

Fraught Epistemologies: Bioscience, Community, and Environment in Diasporic Canadian Literature

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Abstract

This dissertation examines the intersection between diasporic subjectivities and scientific knowledge production in the works of Shani Mootoo, Madeleine Thien, Larissa Lai, and Rita Wong. I read these authors as participating in a burgeoning scene of diasporic Canadian writing that draws on concepts and tropes derived from the life sciences to think through a broad constellation of issues relating to contemporary diasporic experience, from the role of biogenetic discourses in the diasporic search for ancestry, to the embodied dimensions of diasporic memory and trauma, to the role of diaspora communities in the decolonial struggle against the emergent forms of “biopower” that contemporary bioscience has enabled. As the first study to address this burgeoning topic in diasporic Canadian literature, this dissertation asks: Why are diasporic Canadian authors taking up bioscience as a key topos for the exploration of contemporary diasporic experiences? How is this engagement with the life sciences re-shaping current conversations about diasporic kinship, memory, and embodiment, and about the role of diasporic communities in contemporary struggles for environmental justice? Complicating frameworks that understand bioscience only as an instrument of what Foucault calls “biopower,” I argue that the works of Mootoo, Thien, Lai and Wong prompt us to rethink the ways in which queer, feminist, anti-racist, and environmental struggles might constructively interface with the life sciences to challenge emergent forms of biological essentialism and biopolitical control. I demonstrate that, by using bioscientific tropes to highlight the complex and open-ended life processes that shape the human body and the wider environment, these authors construct epistemologies that attend to the global networks of biopower through which neoimperialism operates while also acknowledging the interconnected ways in which living organisms and material substances destabilize these global flows. I argue that, in so doing, these authors

position diasporic knowledge production as a crucial locus for the rethinking of relations between politics and ecology, and between humanist and scientific ways of knowing, that science studies scholars like Donna Haraway and Bruno Latour and decolonial critics like Boaventura de Sousa Santos have identified as a central to contemporary struggles for environmental justice.

Each chapter explores the work of one diasporic Canadian author in relation to a single, historically specific site of scientific knowledge production. Chapter one examines how Mootoo's *Cereus Blooms at Night* combines notions of gothic excess with a materialist emphasis on the material agencies that inhere through bodies and environments in order to disrupt the gendered and racial discourses propagated by imperial botany. Chapter two explores how Thien's novels *Certainty* and *Dogs at the Perimeter* draw on current debates around the neurobiology of memory and emotion to grapple, on one hand, with the fragmentation induced through diasporic trauma and, on the other, with the uncertainty of global risk culture. Chapter three examines how Lai's *Salt Fish Girl* disrupts popular and scientific discourses concerning the genetic basis of diasporic ancestry to advance a model of kinship that is rooted not in a shared ethnic heritage, but in a shared immersion in a complex web of interactions that includes genetic, evolutionary, and environmental forces. Finally, chapter four examines how Rita Wong's *forage* mobilizes contemporary debates around the spread of genetically modified organisms to stage a productive encounter between diasporic, Indigenous, and scientific knowledges. I argue that, in the process of engaging with these various scientific debates, these writers stage trenchant critiques of the colonial legacies and neo-imperial investments of contemporary bioscientific culture while also modeling more fruitful, ethical, and hopeful ways of engaging with scientific knowledge.

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Introduction

Oryx and Crake (2009), the first installment of Margaret Atwood's *MaddAddam* trilogy, is set in a dystopian world in which bioscientific knowledge has become such a sought-after commodity that "brain-snatching," or the kidnapping of elite bioscientific researchers, has become a common occurrence, and in which the disciplinary divide between the sciences and the humanities has reached such an extreme that an individual's place within the social hierarchy is determined largely by their classification as a "words" or "numbers" person (299). After graduating from high school, Jimmy, the self-described "words" man whose story forms the narrative centre of the novel, leaves home to study at the Martha Graham Academy, a crumbling "Arts-and-Humanities college" where students are taught skills that are "no longer central to anything" (186). Meanwhile, his childhood friend Crake, the "numbers" man who eventually emerges as the novel's antihero-scientist figure, is headhunted by the Watson-Crick Institute, a prestigious corporate university where students are trained to develop the biotechnologies that will constitute the "wave of the of the future" (201). A few months after their graduation, Crake invites Jimmy to visit him at the Watson-Crick campus. As he tours the labs where Crake and his classmates conduct their research, Jimmy becomes increasingly self-conscious about his inability to understand the highly specialized modes of knowledge production in which his friend is involved. At first, Jimmy's unease is focalized around his own status as a "neurotypical" person who has difficulty grasping even the most basic of scientific concepts (203). However, his anxieties begin to take on a broader social significance when he enters the "NeoAgriculturals" lab, a facility that houses the latest developments in agricultural biotechnology. There, Jimmy encounters a transgenic creation known as the "ChickieNob" (202), a headless "animal-protein tuber" that has been designed to mimic the body plan of a "sea anemone," and promises to

revolutionize chicken farming by stripping chickens of all brain functions except for those that revolve around “digestion, assimilation, and growth” (203). While Crake’s classmates congratulate themselves on the efficiency and cleverness of their design, boasting that even “animal welfare freaks won’t be able to say a word” because, lacking a central nervous system, the ChickieNob “feels no pain,” Jimmy is overcome with a vague sense of foreboding about the ethical and material implications of their transgenic creation (203). He may not be able to understand the scientific principles behind the ChickieNob’s genesis, yet he cannot help but suspect that “some line has been crossed, some boundary transgressed” (206).

The defamiliarization that Jimmy experiences as he tours the Watson-Crick campus provides an apt synecdoche for a cultural moment in which scientific knowledge production has become the object of widespread social anxiety and heated social debate. Recent developments in the life sciences, particularly in the realm of biotechnology, have led some critics to assert that we are entering a new phase in the history of “biopower,” one in which life can be controlled not just at the level of the species and the individual human body, as Foucault famously argued in *The History of Sexuality*, but also at the microscopic level of the DNA molecule.¹ Indeed, phenomena such as the introduction of recombinant DNA technologies that allow for the “dissection and splicing of DNA molecules in laboratories” and DNA sequencing techniques that translate life into information that can be “packaged, turned into a commodity, and sold as a database” have led many commentators – from anthropologists of science like Nikolas Rose and Kaushik Sunder Rajan to environmental activists like Vandana Shiva – to call for a more nuanced consideration of the social, environmental, and political implications of contemporary bioscientific research (Sunder Rajan, “Liveliness” 2; *Biocapital* 16). While Jimmy’s tour through the Watson Crick Institute raises similar questions about the nature and effects of biotechnology,

what most intrigues me about Atwood's novel is its subtle questioning of the role of diasporic and racialized subjects within the power and knowledge formations produced by contemporary bioscience. The novel enacts this questioning through the figure of Oryx, the elusive Asian woman who figures as Jimmy/Snowman's love interest in the text, and who plays a pivotal role in Crake's scheme to repopulate the Earth with a humanoid species of his own creation. An immigrant of Southeast Asian origins who was sold into a human trafficking ring as a child, Oryx first appears on the scene when she is hired by the Watson Crick Institute to serve as Crake's mistress. When Crake leaves the Institute to head his own biotech corporation, he recruits Oryx to help him distribute his newest invention: a sexual enhancement pill that secretly sterilizes its users, thus functioning as a surreptitious form of population control (294). Oryx is "intrigued" by Crake's work and readily agrees to aid him in the distribution of BlyssPluss pill, but little does she realize that the pill is equipped with yet another secret feature: it carries the virus for a "rogue hemorrhagic" that will wipe out the human species to make way for Crake's transgenic creatures (310, 325). By the time Oryx discovers the true nature of the pill, the hemorrhagic has already spread like "rapidfire" across the globe, leaving her to face the horrific realization that the virus "was in those pills I was giving away, the ones I was selling" (324, 325). As he re-plays the sequence of events that precipitated the contagion, Snowman casts Oryx as an unknowing victim of Crake's scientific hubris. However, the novel repeatedly underscores the inaccessibility of Oryx's perspective while throwing Jimmy's rendering of events into question, leaving the reader to wonder: why was Oryx so drawn to Crake's work in the first place? How much responsibility does she bear for the biological catastrophe that occurs in the novel? And perhaps most crucially, in what ways does her condition as a diasporic subject with a particular history of displacement, racialization, and sexual violence inflect her relationship to Crake's

bioscientific research, as well as the broader biocapitalist structures depicted in the novel?² In short, how might Atwood's depiction of this diasporic figure whose subjectivity remains so suggestively out of reach, both for Jimmy and for the reader, inform our understanding of the intersection between diasporic and scientific knowledge production in our current historical moment, particularly as it is inflected by racial, gender, and sexual difference?

To explore these questions, I turn to four diasporic Canadian authors whose work revolves centrally around the confrontation between diasporic subjectivities and scientific knowledge production: Shani Mootoo, Madeleine Thien, Larissa Lai, and Rita Wong. I see these authors as participating in a burgeoning field of diasporic Canadian writing that draws on concepts and tropes derived from the life sciences to think through a broad constellation of issues relating to contemporary diasporic experience, from the role of biogenetic discourses in the diasporic search for ancestry, to the embodied dimensions of diasporic memory and trauma, to the role of diasporas in the decolonial struggle against the environmental crises and emergent forms of "biopower" that contemporary bioscience has enabled. This body of work includes Hiromi Goto's *A Chorus of Mushrooms* (1994), Shani Mootoo's *Cereus Blooms At Night* (1997), Nalo Hopkinson's *Brown Girl in the Ring* (1999), Dionne Brand's *At the Full and Change of the Moon* (1999), and Larissa Lai's novel *Salt Fish Girl* (2008), all of which draw on tropes inspired by plant biology to question heteronormative constructions of diasporic relatedness and to comment on the rhizomatic workings of diasporic dispersal. Michael Ondaatje's novel *Anil's Ghost* (2000) not only raises various questions about the ethics of scientific knowledge production through its depiction of a forensic pathologist's struggle to identify the unnamed victims of Sri Lanka's civil war, but also draws on various biological metaphors to emphasize the ways in which historical trauma remains archived in the biological body and its material

surroundings. In her novels *Certainty* (2006) and *Dogs at the Perimeter* (2011), Madeleine Thien explores the embodied dimensions of diasporic memory and affect through the lens of contemporary neuroscience. Rita Wong's poetry collection *forage* (2008), Lai's poetry collection *Automaton Biographies* (2009), and Wong and Lai's collaborative book of poetry *Sybil Unrest* (2008) all draw on the scientific concepts of entropy and autopoiesis to critique the new forms of "biopower" produced by biotechnology while also providing a hopeful exploration of the self-organizing capacity of living systems. However, this burgeoning interest in the intersection between bioscience and diaspora has yet to be analyzed in any sustained manner. As the first study to address this important topic in diasporic Canadian literature, my dissertation asks: Why are diasporic Canadian authors taking up bioscience as a commonplace for the exploration of contemporary diasporic experiences? How is this engagement with the life sciences re-shaping current conversations about diasporic kinship, memory, and embodiment, and about the role of diasporic communities in contemporary struggles for social and environmental justice?

I have chosen to focus my analysis on the work of Mootoo, Thien, Lai, and Wong because, more than simply thematizing the encounter between diasporic subjectivity and scientific discourse, their work powerfully enacts the cognitive and affective struggles that arise from this encounter, seizing these moments of struggle as opportunities to forge unexpected connections across different communities, social movements, and cultures of expertise. My project approaches these writers' complex representations of the intersection between bioscience and diaspora through three overlapping lines of inquiry. First, I situate their work in relation to contemporary debates, within the interrelated fields of ecocriticism and science studies, around the need to engage with scientific knowledge in order to understand the material and environmental risks that characterize life in the twenty-first century. Second, I analyze how these

writers' representations of diasporic subjectivity and diasporic communalism intersect with scientific and popular debates around four specific arenas of scientific knowledge production: the colonial production of racial and sexual difference through imperial botany, the neurobiology of memory and emotion, the genetic basis of diasporic ancestry, and the genetic manipulation of living organisms (seeds in particular). Third, I examine how, in the process of engaging with these scientific debates, these writers draw attention to the colonial legacies and neo-imperial investments of contemporary bioscientific culture while also modeling more fruitful, ethical, and hopeful ways of engaging with scientific knowledge.

