is thus, for Baker at least, not an exercise in learning as such, but an exercise in becoming otherwise. It is through reflecting on the transformations that we experience and endure during our work with them that our connection to and appreciation of the species we seek to understand becomes refined.

Anna Tsing (2015, 162) suggests that the stories multispecies ethnographers tell depend on the multispecies relations (and those species that constitute them) that we choose to focus on. I believe that J. A. Baker would agree with her suggestion for the most part, and *The Peregrine* (1967) is a testament to the notion that the direction of our gaze in the field is profoundly formative of what we come to understand about the species we follow. I would however extend Tsing’s suggestion to propose that the ethnographer’s focus is not the only factor in developing multispecies stories. As Baker’s work illustrates, researchers go through a radical and often unexpected transformation when working alongside nonhuman species. The experience of this transformation is physical, psychological, emotional, affective, and even existential. In working with nonhumans researchers are constantly in the process of becoming something else, and as such the work that we produce is never simply the result of our preconceived focus. The stories we tell are both a product of our choices, and a product of the unpredictable and ongoing transformation of the self. Multispecies ethnographies have not yet focussed on the technicalities of these transformative processes, or the repercussions that these transformations have in developing our understanding of nonhumans. It is this story that I have endeavoured to tell.

This thesis has demonstrated that by applying new nature writing techniques to research, multispecies ethnographers can go beyond conventional anthropological analysis and bring about new understandings of nonhuman species which foreground the experiences of the ethnographer and the capabilities of the species with which we work to transform our subjectivity.

Using Charis Thompson's framework, I have proposed that the fungi I encountered during my fieldwork in Moana can be understood as 'ontological choreographers' who, through the technicalities of their lives and deaths, constantly bring their environments and the subjectivities of those who engage with them into being. I have outlined how 'experience' and 'knowledge' ontologies interplay in encounters with fungi, and highlighted their mutually constitutive nature. In turn I have suggested that beyond being simply a medium through which I could interpret the objective world of fungi, my 'experience' and 'knowledge' were actively brought into being through the 'technical agency', or the life-cycles of the fungi. My understanding of fungi was thus never stagnant or complete, but was in a constant state of reproduction with each new encounter.

I have suggested that Evelyn Fox Keller's concept of 'dynamic objectivity' allows for the logistics of fungi's technical agency to be understood without returning to a position of human dominance over the fungi. I applied her conception of 'love' to propose that 'experience' and 'knowledge' can converge to form a cohesive (if indeterminate) comprehension of fungi when love is the premise upon which we formulate our understandings. I then applied Matei Candea's reading of 'detachment' to suggest that 'love' and 'attachment' are not synonymous when working with nonhuman species, and that detaching from my 'experiential' understanding of fungi became a necessity in exercising empathy in the face of disappointment. In doing so I suggest that as well as being choreographers of 'experience' and 'knowledge', fungi also choreograph our engagement with and detachment from them, and thus our emotional responses to their technical agency.

While these arguments engage the conventionally anthropological findings of my research, the overall imperative of my thesis is broader. My intention has not only been to come to an understanding of fungi informed by my experiences with them, but to propose a stylistic intervention in multispecies ethnography that may allow for previously untold stories to surface. In conducting this research, I wanted to see what kind of story could emerge from my engagements when I applied a new nature writing technique to a multispecies ethnography of fungi. What has come about is a multispecies ethnography of my relationship to fungi, and the impressions they have made upon my subjectivity over the past twelve months. By foregrounding rich, poetic description of moments of encounter in the style of new nature writing, I was also able to attend to the fungi's staggering capacity to bring about a change in my subjectivity. I have thus integrated the central aim of multispecies ethnographic writing in challenging human exceptionalism, while rendering a unique account of fungi in Aotearoa.

While I think I have been successful in rendering fungi in an account that is drawn directly from my affective, emotional, and physical experiences, at times it has been difficult to distinguish between the multispecies and a new nature styles of my ethnography. As suggested in the introduction of this thesis, the aspirations and methods of both disciplines are so uncannily similar, their convergence is

almost inevitable. It thus stands to reason that the distinctions between multispecies ethnographic writing and new nature writing will also become less apparent as the disciplines continue to converge. Though this meant that at times I doubted whether I was actually rendering an alternative story of fungi than those I had encountered before, I now interpret this disciplinary murkiness as a strength of the shared research imperative.

Fungi are not creatures of absolutes. For all of their craft and technique they live their lives in a constant state of spontaneous reaction and recreation, assembling the world around them by manipulating various ontologies and agents in the constant process of becoming. For a brief moment I was there, immersed in the turbulence of their lives. But when the moment of encounter has passed, the transformative legacy of the fungi endures through the stories we tell. Fungi are in the constant process of becoming through our writing – the techniques of narratives that keep the agency of the fungi alive long after their fruiting bodies have returned to the earth. As multispecies ethnographers and new nature writers, we share a responsibility to the species we work with to render them with care, accuracy, and vitality as best we can. The stories we choose to tell should thus not only seek to improve our understanding of a given species, but should reflect our individual and collective commitment to the species with which we work, and the transformations that we have sustained at their hands. If we are to continue displacing human exceptionalism in dialogues about nonhuman species, reflecting on the power of nonhumans to radically alter our sense of self is surely as good a place to start as any.

The beauty of J. A. Baker's book lies in the premise that holds so much potential for multispecies ethnography in the future: anyone can experience a transformation at the hand of another species, and thus the potential for new stories of multispecies relationships is limitless. This thesis is my story. A story of fear and determination, of love and heartbreak, of life and death, and of becoming otherwise.

It's the 23rd of February. I stand in the frame of my front door with a cup of black coffee, and let the chill of a cold morning wash over my bare arms. It is uncharacteristically still today. It has rained overnight, and grey clouds form a layer of insulation that envelops the whole city. I can smell the dead leaves of the birch tree putrefying in the dew. I look down and notice that I have goosebumps. A smile radiates up from my chest, curling my lips and wrinkling the corners of my eyes. Not long now.

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