Scientific Literacy and Life in the “Risky” 21st Century

When I first began working on this project, I planned to focus my analysis solely on the ways in which Mootoo, Thien, Lai, and Wong critique the imperial and neo-imperial investments of Western empiricism. However, as I delved more deeply into each of the texts included in my dissertation, I began to realize that they all exceed and, in some cases, even challenge established postcolonial frameworks for thinking about scientific knowledge production. In particular, it became clear to me that, despite critiquing the colonizing effects of certain scientific epistemologies, these works also underscore that negotiating the material and environmental conditions of life in the 21st century necessarily demands an engagement with scientific ways of knowing. Thus, instead of reading these texts exclusively through the lens of postcolonial and biopolitical frameworks that understand scientific knowledge as an instrument of “biopower,” I will be putting them into dialogue with current debates, within the interrelated fields of science studies and ecocriticism, around the need to engage with scientific knowledge in order to understand the material processes and environmental risks that shape contemporary life.

As I noted at the outset, recent developments in the realm of biotechnology have sparked an intense sociopolitical debate around the ethical and material implications of contemporary bioscience. For instance, in *The Politics of Life Itself*, Nikolas Rose argues that, thanks to recombinant DNA and gene sequencing technologies, life can now be “manipulated, mobilized, [and] recombined” in “new practices of intervention that are no longer constrained by the apparent normativity of a natural vital order” (6). Similarly, in his anthropological study of the biotechnology industry titled *Biocapital*, Kaushik Sunder Rajan argues that these technologies have facilitated an unprecedented commodification of biological life, giving rise to an economic regime in which living organisms are increasingly being rendered into sources of biovalue.³ Meanwhile, in her seminal critique of genetic engineering titled *Biopiracy*, ecofeminist and seed activist Vandana Shiva warns that, by making it possible for corporations to control and, in some cases, restrict the self-organizing capacity of living organisms, genetic engineering has enabled the neoimperial colonization of the “interior spaces of the bodies of women, plants, and animals” (*Biopiracy* 5).⁴

While such critiques have generated a great deal of skepticism towards contemporary bioscientific culture, current work in the fields of science studies and ecocriticism emphasizes that grappling with the material and environmental realities that the world is currently facing often requires sifting through scientific and biological information, making it necessary for ordinary citizens to engage with various domains of scientific knowledge production. These discussions have been inspired by the work of risk theorists like Ulrich Beck, whose seminal study *Risk Society: Towards a New Modernity* posited that we are living in a global “risk society” permeated by environmental and public health hazards that require the mediation of the sciences “in order to become visible or interpretable as hazards at all” (27). Building on Beck’s concept

of risk society, ecocritics like Ursula Heise and Stacy Alaimo have argued that understanding the networks of environmental harm that shape contemporary experience demands the creation of epistemological frameworks and aesthetic forms that attend to the material interconnections between diverse ecosystems and communities, and between the human body and the wider environment – an exercise that, as Stacy Alaimo puts it, “often requires the mediation of scientific information” (*Bodily* 16). In her influential study of global environmentalism titled *Sense of Place and Sense of Planet: The Environmental Imagination of the Global*, Ursula Heise argues for an “eco-cosmopolitan” vision that draws on “highly mediated forms of knowledge,” including various forms of scientific data, to enable a better understanding of “biospheric connectedness” and global ecology (62). Similarly, in *Bodily Natures: Science, Environment, and the Material Self*, Alaimo argues that living in a landscape filled with environmental risks means that “the pursuit of self-knowledge” which was once considered a “personal, philosophical, or discursive matter” must now include “a rather “scientific” investigation” of one’s bodily immersion in the broader environment (*Bodily* 5). Arguing for a “transcorporeal” environmental ethics that recognizes the “material interconnections of human corporeality with the more-than-human world,” Alaimo contends that forging epistemologies that attend to these connections necessitates collaborations between different domains of knowledge production, including the biological sciences (*Bodily* 2). While Alaimo is quick to recognize that science “offers no steady ground as [its] information can be biased, incomplete, or opaque and the ostensible object of inquiry – the material world – is extremely complex,” her work nevertheless demonstrates that a thoughtful engagement with the sciences can help create a more nuanced understanding of human beings’ “connection to the material world” (*Bodily* 20).

The conflict between the need to engage with the sciences in order to understand the material conditions of life in the 21st century and the apprehension that this exercise can make us complicit with hegemonizing modes of knowledge production raises a number of questions: how can contemporary social and environmental justice movements establish a more fruitful relationship with the life sciences? In particular, how can they mobilize the productive power of bioscientific knowledge while still challenging those scientific paradigms that promote essentialist understandings of biology, the commodification of living organisms, and/or the displacement of Indigenous and non-Western forms of knowledge production? And finally, what role can literary texts and literary studies play in facilitating this reconfiguration of knowledge? My dissertation posits that diasporic Canadian literature, long theorized as a site for the production of hybrid ways of knowing, can function as a crucial locus for the rethinking of relations between politics and ecology, and between humanist and scientific ways of knowing, that ecocritics like Heise and Alaimo and science studies scholars like Donna Haraway and Bruno Latour (whose work I will discuss in more detail later on) have identified as central to contemporary struggles for social and environmental justice. For these theorists, the phenomenon of bioscientific mediation does not simply end at the laboratory: it is bound up with questions surrounding the knowledge practices we are expected to engage in if we are to be counted as participants in contemporary biopolitical and environmental debates, the place of the human self within the environment, and the forms of collectivity needed in order to address new modes of imperialism which – aided by contemporary biotechnology – have enabled what Shiva has memorably described as the “colonization of life itself” (Shiva 5). Thus, according to these theorists, thinking about today’s global crises demands that we think in terms of “political ecologies” – or, as Latour puts it, that we engage in a kind of thinking that “deal[s]

simultaneously with the sciences, with natures, and with politics, in the plural” (*Politics of Nature* 3). Echoing this exhortation to think of science and politics as coextensive domains, and in contrast to critiques of bioscience which understand this sphere of knowledge-making only as an instrument of “biopower,” the work of Mootoo, Thien, Lai and Wong prompts us to rethink the ways in which queer, feminist, anti-racist, and environmental struggles might constructively interface with the life sciences to challenge emergent forms of biological essentialism and biopolitical control. More specifically, their work underscores that, by illuminating the complex and open-ended interactions that inhere through the biological body and the wider environment, the life sciences can help us construct epistemologies that attend to the global networks of biopower through which neoimperialism operates while also acknowledging the interconnected ways in which living organisms and material substances destabilize these global flows. Ultimately, by examining how these writers engage with disciplines like plant science, neuroscience, and genomics to construct anti-imperial “ecologies of knowledge,”⁵ I hope to foster a much-needed dialogue between biopolitical theories that emphasize the imperializing functions of bioscientific culture and new materialist philosophies that emphasize the openness and non-linearity of biological organisms.

Apart from engaging with recent debates around the political and material implications of scientific knowledge production, my project makes an original contribution to current understandings of diasporic kinship, memory, and embodiment by thinking about these phenomena through the lens of science studies, which is still relatively new to Canadian diaspora studies, with a handful of critical essays by Larissa Lai, Rita Wong, and Cheryl Lousley beginning to chart the postcolonial implications and potential of this area of study.⁶ In addition to rethinking diasporic subjectivity and embodiment through the lens of science studies, my project

seeks to establish a more sustained dialogue between Canadian diaspora studies and the critical conversations that are currently taking place within the field of Canadian ecocriticism surrounding the relationship between literature, science, and environment. Foremost amongst these critical contributions are Pamela Banting's and Jodey Castricano's respective writings on animals and animality in Canadian literature, Catriona Sandilands' recent work on "queer ecologies," Travis Mason's work on the role of Ornithology in Don McKay's poetics, and Adam Dickinson's recent critical writings on "biosemiotics" in contemporary Canadian poetry.⁷ The recently published *Greening the Maple: Canadian Ecocriticism in Context* is another important contribution to this burgeoning field of study, as is the WLUP series dedicated to Environmental Humanities Series. This project springs partly from the conviction that Canadian diaspora criticism needs to engage more fully with these ecocritical perspectives if it is to fully understand the material and environmental concerns that preoccupy the work of contemporary diasporic Canadian writers. I further argue that the recent bioscientific turn in diasporic Canadian writing has been animated not only by the need to account for the material and environmental risks that characterize life in the late 20th and early 21st centuries, but also by a growing recognition that many of the questions about kinship, memory, and embodiment that frequently inform diasporic Canadian writing necessarily involve thinking about biology and materiality and thus intersect with various areas of bioscientific knowledge production. In order to better understand these intersections, it is important to be familiar with recent debates in Canadian diaspora studies, to which I now turn.

Re-thinking Diaspora via Science Studies: Kinship, Memory, and Embodiment

Diaspora studies has occupied an important role in Canadian literary criticism for nearly two decades thanks, in no small part, to the work of Smaro Kambourelli, whose anthology of Canadian multicultural literature *Making a Difference* (1996) and critical study of diasporic literature *Scandalous Bodies* (2000) not only helped consolidate diasporic Canadian literature as a field of study, but also invited a self-reflexive questioning of the subjective processes involved in diasporic knowledge production (“Introduction” xxxi; *Scandalous* 25). My understanding of diaspora in this project is shaped by Kambourelli’s seminal conceptualization of diaspora as a contested site of knowledge production. In addition to Kambourelli’s work, my project also draws on recent critiques – by scholars like Avtar Brah in British diaspora studies and Lily Cho in Canadian diaspora studies – that challenge the classical understanding of diasporas as sharply defined, anthropological “object[s] of analysis,” and instead theorize diaspora as a “subjective condition” that is characterized by a dynamic tension between location and dislocation, by particular forms of memory and affect, and by historically specific experiences of colonialism and racialization (Cho, “Turn” 303). Before outlining how my project engages with this body of theory, I will briefly trace the debates that Brah and Cho both seek to complicate in their respective theorizations of diaspora.

As many critics have already noted, in its most general sense, the term “diaspora” refers to a group of people who have been dispersed from their homeland. Traditionally used in the context of the Jewish diaspora, in recent decades the term has been applied to an increasingly broad spectrum of migrant, minority, and expatriate communities, leading many critics to comment on the necessity of defining the concept and delimiting its field of application so as to prevent it from “losing any but the broadest and most general of meanings” (Cho, “Turn,” 12).

Seizing on this problem, in his influential 1994 essay “Diasporas,” anthropologist James Clifford pointedly asks, “What is the range of experiences covered by the term [diaspora]? Where does it begin to lose definition?” (306). Some critics have attempted to address this definitional problem by formulating specific criteria for determining whether or not a community might be called “diasporic.” For example, William Safran defines diasporas as “expatriate minority communities” that have been dispersed from their place of origin, but maintain a collective “memory, vision, or myth about their homeland” and long for an eventual return to this mythic homespace, in part because they often feel that “they are not – and perhaps cannot be – fully accepted by their host country” (83-84). Working from this definition, Safran concludes that “we may legitimately speak of the Armenian, Maghrebi, Turkish, Palestinian, Cuban, Greek, and perhaps Chinese diasporas at present and of the Polish diaspora in the past,” though he makes a point of highlighting that none of these diasporas “fully conforms to the ‘ideal type’ of the Jewish diaspora” (83-84). Meanwhile, Khachig Tölölyan contends that in order for a diaspora to be “recognizable as a segment,” it must “exist as a *collectivity* rather than a scattering of individuals” (29). According to Tölölyan, this means that, more than simply displaying forms of identity that distinguish them from the dominant host culture, diasporans must cultivate “diaspora-specific social identities that are constructed through interactions with the norms, values, discourses and practices of that diaspora’s communal institutions” (29). Though he does recognize the need to expand the classical definition of diaspora to account for the experiences of more recently dispersed communities, Tölölyan cautions that, without a clear set of definitional criteria, the term “diaspora” risks becoming a “promiscuously capacious category” that could be taken to include virtually any migrant or minority community (8). Clifford shares Safran’s and Tölölyan’s concern over the need to define the concept of diaspora more clearly. However, he cautions that

the impulse to identify the “essential features” of diasporic communities could easily result in the exclusion of those groups who present “only two, or three, or four” of these predetermined features (306). Thus, Clifford proposes that, instead of trying to define diaspora from within, we shift our “focus on diaspora’s borders, on what it defines itself *against*” (307, emphasis mine). He then asserts that diasporas need to be understood in opposition to “1) the norms of nation-states and 2) Indigenous, and especially autochthonous claims by ‘tribal’ peoples” (307). However, as Lily Cho notes in her essay “The Turn to Diaspora,” this approach still reinforces the notion that diasporas are pre-constituted “objects whose major features and characteristics can be catalogued and classified” (14). Moreover, by defining diasporas in opposition to the claims of Indigenous nationhood and sovereignty, Clifford’s framework elides the ethical responsibility that diasporas owe to the Indigenous communities who originally inhabited their new places of settlement – a question that has recently received a great deal of attention from Canadian literary scholars, and that I will discuss in more detail later on.

In *Cartographies of Diaspora*, Avtar Brah complicates the definitional approach adopted by Safran, Tölölyan, and Clifford by arguing that, more than a descriptive category, diaspora should be understood as *analytical* category that encompasses a vast range of “economic, political, cultural, and psychic processes” (205). In an effort to capture this complexity, Brah theorizes diaspora in spatial terms, as a site that encompasses the multiple subject positions and histories of migrancy (15). Crucially, Brah argues that living in this “diaspora space” entails a constant oscillation between location and dislocation, and between rootedness and dispersal (194). She notes that this tension reflected in the very etymology of the word “diaspora,” which is derived from the Greek words *dia*, “through,” and *sperein*, “to scatter” (187). For Brah, by invoking a process of dispersal, this etymology also implies “a centre, a locus, a ‘home’ from

where the dispersion occurs” (178). Thus, challenging those frameworks that persistently equate diasporic subjectivity with an unambiguous nostalgia for the “homeland,” or that focus exclusively on diasporans’ experiences of dislocation while ignoring their experiences of location, Brah argues that “diaspora places the discourse of ‘home’ and ‘dispersion’ in creative tension, inscribing a homing desire while *simultaneously* critiquing discourses of fixed origins” (189, my emphasis). According to Brah, this tension is reflected in diasporans’ conflicted relationship to the homeland, which often figures as both “a mythic place of desire” and a place of “no return” in diasporic imaginings (188). However, Brah makes the crucial point that “not all diasporas inscribe a homing desire through a wish to return to a place of ‘origin,’” noting that for some diasporas, “cultural identification with the homeland might be by far the most important element” (189). But regardless of what shape it may take, for Brah, the “homing desire” experienced by diasporans always butts up against “moments of intense alienation” that work to defamiliarize both the concept of “home,” and the notions of fixed origins that underpin this concept (4). Building on these ideas, my project explores how diasporans’ ambivalent orientation towards the homeland and other “homespaces” also places them at odds with the essentialist understandings of kinship and biological relatedness that frequently underpin this concept, thus opening up important avenues for challenging normative biogenetic discourses. I argue that, more than simply challenging biogenetic discourses from the *outside in*, by opposing them to notions of cultural hybridity and cultural diversity, the works under discussion challenge these discourses from the *inside out*, mobilizing various biological tropes to emphasize the openness and non-linearity of living processes and thus challenge the “notion of biology as destiny” that biological determinism is founded upon (Alaimo, *Bodily* 5). For instance, in chapter one, I examine how Mootoo emphasizes the material agency of plant species, with their uncanny ability

to “seduce” other species to act as pollinators, in order queer the heteronormative plant classifications that were propagated by imperial botany. Meanwhile, in chapter three, I explore how Lai highlights the dynamic relationship between genes, evolution and the environment to challenge racist, heteronormative, and scientifically reductive understandings of genetics.

Aside from emphasizing diaspora’s conflicted relationship to homespaces and normative understandings of kinship, Brah’s work also insists on the need to think about “diaspora space” as an internally contested terrain. Indeed, recognizing that thinking about diasporic subject formation always carries the risk of treating diasporic subjectivity as if it were a “transcendental” or unified category, Brah insists that the concept of diaspora needs to be understood in terms of the relationship between multiple, and often conflicting, genealogies of dispersal (193). Thus, she argues for a “multi-axial” approach that considers both the differences and similarities between historically specific stories of departure and arrival, and the ways in which class, gender, and race mark these trajectories (193). Although Brah frames this heterogeneity almost exclusively in terms of the relationship between diasporas of distinct geographical origins (the “Chinese and Japanese diasporas in the California of the 1990s,” for instance) her ideas surrounding the differential relationship between diverse diasporas raise additional questions about the role of *generational* differences in shaping diasporic subjectivities (187). Does the psychic and social terrain of “diaspora space” also encompass the dislocations experienced by those who have not lived through the “traumas of separation and dislocation” firsthand (Brah 190), but have nevertheless inherited their memory? As I will explain in more detail later on, my project combines Brah’s insights surrounding the heterogeneity of “diaspora space” with Lily Cho’s and Marianne Hirsch’s ideas surrounding the intergenerational transmission of historical trauma to explore the subjective experience of second and third generation diasporans who have

inherited a “living connection” to past historical traumas (Hirsch 3). I analyze how, in some of the works this project is concerned with, this “living connection” sparks a powerful need to know more about the past, spawning knowledge-seeking efforts that often spill into various realms of scientific investigation, from the genetic basis of racialized and diasporic identities to the neurobiological basis of diasporic memory and trauma. While these scientific investigations are often prompted by the hope that the sciences will be able to provide causal explanations for the discontinuities that accompany diasporic experience, they ultimately give rise to processes of contestation that work to reframe the sciences not as vehicles for establishing certain proof, but as a tools that can help us cultivate a more nuanced understanding of the complex material processes associated with diasporic memory and trauma. For instance, in my reading of *Certainty* and *Dogs at the Perimeter*, I argue that while Thien’s characters initially regard science as a site of epistemological certainty, they ultimate learn to cultivate a more nuanced stance toward scientific knowledge production – one that values the sciences not for their ability to establish uncontested “matters of fact,” as Latour might put it, but rather for their ability to help create a richer and more materially engaged account of the “matters of concern” that accompany diasporic experience.

Like Brah, Cho also challenges those frameworks that conceive of diasporas primarily as anthropological objects of study and attempt to isolate a list of characteristics that define diasporic communities. Less interested in question of “who or what is diasporic” than she is in the question of “how it is that individuals and communities *become* diasporic” (12), in her essay “The Turn to Diaspora,” Cho argues that diaspora needs to be understood primarily as “a subjective condition [that is] marked by the contingencies of long histories of displacements and genealogies of dispossession” (14). Building upon Judith Butler’s conceptualization of subject

formation as a process that hinges on the act of turning to “heed” the voice of the law, Cho argues that “diasporic subjects emerge in... turning back upon those markers of the self – homeland, memory, loss” produced by the traumas of colonialism (5). Thus, according to Cho, thinking about diaspora necessarily entails thinking about the legacies of colonialism, not just because these legacies live on through forms of racialization that continue to shape the everyday lives of diasporic subjects, but also because they have played a *constitutive* role in the emergence of diasporic subjectivities (14). Cho insists on this point in part because she wants to move away from those frameworks that treat diaspora as if it were synonymous with migration and transnationalism, or, alternatively, that treat diasporic subjectivity as an de-politicized site of cosmopolitanism and cultural hybridity. Complicating these frameworks, Cho argues that diaspora is indeed closely linked to “globalization, transnationalism, and postcolonialism,” but is also fundamentally *differentiated* from these experiences by “deeply subjective processes of racial memory, of grieving for losses which cannot always be articulated and longings which hang at the edge of possibility” (15). Cho argues that, by bringing this tension into relief, diaspora can provide a rich critical lens for thinking about the intersections between colonialism and globalization. Crucially, then, Cho understands diaspora as “a form of subjectivity [that is] alive to the effects of globalization and transnational migration, but also attuned to the histories of colonialism and imperialism” (15). Building on Cho’s conceptualization of diaspora as a condition that engages with globalization from a standpoint that remains informed by the legacies of imperialism, in chapter two I examine how Madeleine Thien’s novels *Certainty* and *Dogs at the Perimeter* narrativize the intersection between the historical traumas inherited by contemporary South East Asian diasporas and the uncertainties generated by global risk culture. I argue that Thien’s novels negotiate the discontinuities produced by the intersection between

globalization and diasporic trauma by drawing on neuroscientific tropes to explore both the lasting psychic and material effects of past historical traumas, and the challenges involved in grappling with experiences of globality that involve a dynamic interaction between past and present, and between the local and the seemingly distant.

Another key aspect of Cho's work that my project draws upon is her emphasis on the *embodied* dimensions of the subjective processes that accompany diasporic experience. Drawing on Paul Gilroy's conceptualization of the cultural practices of the Black Atlantic as "living memor[ies]" of the trauma induced by the Trans-Atlantic slave trade, Cho argues that diasporic subjectivities are marked not just by the effects of "geographical displacement," but also by "forgotten or suppressed pasts" that "continue to live on in secret or forgotten gestures, habits, and desires" ("Citizenship" 106). In other words, for Cho, living in diaspora means living with sensations and affects that exceed and, in some cases, even confound the limits of one's own lived experience. As Cho poetically describes it, diasporas "carry an anger that is [their] own" and "have cravings for tastes [they] cannot name" ("Citizenship" 106). In her book *Eating Chinese: Culture on the Menu in Small Town Canada*, which examines the role of the Chinese restaurant in diasporic memory, Cho invokes the possibility of reading these embodied memory processes through the lens of contemporary neurobiology. Focusing on the taste-smell experiences invoked in Fred-Wah's *Diamond Grill*, Cho argues that Wah's work situates the biological body as a "crucial site of memory," emphasizing the processes whereby the body becomes "aware, through a series of synaptic jolts, of its location in particular geographies, of its emplacement and displacement" (*Eating Chinese* 150). Chapter two extends this line of criticism by considering how Thien's novels *Certainty* and *Dogs at the Perimeter* draw on contemporary

insights about the neurobiology of memory to negotiate the uncertainties generated by the collision between diasporic trauma and contemporary risk society.

My analysis of the embodied processes associated with diasporic memory brings Cho's ideas about the transmission of memories across generations into dialogue with Marianne Hirsch's work on "postmemory," which explores the processes whereby the "traumatic knowledge and embodied experience" of trauma survivors can be passed on from one generation to the next, giving rise to "transferential processes – cognitive and affective – through which the past [can be] internalized by [by younger generations] without being fully understood" (*Postmemory* 6, 31). Crucially, Hirsch argues that although postmemory "approximates memory in its affective force and... psychic effects," it is differentiated from memory in the sense that "it has lost its direct link to the past" (*Postmemory* 31, 33). Thus, echoing Cho's notion that diasporic subjectivity is marked by an embodied connection to the past, Hirsch posits that the "postmemorial" generations are subject to "embodied and affective experience[s]" that link them to the past, but in ways that cannot easily be traced or understood (33). She further notes that these gaps in knowledge can trigger an anxious "curiosity... urgency... [and] *need*" to know more about a traumatic past (*Postmemory* 35). One of the central questions that I ask in this project is, what kinds of reconfigurations have the knowledge-seeking efforts of the postmemorial generations undergone in recent years as they intersect with emergent understandings of the genetic, neurobiological, and environmental processes that inform human embodiment? For instance, in chapter three, I explore how Larissa Lai's novel *Salt Fish Girl* dramatizes the intersection between the diasporic search for familial origins and contemporary discourses surrounding genetic genealogy. I argue that the postmemorial affects and bodily sensations experienced by Lai's Chinese-Canadian protagonist lead her to develop a profound

hunger for causal explanations and linear histories of descent, ultimately prompting her to embark on a quest for biogenetic origins that mirrors the recent cultural fascination with genetic genealogy as a means of establishing diasporic kinship connections. Meanwhile, in my reading of Rita Wong's *forage*, I explore how the speaker's embodiment as a postmemorial subject intersects with her growing awareness of her bodily immersion in a global landscape filled with environmental risks. I argue that, by drawing analogies between the intergenerational transfer of "postmemorial affects" and the bioaccumulation of toxic chemicals, *forage* fosters a more nuanced awareness of the many ways in which the past remains archived in the biological body.

In her discussion of the embodied aspects of diasporic memory, Cho notes that the uncanny sensations and bodily affects experienced by diasporic subjects can have a profoundly unsettling effect, making them feel both "out of place" in their current location and "uncomfortably out of joint" with the present moment ("Turn" 19). However, Cho stresses that these embodied experiences can also form the basis for unexpected forms of community and solidarity. As she explains with some help from a memorable passage in Wah's *Diamond Grill*:

Writing of his sudden desire for *lo bok*, Chinese turnip... Wah guides us into the geography of longing. He writes in *Diamond Grill* of "a craving for some Chinese food taste that I haven't been able to pin down. An absence gnaws at sensation and memory. An undefined taste, not in the mouth but down some blind alley of the mind" (67). He finds this lost taste, the fulfillment of his craving, in a Chinese market. He sees a pile of turnips and has to ask a woman in the market how to use the vegetable. Journeying down this "blind alley of the mind," Wah finds a form of community out of a craving and through a stranger.

("Citizenship" 106)

For Cho, the value of diaspora as a lens for critical analysis lies *precisely* in this ability to forge unexpected connections out of the traumas and losses generated by colonialism. Indeed, even though she echoes Brah's call for a more nuanced investigation of the differential histories of displacement and arrival that inform diasporic experience, Cho insists that "so too do seemingly distinct diasporas need to be compared" in order to identify potential connections between their distinct histories ("Turn" 22). Drawing on the specific examples of the histories of black slavery and Asian indenture, Cho argues that mapping the "overlaps and connections" between these phenomena can enable us to identify affinities between seemingly discrete communities and social movements, from "the Haitian Revolution of Toussaint L'Ouverture," to the "Civil Rights movement in the United States," to the struggles of "Chinese communities in South America" and "South Asian Communities in the West Indies" ("Turn" 22, 13). In this sense, Cho's work demonstrates how, more than simply providing an opportunity to fulfill a nostalgic longing for a lost ancestry or "homeland," moments of embodied remembrance like the one described by Wah can serve as opportunities to explore new forms of community and solidarity. Keeping this potential in mind, and in accordance with Cho's insistence that diaspora's value lies in "its promise as a mode of theorization which enables connections between traumas of colonialism even as it marks distinctions" ("Turn" 13), this dissertation attempts to map some of the relational possibilities that can arise when we trace the colonizing legacies of Western scientific epistemology. Some of the questions I ask in this regard are: what role has scientific knowledge production played in the histories of dispersal of the Asian and South Asian communities portrayed by Mootoo, Thien, Wong, and Lai? What connections can be enabled when we consider the points of convergence between diverse communities affected by historical phenomena like the bioscientific production of racialized and sexualized others, as well as more

contemporary phenomena like the “geneticization” of race and the genetic manipulation of living organisms? For instance, in my reading of *Salt Fish Girl*, I explore how Lai’s novel mobilizes contemporary discourses around the genetic basis of racialized and diasporic identities not just to mount a critique of contemporary biotechnology, but also to highlight the need for a more open collaboration between queer, anti-racist, and environmental movements.

At this point, it is important to reiterate that, as I stated from the outset, my aim in tracing such interconnections is not simply to expose the hegemonizing effects of scientific knowledge production. Instead, I am interested in mapping the ways in which the authors included in my project draw on concepts and insights from various scientific disciplines to challenge the many forms of biological essentialism propagated by Western scientific epistemology, as well as the new forms of “biopower” enabled by contemporary biotechnology. This line of inquiry arises out of my conviction that, just as imperialism was enacted through a co-production between scientific and literary forms of knowledge production (as *Cereus Blooms at Night* teaches us through its exploration of the role of Linnaean botany, 19th-century race science, and gothic literary conventions in shaping colonial understandings of the Caribbean), so too must decolonizing efforts entail collaborations between different ways of knowing. It also arises out of my growing sense, in thinking through Mootoo’s, Thien’s, Lai’s, and Wong’s complex representations of the biological body and its relationship to the material environment, that biological essentialism and biotechnological encroachment cannot be challenged through cultural forms of resistance alone. Instead, they need to be challenged both through a more nuanced understanding of the biological body, and through material practices that acknowledge and foster the self-organizing capacity of living systems (such as the seed preservation initiatives that Lai and Wong both reference in their work), both of which necessitate an engagement with the

biological sciences. In this sense, my project builds on and extends Cho's insights regarding diaspora's coalitional potential by exploring the ways in which the embodied and affective experiences that accompany diasporic displacement can serve as opportunities to build coalitions not just across different communities affected by the legacies of scientific imperialism, but also across different spheres of knowledge production and cultures of expertise.

It is important to clarify that, in exploring diaspora's coalitional potential, I try to remain aware of Brah's insistence that "diasporic... positionality does not *in itself* assure a vantage point of privileged insight into and understanding of relations of power," but simply creates "a space in which experiential mediations may intersect in ways that render such understandings more readily accessible" (204). Thus, throughout this project, I treat diaspora not as an idealized site of cultural hybridity or solidarity, but as a site of encounter between conflicting genealogies of dispersal and conflicting ways of knowing. While these encounters open up the possibility of forming alliances across different communities and cultures of expertise, they also give rise to a host of contradictions that underscore the cognitive labour involved in constructing epistemologies that straddle the boundaries between politics and ecology, and between the sciences and the humanities. From Lai's foregrounding of the tensions between queer and environmental politics in *Salt Fish Girl*, to Thien's self-reflexive questioning of the cognitive and affective tensions produced by cross-disciplinary dialogue in *Certainty* and *Dogs at the Perimeter*, to Wong's exploration of the fraught relationship between diasporic, Indigenous, and scientific knowledge production in *forage*, the works discussed in this dissertation all highlight (albeit with varying degrees of self-reflexivity) the cognitive challenges that accompany cross-disciplinary dialogue. I argue that, by producing literary works that *enact* (instead of simply thematizing) these tensions, Mootoo, Thien, Lai, and Wong all offer important insights into the

specific contributions that literature can make to the “renewal of empiricism” advocated by Latour and other science studies scholars. Indeed, these authors demonstrate that, just as the sciences can help expand our understanding of the embodied and material processes that accompany diasporic experience, so too can literature help enrich our understanding of empiricism by enabling us to engage with the discontinuities and affective excesses that frequently form the underside of scientific knowledge production, but are rarely acknowledged by scientific methodologies. In this sense, these authors highlight the ways in which literature can help construct what Brian Massumi, following William James, calls an “expanded empirical field,” or a space of knowledge production where we can “connect with [those] regions of empirical reality that science studiously leaves out” as it strives to produce objective results (236).

In summation, building and expanding upon the work of Smaro Kamboureli, Avtar Brah, and Lily Cho, and drawing on methodological lessons gleaned from science studies, my dissertation theorizes diasporic subjectivity as a field of knowledge production that shares some key “matters of concern” with the biological sciences, from the material dimensions of memory and emotion, to the biological basis of relatedness, to the knowledge practices that are necessary in order to build coalitions between different communities affected by contemporary forms of “biopower.” While these shared “matters of concern” have remained largely unacknowledged in the field of Canadian literary studies,⁸ they have received a considerable amount of attention in the field of anthropology, where scholars like Aihwa Ong, Kaushnik Sunder Rajan, and Alondra Nelson have begun exploring the impact of the life sciences on contemporary experiences and understandings of diaspora. This growing body of work calls attention to two important phenomena: first, the new knowledge formations and cultures of expertise that have emerged

from the intersection between bioscientific culture, contemporary risk society, and diasporic subjectivity; and second, the new understandings of diasporic selfhood and kinship that are taking shape as a result of recent developments in the life sciences, particularly in the field of genomics. In keeping with Brah's and Cho's shared insistence that diasporic subjectivities need to be discussed in relation to the historically specific circumstances of their emergence (Brah 193; Cho, "Turn" 21), and in an effort to elucidate the broader sociocultural context of the intersections between bioscience and diaspora that I map in each of my chapters, I will briefly discuss this anthropological work below.

Sociocultural Contexts: Diasporic "Experts," Genetic Genealogy, and Diasporic Belonging

In her introduction to a recent collection of essays on the Asian biotechnology industry, Aihwa Ong argues that the growing demand for bioscientific expertise that can currently be observed in many countries across the Asian continent has important implications for contemporary understandings of diasporic knowledge production. Drawing on Beck's concept of risk society, Ong observes that emergent states in the Asian continent are increasingly looking to the life sciences and to biotechnology to manage the environmental and public health risks associated with modernity and thus reinforce the sense of a shared fate among their populations ("Introduction" 3). According to Ong, this burgeoning interest in bioscience as a tool of risk management and nation-building is symptomatic of the global economy's increasing shift away from the production of goods and toward the production and management of *knowledge* – particularly "high tech [and] biomedical expertise" (Ong, "Neoliberalism" 5). She argues that, in many emergent postcolonial states, the desire to compete in this global knowledge economy has spawned an effort to create world-class hubs of bioscientific expertise (Ong, "Introduction" 30). Pertinent to my focus on diaspora, Ong notes that this fetishization of bioscientific knowledge

has resulted in the widespread perception that the return of foreign-trained bioscientific experts is crucial for the development of emergent postcolonial states (Ong, “Introduction” 31). Not surprisingly, then, “the turn of the century [has] witnessed one of the largest repatriations of global skills in recent times” as many Asian countries attempt to repatriate diasporans educated in the West (31). According to Ong, discourses emphasizing the value of bioscientific diasporas are especially compelling for developing nations because they mobilize the hope that, once repatriated, foreign-trained experts will be able to use their knowledge to advance national and collective interests at home. As Ong puts it, “the role of scientific knowledge in the success of postcolonial nations begets a powerful emotional resonance especially among the educated elite” (*Asian Biotech* 20). But this privileging of bioscientific diasporas as key actors in the biopolitical management of emergent states raises pressing ethical questions about the entangled, and often unequal, relationships between these cosmopolitan elites and other constituencies whose knowledge claims have been historically displaced by scientific discourse, from the Indigenous communities whose traditional territories, biological resources and traditional knowledges are increasingly under threat of extraction by multinational corporations, to the racialized minorities who are often targeted as objects of scientific risk calculations (demonstrated by the coding of Chinese migrants as public health threats during the SARS crisis of 2003, for instance). In this sense, the intersection between bioscientific and diasporic knowledge production offers a rich ground from which to engage with current debates about “conceptions of knowledge, of what it means to know, [and] what counts as knowledge” (Santos, Nunes and Meneses xxi), as well as debates around the way in which these epistemic struggles intersect with conflicts over “place, culture, and power” (Escobar 4).

Another area of inquiry raised by recent scholarship on the intersection between bioscience and diaspora explores how new developments in the life sciences – particularly in genomics – are reshaping diasporic notions of self and community. Diaspora scholars have often underscored the ways in which diasporic relatedness confounds the search for linear histories of descent. However, recent developments in the field of genomics, which promise to shed light on the molecular differences between racialized subgroups of the population, have sparked an explosion of popular discourses and commercial enterprises that highlight the possibility of using various forms of DNA analysis to trace diasporans’ ancestry back to an originary homeland. Alondra Nelson’s work on the African American diaspora, for instance, explores how African American “root seekers” are drawing on bioscientific practices such as genetic genealogy testing to understand their affiliative relationship to “inferred ethnic communities and nation states of Africa” (254). Though highly compelling from an affective standpoint, this geneticization of the diasporic pursuit for genealogical roots is ethically problematic in that it may foster forms of “biosociality” – to borrow the term used by Paul Rabinow to describe collectivities formed around a shared biological identity or somatic condition – that reinforce essentialist understandings of self and community. Two current trends that reflect this geneticization of diasporic identifications are the rise of commercial genetic databases such as the African Ancestry Database, whose slogan “Trace your DNA. Find your Roots” casts genetic inheritance as the key to understanding diasporic identities, and the recent efflorescence of state-sponsored Chinese human genome projects whose ongoing attempts to map the “biological constituency of the Chinese nation” (Sung 282) have found special resonance amongst Chinese diasporas in pursuit of a biologized connection to ancestral China (Ong 38).

In considering the genetic testing practices of African American “root-seekers,” Alondra Nelson stresses that such investigations do not always result in a wholesale acceptance of essentialist understandings of biological and ethnic affiliation (“Factness” 254-255). Instead, according to Nelson, personal investigations into the biogenetic roots of diasporic kinship are often accompanied by “interpretive efforts to align” these biological facts with “extant relationships” and various other sources of relatedness (“Factness” 259). Building on this insight, and re-thinking Rabinow’s concept of “biosociality” from an environmental standpoint, I argue that texts like *Salt Fish Girl* and *forage* not only foreground the tensions that arise when diasporic subjects attempt to draw on biological data to trace their kinship networks, but also disrupt biological essentialism by figuring diasporic communalism in terms of a “trans-corporeality” (Alaimo) in which diasporic bodies are always intermeshed with the wider environment. Indeed, while both of these texts dramatize the impulse to trace the biological substance of diasporic selfhood, they also challenge essentialist understandings of diasporic relatedness by emphasizing that diasporic subjects and diasporic communities are constantly being reshaped through their bodily immersion within “vast biological, economic, and industrial systems that can never be entirely mapped or understood,” but nevertheless have tangible effects on the material world (*Bodily* 23). Thus, I contend that these texts model a biosocial ethics that is grounded not in a shared biological heritage, but in a shared embodied experience of the systemic harm caused by the global flows of biopower.

Given the many “matters of concern” shared by diasporic and scientific knowledge production, as well as the recent explosion of anthropological work that explores the impact of bioscientific mediation on the knowledge-making and “root-seeking” practices of contemporary diasporas, it is hardly surprising that a growing number of diasporic Canadian authors are turning

to bioscience as a commonplace for exploring the subjective, embodied, and communal experiences that accompany diasporic displacement. In an effort to situate these intersections within their specific historical and sociocultural contexts, my dissertation examines Mootoo's, Thien's, Lai's, and Wong's work in relation to four historically contingent sites of scientific knowledge production: chapter one reads Mootoo's *Cereus Blooms at Night* in relation to the gendered and racial discourses that were propagated by Linnaean botany in the 18th and 19th centuries; chapter two reads *Certainty* and *Dogs at the Perimeter* in relation to current debates around the neurobiology of memory and emotion; chapter three reads Lai's *Salt Fish Girl* in relation to popular and scientific discourses concerning the genetic basis of diasporic relatedness; and, finally, chapter four reads Rita Wong's *forage* in relation to contemporary debates around the production of genetically modified organisms, particularly genetically modified seeds. I contend that, in addition to engaging with a specific domain of scientific discourse, each one of these texts underscores the need to acknowledge the way in which the legacies of colonialism complicate diasporans' interactions with scientific knowledge production. In so doing, these texts make an important contribution to recent debates surrounding the role of both scientific and diasporic knowledge production in contemporary struggles for the "decolonization" of knowledge, to which I turn below.

Decolonizing Diaspora: Constructing a More Ethical Relationship Between Scientific, Diasporic, and Indigenous Knowledges

Within postcolonial scholarship, bioscientific culture has long been regarded as a key expression of what decolonial thinkers like Boaventura de Sousa Santos and Walter D. Mignolo refer to as the "coloniality of knowledge," or the longstanding ordering of the world according to

the logic of Western scientific epistemology. As Boaventura de Sousa Santos, João Arriscado Nunes, and Maria Paula Meneses note in their introduction to the volume *Another Knowledge is Possible: Beyond Northern Epistemologies*, this coloniality of knowledge has traditionally operated through two distinct, but complementary processes: 1) the reduction of local, Indigenous, and non-Western epistemologies as “expressions of irrationality, of superstition, or, at best, to practical and local forms of knowledge whose relevance [is] dependent on their subordination to modern science, perceived as the sole source of true knowledge” (“Introduction” xxiii); and 2) the production of racial and sexual “others” whose difference marks them as objects “available for use and appropriation” by Western science (“Introduction” xxxv). Santos, Arriscado and Meneses go on to explain that, despite being rooted in the enlightenment humanism of the seventeenth and eighteenth centuries, colonial epistemologies continue to shape social relations to this day. They contend that one of the key arenas of social practice in which this colonial legacy can be seen at work is the realm of international development. More specifically, they argue that, by framing development in terms of the need to transfer Western technologies and expertise to the “underdeveloped” global South, development discourses often promote a displacement of local and Indigenous knowledges by Western scientific discourses (“Introduction” xxvii). As Sandra Harding explains, this development paradigm emerged in the aftermath of WWII, when Western policy makers reached a consensus that peace and economic prosperity could only be achieved through “Western scientific rationality and expertise” (1-2). As many critics have noted, this consensus led, among other things, to the Green Revolution in agriculture, which promoted the large-scale replacement of traditional and Indigenous farming methods with hybridized seeds and chemical fertilizers. As Shiva and many others have argued,

these policies have not only promoted a displacement and stigmatization of Indigenous and local knowledges across the world, but have also led to a host of environmental problems.

Debates over the colonality of knowledge have taken on increasing urgency in recent years as Indigenous sovereignty movements around the world, from the Seed Satyagraha movement in rural India, to the Zapatista movement in Southeastern Mexico, to the Idle No More movement here in Canada, are increasingly framing their demands not just in terms of social and political justice, but also in terms of what Santos, Nunes, and Meneses call “cognitive justice,” or the recognition that, because the “capitalist and imperial order that the global North has been imposing on the global South” was founded upon a suppression of Indigenous knowledge systems, contemporary struggles for social and environmental justice must necessarily entail a decolonization of *knowledge* as well as a decolonization of traditional territories and natural resources (“Introduction” xix). As Santos, Nunes, and Meneses explain, this decolonization of knowledge must involve a recognition not only of the “epistemological diversity” that exists in the world, but also of the crucial lessons that social and environmental justice movements can derive from Indigenous and non-Western epistemologies which frame collective rights and responsibilities in relation to “a territory, which is defined as a collective of spaces, human groups (including both the living and their ancestors), rivers, forests, animals, and plants” (“Introduction” xx). However, as they strive to make their demands in epistemological, and not just sociopolitical terms, Indigenous and “Third World” activists often find themselves at odds with the cultures of expertise and standards of validation promoted by Western science. Speaking about this problem specifically in the context of the global grass roots struggle against the spread of corporate seed monopolies (which I examine in the chapters on *Salt Fish Girl* and *forage*), rural sociologist Abby Kinchy argues that contemporary environmental debates are

often governed by a logic of “scientization” which frames sociopolitical conflicts as scientific debates that must be carried out among scientific experts “who are assumed to produce objective, value-neutral assessments that do not favour one social group over another” (2). This “scientization” of public debate belies the fact that environmental issues such as the burgeoning debate over agricultural biotechnology often have “a wide range of cultural, economic, and ethical implications that are not easily reduced to scientific calculations of risk” (2). While my dissertation recognizes the need to challenge this logic of “scientization,” it also takes a cue from Santos, Nunes, and Meneses’ insistence that, far from rejecting science, contemporary anti-imperial movements must strive to place science “in the context of the diversity of knowledges existing in contemporary societies” in order to forge an “ecology of knowledges” that attends to the social, political, and environmental consequences of contemporary forms of imperialism (“Introduction” xx). This recognition that scientific knowledge can be a powerful force for social critique and social activism is starting to gain ground in the Canadian context, where many activists associated with the Idle No More movement are drawing on the scientific expertise of climate specialists and other scientists to bolster their claims about the need to rethink governance and citizenship in terms of people’s shared connection to collective resources. In this sense, Indigenous activists are enacting modes of mobilization that combine traditional principles of land stewardship and situated knowledge of traditional territories with scientific perspectives on the environmental effects of fracking and other forms of resource extraction in order to make their claims. Moreover, there is a growing recognition that this kind of mobilization is especially important in a national context marked by the Harper government’s increasing de-funding of the hard sciences and ongoing refusal to accept the reigning scientific consensus regarding climate change.

Aside from emphasizing the need to forge epistemologies that foster dialogue between Indigenous, non-Western, and scientific cultures of expertise, contemporary calls for the decolonization of knowledge have also prompted Canadian diaspora and critical race scholars to re-think the relationship between diasporic and Indigenous knowledge production. From Edward Said's insistence that the deterritorialization experienced by exiles can help foster "contrapuntal" modes of thinking that accommodate simultaneous temporalities and locations (186), to Homi Bhabha's suggestion that experiences of migration can produce an "interstitial perspective" that challenges self/other binarisms (5), to Smaro Kamboureli's aforementioned assertion that the central task of diasporic critics lies in producing a space for the dynamic interaction between conflicting epistemologies and categories of identity (22), diasporic subjectivity has long been theorized as a site for the production of hybrid ways of knowing. However, as Kamboureli and many other critics have noted, in striving to create such a space, diasporic writers and critics often run the risk of fetishizing the symbolic value of transnational mobility while ignoring the heterogeneous points of departure and differential histories of marginalization that constitute diaspora's material reality (23). Kamboureli stresses that diaspora critics must counter this kind of "closet idealism" by questioning the investments – social, political, and affective – they bring to their own knowledge practices, as well as remaining aware of their own imbrication in "power relations [that are] usually concealed behind the force of knowledge" (26). Following this line of thinking, critics who work in Canadian diaspora studies have long been in the habit of questioning how their work speaks to wider debates in the public sphere, particularly around the fronts of identity politics and anti-racist activism. As many critics have noted, the "Writing thru Race" conference, which took place in Vancouver in 1994, played a key role in placing the "practice and pedagogy of identity politics" at the centre of diasporic Canadian literature and

criticism (Mathur, “Transubracination” 142). In recent years, however, diasporic Canadian writers and literary critics have been shifting their attention from the work of anti-racism and towards the need to better articulate the relationship between diaspora and indigeneity, with many commentators emphasizing the need for diasporans to think more self-critically about their ethical duty to Canada’s First Nations. For instance, in an essay theorizing the limits and possibilities of diasporic citizenship, Lily Cho insists that “minority literatures in Canada demand an engagement with long histories of dislocation that are differentially related,” and, more specifically, that “the story of Asians in Canada must be told in relation to, and with an understanding of the differential relationship with, First Nations communities in Canada” (“Diasporic Citizenship” 97). This is not an easy task given that, historically, the field of diaspora studies has often defined itself in direct contradistinction to indigeneity, as exemplified by James Clifford’s aforementioned assertion that diasporas need to be understood in opposition to “Indigenous, and especially autochthonous claims by “tribal” peoples” (307).

In *Cartographies of Diaspora*, Brah began to lay the groundwork for the kind of questioning Cho calls for above by advancing the crucial argument that the site of contestation she refers to as “diaspora space” is inhabited “not only by those who have migrated and their descendants but equally by those who are constructed and represented as Indigenous” (178). Thus, in contrast to Clifford, who defines diaspora in direct opposition to indigeneity, Brah insists that thinking about diaspora means thinking about the “entanglement [and] intertwining of genealogies of dispersion with those of ‘staying put’” (205). For Brah, this exercise is of crucial importance when considering diasporic experiences of “arrival and settling down” (Brah 179). Thus, challenging those frameworks that focus too narrowly on the diasporic longing for a mythic homeland, thereby ignoring the circumstances of diasporans’ resettlement in the

aftermath of displacement, Brah emphasizes the need to consider how diasporans' efforts to make themselves at home in their host countries conflict and intersect with Indigenous calls for "first nationhood" (188). Moreover, she complicates the perceived opposition between indigeneity and diaspora by stressing that, as the world becomes increasingly globalized, many Indigenous communities are *themselves* becoming dispersed, such that, in "diaspora space," "the native is as much a diasporian as the diasporian is the native" (205). In a recent keynote address entitled "Between Indigeneity and Diaspora," Daniel Coleman noted that, by insisting on the co-habitation between diasporic and Indigenous subjects within "diaspora space," Brah acknowledges the need to establish a more ethical relationship between both communities. However, he cautioned that characterizing this site of encounter as "diaspora space" not only predetermines the power relations that can take place therein, but also runs the risk of colonizing "literal Indigenous space" with "abstract 'diaspora space.'" ⁹ This concern over the need to question diasporans' complicity in the colonization of Indigenous space is being echoed by a growing number of Canadian literary scholars. For instance, the 2011 anthology entitled *Cultivating Canada: Reconciliation through the Lens Cultural Diversity*, edited by Ashok Mathur, Jonathan Dewar, and Mike DeGagne, brings together a series of essays that engage with decolonization debates from a diasporic perspective, "but with an understanding that such viewpoints need to be aware of what has come before them – specifically, Aboriginal populations and the history of the land that is determined not by colonizing definitions, but by pre-contact awareness" (Mathur, "Cultivations" 8). In their contribution to the collection, Bonita Lawrence and Enakashi Dua argue that anti-racist discourse and activism "has failed to make the on-going colonization of Indigenous peoples foundational to their agendas"; thus, they emphasize the need to consider the ways in which diasporic communities have participated in the

“ongoing settlement of Indigenous lands” (255, 254). Meanwhile, Malissa Phung complicates Lawrence and Enakashi’s call for a more sustained questioning of diasporans’ participation in settler-invader culture by insisting that the category of “settler” needs to be reconfigured to account for the “different histories and everyday experiences of settler privilege and marginalization [that distinguish] white settlers and settlers of colour” (“Settlers” 296). Smaro Kamboureli and Christl Verduyn’s recently published collection *Critical Collaborations: Indigeneity, Diaspora, and Ecology* takes these debates into an ecocritical direction by asking how diasporic and Indigenous communities can come together “in relation to the land, land understood at once as the geopolitical space of Canada and as the larger ecological system whose substance is intimately linked with humanness” (19).

Two of the authors whose work I explore in this project – Larissa Lai and Rita Wong – have made valuable contributions to the ongoing effort to theorize diasporic subjectivity in terms of the parallel, but differential experiences of colonization shared by diasporic and Indigenous communities. Central to Lai’s and Wong’s explorations of diasporic subjectivity is a reckoning of the ethical debt that diasporic subjects, in their ambivalent position as both objects of colonial power and settlers in Indigenous territories the rights over which are still being contested, owe to Indigenous communities. Both across her poetry and in her current critical project *Watersheds*, which examines the relationship between local, global, and Indigenous communities in terms of their shared relationship to water, Rita Wong has actively interrogated the role of Asian Canadian and other diasporic communities as allies in Indigenous struggles for sovereignty. As she explained in a recent interview with the *Capilano Review*,

... it’s been very important for me to learn about and understand my community’s history in this country, as a woman of Chinese descent. At the same time, anti-racism is not

enough – given the history of the original peoples of this land, decolonization is imperative.... We live in a contact zone, and I’m particularly grateful to writers who remember and understand the Indigenous history of the land and watersheds in which we live, and who share their knowledge, like Lee Maracle, who I first met at a workshop in Calgary in the mid-1990s.... This is the first critical community that needs attending to: the Indigenous peoples whose homelands we live on. This is not only an ethical matter, but a practical one – if we care about respecting history, land and justice, we need to be working with these communities more closely, and we can’t do so effectively unless we do our homework to decolonize ourselves, probably a lifelong process – several generations long, actually. (“Downstream” n.pag.)

Similarly, in her contribution to Kambourelli and Verduyn’s aforementioned *Critical Collaborations* volume, Lai asserts that forging a more ethical relationship between diasporic and Indigenous communities requires an “active... engagement with Indigenous epistemologies and ways of being with the human, animal, vegetable, and elemental worlds” (101). As they work to build more robust networks of solidarity with Indigenous communities, Lai and Wong have both critiqued those scientific paradigms that dismiss Indigenous modes of knowledge production and/or attempt to appropriate Indigenous resources. However, far from rejecting science, their work highlights the ways in which an anti-imperial mobilization of scientific knowledge can help further Indigenous struggles for cognitive and environmental justice. In this sense, their work highlights the important role that scientific knowledge needs to play in contemporary efforts to make diasporas more accountable to Indigenous communities.

As I have endeavored to show throughout this introduction, scientific knowledge production has a crucial bearing on many of the key “matters of concern” that preoccupy

contemporary diasporic Canadian writing. In engaging with these shared “matters of concern,” the texts that I examine in this dissertation raise important questions about the “epistemic agency” (Haraway) granted to scientific “experts,” about the potential for biopolitical control inherent in the transnational circulation of Western bioscientific practices, and about the ability of bioscience to secure the collective identity and shared fate of diasporic communities. However, instead of offering a deterministic critique of bioscience or calling for a complete rejection of its technologies and specialized knowledges, these texts stage epistemological encounters that mobilize the resources of the life sciences – in strategic combination with other diverse knowledge practices and cultures of expertise – to think through the complex and multilayered ways in which environments and living organisms (human and nonhuman) defy biopolitical control. In mapping these hybrid epistemologies, I draw upon the work of Bruno Latour, Donna Haraway, Elizabeth Grosz, Brian Massumi, Jane Bennett, Stacy Alaimo, and other new materialist theorists whose work challenges us to rethink the ways in which the specialized knowledges produced by the life sciences can enable us to constructively engage with the material agencies at work in the environment.

Reading Diasporic Bodies and Environments through the Lens of New Materialism

Since at least the 1980s, cultural critics have been contesting the claims of objectivity and epistemological certainty, as well as the biological reductionism, associated with dominant scientific discourses by emphasizing both the contingency of scientific knowledge and the constructedness of normative biological categories. As Alaimo argues, while these critiques have usefully highlighted the ways in which both scientific truth and biology are discursively produced, they have inadvertently drawn attention away from the very real, material substances

that make up actual bodies and environments (*Bodily* 7). Alaimo insists that only by attending to these material substances can we truly challenge biological determinism and “transform science into something more accountable, more just, and more democratic” (*Bodily* 65). A similar preoccupation with the theoretical privileging of the discursive over the material is beginning to make itself palpable in postcolonial studies. For instance, postcolonial ecocritic Pablo Mukherjee has recently insisted that we cannot understand contemporary postcolonial crises “without paying attention to their material strata, one that is composed of soil, water, plants, crops, animals” (5). As Alaimo argues, however, navigating the complex web of interactions between such material agencies “often requires the mediation of scientific information” (16). Recognizing this dilemma, in a recent opinion article titled “Canadian Postcolonial Environments,” Canadian ecocritic Susie O’Brien issued a call for a more sustained cross-fertilization between the fields of ecocriticism, postcolonial studies, and biology (n.pag.). In a similar vein, the authors I examine in this dissertation all confront the crucial question of how diasporic communities can draw upon the life sciences to grapple with the material dimensions of current geopolitical struggles *without* reinforcing biological essentialisms or those hegemonic scientific paradigms that work to displace Indigenous knowledge. This willingness to interface with the life sciences stands at odds with established postcolonial frameworks for thinking about scientific knowledge production, which – as postcolonial epistemologist Kapil Raj has pointed out – tend to focus on the need to protect local and Indigenous knowledges from scientific encroachment without considering the ways in which scientific practices themselves are constantly being reshaped through “*reciprocal*, albeit asymmetric, processes of [transnational] circulation and negotiation” (13, emphasis mine). The works that I consider in this project all stage trenchant critiques of hegemonizing bioscientific practices, but exceed established postcolonial frameworks for understanding

scientific knowledge production by considering the ways in which knowledges and practices derived from the life sciences can be reshaped and remobilized to challenge biological essentialisms and emergent forms of biopolitical control.

This shift in perspective resonates with Latour, Haraway, and Alaimo's shared insistence on the possibility – and also the necessity – of transforming the life sciences to allow for more ethical and self-reflexive ways of understanding and engaging with the material world. While all of these theorists question the assumption that scientists can act as “modest witnesses” (Haraway) or transparent “spokespersons” for nature (Latour), they still contend that the sciences have an important role to play in helping to create a more nuanced understanding of the material agencies that permeate the human body and the wider environment (Haraway, “Witness” 224; Latour, *Politics* 4). Indeed, while Latour and Haraway both followed a social constructionist view of scientific facts in their earlier work,¹⁰ they have since shifted and complicated their stance toward scientific knowledge production, partly in response to the anti-science stance taken by conservative groups who have redeployed the social constructionist critique of science to deny the validity of scientific evidence surrounding evolution and climate change. In his influential essay “Why Has Critique Run Out of Steam?”, Latour questions what it is about the cultural critique of science that lends itself to this kind of appropriation, and locates the root of the problem in cultural critics' failure to adequately define their main target. He argues that, as it laboured to debunk the social construction of scientific facts, the cultural critique of science failed to make clear that its goal “was never to get away from facts but closer to them, not fighting empiricism but, on the contrary, *renewing* empiricism” (“Critique” 2287, emphasis mine). Thus, Latour contends that, instead of oscillating between a constructivist impetus to debunk scientific facts and a realist impulse to prove the determining force of nature, critique

should strive to cultivate a more nuanced understanding of realism – one that deals with risky and open-ended “matters of concern” rather than the close-ended “matters of fact” that critics typically invoke when speaking about scientific knowledge production (“Critique” 2287). Latour hopes that shifting the ground of discussion from “matters of fact” to “matters of concern” will help foster a critical impulse to “protect and... care” for the material world instead of simply exposing its imbrication in processes of social construction (“Critique” 2287).

Latour’s call for a “renewal” (“Critique” 2287), as opposed to a rejection, of empiricism is echoed by Haraway, who ends her famous critique of the “modest witnessing” practices associated with traditional empiricism with a call for an epistemological and material restructuring of the spaces in which scientific knowledge is produced (“Witness” 226).¹¹ In a similar vein, Alaimo argues that the contemporary proliferation of environmental and public health risks whose management demands the mediation of scientific knowledge offers up a challenge to “transform science into something more accountable, more just, and more democratic” (*Bodily* 65). In short, Haraway, Latour, and Alaimo all advocate a form of materialism that challenges the assumptions of objectivity and epistemological certainty, as well as the biological reductionism, associated with dominant scientific discourses while also recognizing that science can be a powerful resource in helping us to construct more capacious understandings of the material world that surrounds us. Such a materialism, they argue, must not only emphasize the embodied and situated qualities of scientific knowledge production, but also pay keen attention to the complex networked interactions that shape the material world. I contend that Mootoo, Thien, Lai and Wong enact similar forms of materialism in their writing. While of each these authors deals slightly differently with the question of how diasporic subjects might constructively interface with the life sciences, they all construct epistemologies that: 1)

complicate the trope of scientific objectivity, or what Haraway calls “modest witnessing,” through an attention to the situated, embodied, and affective dimensions of scientific knowledge production; 2) re-frame science as a resource not for establishing “expert knowledge” or certain proof, but for opening up debate about the embodied and environmental “matters of concern” faced by diasporic communities; and 3) challenge biological reductionism by emphasizing the human body’s constitutive openness to the wider environment, as well as the self-organizing capacity of biological systems.

In addition to identifying some key avenues for the democratization of scientific knowledge, the epistemologies produced by Mootoo, Thien, Lai and Wong also complicate some key assumptions about the nature of scientific knowledge production that have long informed the cultural critique of science. As de Santos argues in his recent article “A Discourse on the Sciences,” contemporary critiques of bioscience are often predicated on the assumption that scientific knowledge production is governed by a reductionist paradigm that, following Newtonian and Cartesian principles, sees the world as a “machine whose operations can be precisely determined by means of physical and mathematical laws – an eternal and static world hovering in an empty space, a world which Cartesian rationalism makes knowable by dividing it into its constituent parts” (19). However, as Santos goes on to explain, this once-dominant paradigm has been in crisis for quite some time, with some of the most powerful challenges against reductionism coming from scientists themselves. Drawing on Ilya Prigogine’s work on dissipative structures, among other examples, Santos notes that, for at least three decades now, many disciplines in the natural sciences have been moving towards a “new conception of matter and of nature, which is hard to reconcile with the one we inherited from classical physics. In place of eternity, we now have history; in place of determinism, unpredictability; in place of

mechanism, interpenetration, spontaneity, irreversibility, and evolution; in place of order, disorder; in place of necessity, creativity, [sic] and contingency” (25). This awareness that reductionism is no longer the reigning paradigm in scientific knowledge production has been somewhat slow to come in literary studies. In a workshop entitled “Underground Ecocriticism” which took place at the University of Western Ontario in November of 2012 and was attended by ecocritics from across Canada, participants were asked to consider the question, “Is ecocriticism/ecology a kind of vitalism? Does care for biodiversity presuppose a certain discourse on what life is and means? What about the reductionism that is methodologically common in biological and physical sciences – is the work of ecology to dispel reductionism or to put it to unusual and perhaps unwarranted uses?” As a belated answer to this query, I would suggest that while ecocriticism should certainly challenge scientific reductionism in those knowledge-making arenas where it remains prevalent (most notably, that of commercialized biotechnology), it also has a responsibility to engage with the sciences as they are practiced today – an exercise that demands acknowledging that many scientific disciplines which once operated according to reductionist principles have shifted their focus away from the study of isolated processes and organisms and towards the study of system-level interactions between *multiple* processes and organisms, many of them happening at varying scales of time and space. From Shani Mootoo’s depiction of Mala’s garden as a transcorporeal landscape in *Cereus Blooms at Night*, to Madeleine Thien’s rethinking of human subjectivity in terms of neural networks in *Certainty* and *Dogs at the Perimeter*, to Larissa Lai’s engagement with the evolutionary processes that inform the genomic self in *Salt Fish Girl*, to Rita Wong’s ironic investigation into the self-organizing capacity of living organisms in *forage*, the texts that I consider in this project all demonstrate that engaging with systems-oriented modes of scientific

knowledge production can help enable more ecologically sound ways of understanding and relating to the material world.

Chapter Summaries: Charting New Connections Across Communities, Social Movements, and Cultures of Expertise

Chapter one traces the emergence of what I have been calling the “bioscientific turn” in contemporary diasporic Canadian literature through a reading of Shani Mootoo’s *Cereus Blooms at Night*, a novel that predates the other literary texts in my project by several years, but anticipates many of the conceptual shifts that Thien, Lai, and Wong enact through their respective engagements with scientific knowledge. Previous criticism has emphasized the novel’s use of the Caribbean garden as a site from which to explore the role that botanical and scientific travel discourses played in the colonization of the Caribbean landscape (Hong 74; Hoving 161; Casteel 14, 15). For instance, Grace Hong has argued that Mootoo’s novel uses and abuses the conventions of natural history both to illustrate the role that colonial science played in producing the “racial and sexual classifications” that facilitated the colonial exploitation of the Caribbean and to imagine queer alternatives to these classifications (81). Thus, according to Hong, the novel constructs queerness “as a formation produced by, but in excess of, modern scientific knowledge and the colonial and postcolonial nationalisms consolidated around this epistemic formation” (98). But while Hong provides an insightful analysis of the novel’s treatment of the historical legacies of Linnaean botany and other scientific discourses, her suggestion that *Cereus Blooms at Night* ultimately defines queerness as that which lies “in excess of categorization” remains tied to a Foucauldian framework that constructs non-normative gender and sexual identities as variations on a set of pre-established norms (97). I argue that

Mootoo's novel invites us to think outside of this Foucauldian framework by combining notions of gothic excess with a proto-materialist emphasis on the "vibrancy" (Bennett) or material agency of living things in order to cast Mala's garden as a trans-corporeal landscape which, more than simply disrupting the racial and sexual hierarchies constructed by Linnaean botany and other related scientific discourses, enacts forms of interrelation that hinge on material and corporeal processes, and thus invite us to think in terms of different systems of knowing. While the destruction of Mala's garden towards the end of the novel prevents these relational possibilities from coming fully into view, their emergence works to expose the conceptual and ethical limitations of the postcolonial testimony rendered by Tyler, suggesting that thinking about diasporic affiliation and relationality at this historical juncture demands a different kind of language, a different kind of knowledge. I argue that, by calling for more materially inflected forms of witnessing, Mootoo's novel opens the way for a constructive engagement with scientific knowledge, thus anticipating Thien's, Lai's, and Wong's efforts to interface with the life sciences in order to foster a richer understanding of the embodied dimensions of diasporic trauma and re-frame diasporic relatedness in terms that might render diasporic subjects more accountable to other communities (both human and non-human) and to the wider environment.

In chapter two, I turn to Madeline Thien's *Certainty* and *Dogs at the Perimeter*, two novels that explicitly interrogate the role of scientific knowledge in negotiating the landscapes of uncertainty generated by the collision between diasporic displacement, postcolonial trauma, and global risk society. Set in a transnational context that transports us back and forth between Canada and various locations throughout South East Asia, the United States, and Europe, and populated by characters whose family histories are permeated not only by geographical displacement, but also by the traumatic effects of wartime violence,¹² these novels narrativize the

intersection between postcolonial trauma and contemporary risk society. Echoing Beck's and Alaimo's insistence that grappling with life in risk society demands an engagement with technical and scientific ways of knowing, Thien draws heavily on language and imagery from the life sciences – and particularly from neuroscience, with its increasing scientific and cultural influence as a framework for understanding the material underpinnings of psychological trauma – in order to explore the place of diasporic communities within these global phenomena. Existing scholarship on Thien's work argues that her engagement with bioscientific discourse works to expose “the limits of a scientific epistemological framework for understanding the traumas induced in socially – and historically – situated contexts” (Troeung, “Intimate Reconciliations” 72). I build on this reading by arguing that, despite her emphasis on the failure of any one scientific discipline to quell the uncertainties associated with diasporic displacement and trauma, Thien stresses that such unknowns need to be confronted through multiple avenues, as opposed to a single field of inquiry. I therefore argue that, instead of rejecting science, Thien's novels prompt us to consider how diasporic communities might productively engage with the sciences in order to construct the “ecologies of knowledge” (to borrow a phrase from Santos) that are necessary for grappling with contemporary experiences of globality. I also explore how, aside from emphasizing that imagining the global demands a collaboration between seemingly divergent fields of inquiry, these novels self-reflexively question what narrative fiction – with its ability to engage the *affective* dimensions of this cognitive exercise in ways that perhaps other frameworks cannot – can contribute to this important reconfiguration of knowledge.

Having considered Mootoo's and Thien's respective explorations of the relationship between bioscientific and diasporic knowledge-production, in the second section of the project I turn my attention to two texts that turn this questioning to explicitly environmental ends: Larissa

Lai's work of speculative fiction *Salt Fish Girl* and Rita Wong's ecopoetry collection *forage*. I argue that these works call attention to the ways in which commercialized biotechnology and other forms of scientific knowledge production have contributed to the "colonization of life itself" (Shiva) while also drawing on insights from the life sciences to identify potential avenues for forging biosocial coalitions between contemporary diasporas and other communities affected by contemporary forms of biopower.

Chapter 4 focuses on Lai's *Salt Fish Girl*, a novel that challenges popular discourses surrounding the genetic basis of diasporic ancestry by emphasizing the complex evolutionary and environmental processes that shape the genomic self. Set in a fictional industrial city of the near future, the novel dramatizes the diasporic search for rootedness amidst a global landscape characterized by geographical displacement and environmental risk. The narrative centers around Miranda, a Chinese-Canadian woman who possesses two peculiar biological traits: a strong bodily odour resembling the pungent smell of the durian fruit, and two reptilian-looking fistulas that ooze with bodily secretions whenever she is angered. These unusual traits cast an uncomfortable doubt on Miranda's biological origins: it is unclear whether they are a product of her genetic ancestry, the product of a genetic transfer from a genetically modified durian fruit eaten by her mother around the time of her conception, or the product of a mutation triggered by toxic exposure. Lai offers a possible answer to the questions posed by Miranda's unusual embodiment by casting her as a modern day reincarnation of Nu Wa, the "snake goddess" who, in Chinese folk tradition, is said to have engendered the Chinese nation. Thus, Lai invites us to read Miranda's peculiar phenotype as a direct imprint of Nu Wa's reptilian genotype – a gesture that not only works to create a sense of rootedness amidst the risky landscapes depicted in the novel, but also invokes the possibility of giving biological fulfillment to longstanding "diasporic

yearnings for reconnecting with ancestral, mainland China” (Ong 38). Echoing Brah’s aforementioned notion that diaspora “inscribes a homing desire while... critiquing discourses of fixed origins,” Lai dramatizes the affective pull of this yearning, but then throws it into question by showing how the genomic impulse to map a biological connection to the homeland plays into contemporary risk calculations which – following the recent SARS epidemic – attempt to link biological vulnerabilities to ethnic heritage, and inscribe Asian diasporas in particular as “walking incubators of a disease epidemic” (Ong 26-27). I argue that Lai advances a more fruitful model for engaging with genetic discourses by constructing a narrative of ancestry that attends to the biological dimensions of diasporic relatedness, yet also *challenges* notions of a fixed biological essence by emphasizing that the genomic self is constantly being reshaped through its embodied interaction with other biological entities (both human and nonhuman) at work in the environment. Drawing on Alaimo’s insistence that an attention to such transcorporeal connections can “inspire a posthuman environmentalism... that undertakes ethical actions from within global systems” (393), I argue that Lai’s emphasis on the material interrelations between the genomic self and the wider environment works to underscore the political affinities between diasporic communities and anti-imperial movements seeking to address the environmental – as well as political – implications of current geopolitical crises.

Chapter four examines how Rita Wong’s *forage* mobilizes the global GMO seed debate in order to stage a productive encounter between diasporic, Indigenous, and scientific ways of knowing. Drawing on current ecocritical frameworks which emphasize the need to cultivate an ethics that attends to the dynamic interrelation between the local and the global, I suggest that *forage* constructs diasporic subjectivity as a fertile site for cultivating the perceptual changes that are necessary in order to construct a more ethical imagination of the global. However, I argue

that Wong complicates her emphasis on the possibilities offered by diasporic subjectivity by exploring the ways in which diasporic communities have contributed to the ongoing colonization of Indigenous territories. Seizing on Wong's assertion, in her critical writings about the politics and poetics of water conservation, that one way for diasporic and Indigenous communities "to move forward together... is to cooperatively focus" on shared environmental concerns such as the health of the water supply ("Restitution" 85), I argue that *forage* constructs the spread of GMO seeds as another key "matter of concern" that can help build coalitions across communities and social movements. In closing, I demonstrate that, far from adopting an anti-science stance, Wong's treatment of the GMO seed debate establishes a dialogue between Indigenous epistemologies that emphasize the dynamic interrelation between land, people, and natural resources and scientific theories that emphasize the self-organizing potential of living systems. In so doing, *forage* invokes the possibility of establishing a more ethical relationship between diasporic, Indigenous, and scientific knowledges.

Previous critical discussions of the impact of bioscience on the circulation of power and knowledge in contemporary risk society have tended to depict this sphere of knowledge production only as an instrument of biopolitical control. This trend has been especially pronounced in the fields of postcolonial and globalization studies, which have rightfully emphasized the need to protect local and Indigenous knowledges from scientific encroachment, but very seldom consider the ways in which knowledges and practices derived from the life sciences can be reshaped and remobilized to challenge emergent forms of biopolitical control. My dissertation addresses this gap in existing scholarship by considering how the writings of Shani Mootoo, Madeleine Thien, Larissa Lai and Rita Wong prompt us to rethink the ways in which diasporic communities might usefully engage with the life sciences in order to cultivate a

more nuanced understanding not only of the embodied, material, and affective processes that accompany diasporic experience, but also of the environmental “matters of concern” that contemporary diasporas share with other communities.

Chapter 1

“I felt an Empathy that Words Alone Cannot Describe”: Tracing Shani Mootoo’s

Materialist Disruption of Postcolonial Witnessing in *Cereus Blooms at Night*

This chapter traces the emergence of what I have been calling the “bioscientific turn” in contemporary diasporic Canadian literature through a reading of Shani Mootoo’s *Cereus Blooms at Night*, a novel that predates the other literary texts in my project by several years, but anticipates many of the conceptual shifts that Thien, Lai, and Wong enact through their respective engagements with scientific knowledge. Previous criticism has suggested that, despite frequently being categorized as a postcolonial novel, *Cereus Blooms at Night* exceeds the conventions associated with postcolonial writing in crucial ways. For instance, in her analysis of the cultural politics involved in the branding of *Cereus Bloom at Night* as a postcolonial novel, Christine Kim argues that reading Mootoo’s text “through the lens of postcolonial discourse” instead of through “the lens of the lesbian feminist politics of activism out of which it emerged” risks flattening out its queer interventions (“Troubling the Mosaic” 159). This chapter extends and complicates this line of criticism by examining how Mootoo’s novel disrupts a key trope associated with postcolonial writing: that of “bearing witness” to colonial trauma. I argue that Mootoo’s novel insists that understanding the nature and magnitude of colonial violence demands modes of knowledge production that are attuned to the material and embodied aspects of this violence, instead of modes of knowledge production that revolve around witnessing and recovering silenced or otherwise repressed experiences. I contend that even though Mootoo’s novel was published well before the consolidation of new materialism as a recognizable body of theory, its representation of the relationship between colonial systems of domination and material bodies and environments prefigures new materialism’s interest in creating modes of

witnessing that attend to the “body’s immersion and participation in the world” so as “to develop political strategies to transform the existing social regulation of bodies” (Grosz, *Nick of Time* 2). I ultimately suggest that, by highlighting the need to engage with biological bodies and material processes in order to challenge the epistemic violence generated by colonialism, Mootoo’s novel opens up possibilities for a different kind of engagement with scientific ways of knowing, even if it does not fully realize this materialist vision within its own narrative space.

My analysis of the materialist interventions at work in *Cereus Blooms at Night* focuses specifically on Mootoo’s representation of the racial and sexual hierarchies produced by imperial botany and other related branches of colonial science, as well as the reductive systems of filiation and communal relation that these hierarchies helped establish. Previous scholarship has examined the way in which *Cereus Blooms at Night* subverts the language and conventions of natural history, as well as the way in which it mobilizes the Caribbean garden as a site from which to explore the role that botanical and scientific travel discourses played in the colonization of the Caribbean (Hong 74; Hoving 161; Casteel 14, 15). For instance, Grace Hong has argued that Mootoo’s novel uses and abuses the conventions of natural history both to illustrate the role that colonial science played in producing the “racial and sexual classifications” that facilitated the colonial exploitation of the Caribbean and to imagine queer alternatives to these classifications (81). Thus, according to Hong, the novel constructs queerness “as a formation produced by, but in excess of, modern scientific knowledge and the colonial and postcolonial nationalisms consolidated around this epistemic formation” (98). But while Hong provides an insightful analysis of the novel’s treatment of the historical legacies of Linnaean botany and other scientific discourses, her suggestion that *Cereus Blooms at Night* ultimately defines queerness as that which lies “in excess of categorization” remains tied to a Foucauldian

framework that constructs non-normative gender and sexual identities as variations on a set of pre-established norms (97). I argue that Mootoo's novel challenges us to think outside of this Foucauldian framework by combining notions of gothic excess with a materialist emphasis on the "vibrancy" (Bennett) or material agency of living things in order to cast Mala's garden as a place of disorientation which, more than simply disrupting the racial and sexual hierarchies constructed by Linnaean botany and other related scientific discourses, enacts modes of interrelation and affiliation that cannot be described through the knowledge systems produced by colonial *or* postcolonial discourse. While the destruction of Mala's garden towards the end of the novel prevents these relational possibilities from coming fully into view, their enactment works to expose the conceptual and ethical limitations of the postcolonial testimony rendered by Tyler, thereby suggesting that thinking about diasporic affiliation and relationality at this historical juncture demands a different kind of language, a different kind of knowledge. It is from this representational crisis that the potential for a different kind of engagement with scientific knowledge arises – one that anticipates Thien's, Lai's and Wong's efforts to reimagine diasporic relatedness in terms that might render diasporic subjects more accountable to other entities with whom they share transcorporeal connections, both human and non-human.

In order to trace the materialist interventions at work in *Cereus Blooms at Night*, it is important to be familiar with the historical and scientific contexts that inform the novel. I illuminate these contexts by discussing the role of Linnaean botany and other related forms of scientific knowledge in producing the racial and sexual hierarchies that facilitated the colonial exploitation of the Caribbean. This part of my discussion builds on previous analyses of Mootoo's treatment of colonial botany by scholars like Grace Hong, Sarah Phillips Casteel, and Isabel H. Hoving. However, I take this conversation into a new direction by considering the

relationship between the botanical metaphors that abound in *Cereus Blooms at Night* and the gothic conventions that inform the novel's narrative structure. Drawing on the gothic's history as a site for representing those "excesses" that did not fit into colonial taxonomies of nature, I argue that Mootoo's use of gothic works to expose the conceptual limits of postcolonial frameworks that hinge on the recognition of repressed histories and experiences by demonstrating that such discourses can only accommodate representations of difference that frame gender, sexual, and racial differences as variations on an established norm. I suggest that Mootoo further emphasizes the limitations of these frameworks through her depiction of Tyler's fraught attempts to enact an ethics of "shared queerness" by bearing witness to Mala Ramchandin's trauma. In the concluding section of my analysis, I consider how the aporias that arise within the space of Mala's garden open up the possibility for a different understanding of diasporic and queer communalism, one that treats community not as a function of a shared subject identifications, but as a process that is made and unmade in the encounter between bodies and environments.

Producing Racial and Sexual Difference as Perverse Excess: The Scientific Production of "Natural" Types and The Literary Production of "Gothic Unnaturals"

If, as Lily Cho has argued, diasporic subjectivities are marked by "the ways in which forgotten or suppressed pasts continue to shape the present" (106), in *Cereus Blooms at Night*, Mootoo unearths an element of the colonial past that continues to haunt the psychic and material landscape inhabited by Indo-Caribbean diasporas to this day: the scientific production of Caribbean "nature" which took place over the course of the 18th and 19th centuries through an interaction between various branches of natural history, including Linnaean botany, scientific travel writing, and 19th- century race science. Mootoo unearths these epistemic legacies through

the story of Chandin Ramchandin's acculturation as a colonial "mimic man" who is groomed to act as an intermediary between the Christian mission and Lantanacamara's indentured labourers, and thus internalizes a host of horticulturally inflected ideas about the need to "cultivate" the tropics and police the racial and sexual hierarchies that support the island's plantation economy. Highlighting the ways in which "understandings of nature inform discourses of sexuality" and vice-versa (Sandilands and Erickson 2), Mootoo interweaves the devastating story of Chandin Ramchandin's abuse of his two daughters with a series of narrative threads that work to illustrate his story's afterlife as a "straightening device" that the people of present-day Lantanacamara (a fictionalized version of Mootoo's native Trinidad) have continued to rely upon in order to naturalize certain forms of filiation and sexual conduct while pathologizing others. Through this multilayered narrative structure, Mootoo illustrates how the colonial production of Caribbean "nature" continues to live on not only in contemporary forms of racialization, but also in social prohibitions that restrict what counts as sexual knowledge, foreclosing the possibility of imagining modes of affiliation and interrelation outside of these established structures.

In order to trace the epistemic legacies invoked by Mootoo's novel, it is important to understand the relationship between the European colonization of the Caribbean and the rise of the systems of categorization associated with colonial science. As Nancy Stepan and other historians of scientific imperialism have noted, the earliest colonizers of the Caribbean often relied on biblical and classical metaphors to describe the "newness" of the Caribbean landscape, thereby constructing an idealized vision of the Caribbean as a paradisiacal place, or "perhaps the actual location of Eden" (6). However, as DeLoughrey et al. explain, "this prelapsarian Eve would eventually fall once Europeans discovered the unruly wildness of the New World" (11). Indeed, beginning in the eighteenth century, "the utopian representation of tropical nature" gave

way to “concerns about its hypersexuality, disease, and moral decay” (DeLoughrey et al. 7). The emergent scientific discourse of Linnaean botany provided a welcome tool for reasserting colonial control over this unruly Caribbean landscape. As Grace Hong notes, “coincident with the rise of the plantation system that made the Caribbean islands such as Trinidad the linchpin of the English economy, the classificatory science of natural history emerged in the early eighteenth century with the publication of *Systema Naturae* by Car Liné (better known as Linnaeus), which standardized the categorization of living forms into the familiar dual Latinate nomenclature of genus followed by species” (80). The novelty and “simplicity” of Linnaeus’ system fostered a widespread popularization of Linnaean botany across the British empire, leading to the creation of an imperial network of botanists and natural history “collectors” who travelled throughout the New World tropics in search of “new and useful exotic species” to send back to “herbariums and botanical gardens in London” (Hong 80; Mackay 39). Perhaps the most well-known of these figures is Joseph Banks, the British naturalist who founded Kew Gardens, the botanical garden that served, in Jamaica Kincaid’s words, as “a clearinghouse for all the plants stolen from the various parts of the world [in which the British] had been” (“Joseph Banks” 135).

As many scholars have noted, in addition to providing a language that enabled British colonial subjects to “make sense of the plurality of their colonial world,” Linnaean botany also played a central role in shaping colonial knowledge around sexuality and race (Hong 80; see also Hoving 161 and DeLoughrey et al. 7). Linnaeus’s “insistent personification of plants” and famous characterization of “plant fertilization as a ‘marriage’ [between] male and female” led to a widespread conflation between plant and human sexuality in colonial botanical culture – a trend that instigated a great deal of controversy over what some denounced as the “obscenity” of the Linnaean system, but also served to reinforce the perceived naturalness of compulsory

heterosexuality (Browne 155, 56). Indeed, as Hoving notes, following Linnaeus's lead, colonial botanists "'gave undue primacy to sexual reproduction and heterosexuality,' down-playing the fact that most plants are hermaphroditic, and not 'male' or 'female'" (161). This scientific compartmentalization of nature into discrete categories that reinforced socially sanctioned forms of sexuality and filiation intensified with the "visible presence of racial mixture" in the colonies, which prompted the creation of racial taxonomies that "argued for the degeneracy and ultimate infertility of the offspring of mixed-race sexual unions" (DeLoughrey et al. 16). Drawing on concepts and metaphors derived from the emergent sciences of "colonial plant propagation and animal breeding," 19th-century racial theorists such as the zoologist Louis Agassiz "began to defend the view that there were different human species and that the hybrid offspring of parents of different species would prove to be infertile" (Hoving 159). As Stepan notes, drawing analogies between interracial and cross-species reproduction, Agassiz and other racial theorists of his time "tried to defend the hypothesis of hybrid degeneracy by claiming that 'half-breeds' and 'half-castes,' and 'mulattos' were unnatural and, like the mule, infertile" (109). Thanks to these scientific theories, tropical locales such as the Caribbean islands, "where races had apparently mixed much more freely than anywhere else," came to be widely regarded as exotic, but dangerous sites of "impermissible racial mixings and degeneration" (Stepan 86, 21). The need to prohibit these kinds of mixings became more urgent with the abolishment of slavery and subsequent transplantation of indentured labourers from India to the Caribbean colonies, which disrupted the master-slave dichotomy that regulated the relationship between slaves and plantation owners while also introducing another potential source of racial miscegenation (Stepan 108-109). Writing about the impact of abolition and indentureship in the Trinidadian context, Hong notes that the colonial labour policies of post-emancipation Trinidad drew on the

sexual and racial classifications produced by natural history to “codif[y] a hierarchy of races that legitimated the differential subordination and incorporation of formerly enslaved and indentured laborers into the economic structure of the plantation” (87).

In tracing the knowledge formations engendered by colonial botany, Mootoo’s novel mobilizes another strand of colonial discourse that played a crucial role in shaping colonial and postcolonial perceptions of Caribbean “nature”: gothic narrative convention. If, as Hong argues, colonial science produced “taxonomic classifications... that naturaliz[ed] the racial, gender, and sexual hierarchies on which the plantation economy was based,” but in so doing “also necessarily produced racialized and sexualized subjects as deviant and disorderly,” then, historically, this deviant “excess” was frequently abjected to the realm of gothic fiction (75). Indeed, as postcolonial scholarship on the gothic tradition has shown, beginning in the late 18th century, the gothic genre became a key discursive site for negotiating British colonial fears around the threat of racial miscegenation and the “attendant horror of interracial sexuality” (Paravisini-Gebert 230). That is to say, if colonial botany provided a means of cataloguing and describing those bodies and orientations that were deemed to be “natural,” then gothic convention provided a means of reckoning with those unruly bodies that threatened to unsettle these categorizations. Not surprisingly, then, scientific theories about so-called hybrid degeneracy found a literary analogue in the troping of the mixed-raced subject as a “gothic unnatural” – a motif that finds two of its most canonical manifestations in the figures of Heathcliff and Bertha Mason, the “defeated “colonials”” of “questionable racial provenance” who appear in *Wuthering Heights* and *Jane Eyre*, respectively (Malchow qtd. in Paravasini-Gebert 232; Paravasini-Gebert 249).

Mootoo's deployment of the gothic genre in *Cereus Blooms at Night* builds on a well-established tradition of Caribbean postcolonial fiction that mobilizes gothic conventions to interrogate the representational strategies and epistemic habits of colonialism. As Elizabeth Paravisini-Gebert notes, the Caribbean "is a space that learned to 'read' itself in literature through Gothic fiction," whether in travelogues that depicted it as "the site of the mysterious and the uncanny," in "histories that underscored the violent process that led to its colonization," or in fictions that, like Brontë's *Jane Eyre*, depicted it as a site of racial miscegenation (234). She explains that, drawing on this history, contemporary Caribbean fiction frequently stages a postcolonial dialogue with gothic colonial models, parodying their "devices and generic conventions" to interrogate both the troping of the Caribbean as a site of terror and perverse excess and "the nature of colonialism itself" (Paravisini-Gebert 234). In their introduction to the volume *Unsettled Remains: Canadian Literature and the Postcolonial Gothic*, Cynthia Sugars and Gerry Turcotte trace a similar use of the gothic in the Canadian context, noting that "gothic tropes have emerged in Canadian Literature as integral to the postcolonial interrogation of national identity constructs and dominant representational practices" (x). Most relevant to my purposes, Sugars and Turcotte observe that many writers from traditionally "marginalized" communities have drawn on gothic conventions to "write back" to the colonial gothic tradition in various ways (xvii). Building on a well-established body of Caribbean and contemporary Canadian texts that stage postcolonial reworkings of the gothic, and seizing on the historical interconnections between the scientific production of "natural" types and the literary production of "gothic unnaturals," Mootoo's novel marries botanical and gothic motifs to illustrate the far-reaching epistemic and material effects of the sexual and racial hierarchies produced by colonialism. However, more than just using the gothic to "write back" to this colonial tradition,

Cereus Blooms at Night mobilizes the genre both to expose the limitations of postcolonial frameworks that revolve around resisting these established categories, and to highlight the need for epistemologies that might take us beyond this logic of resistance.

Mootoo dramatizes the interaction between the botanical production of “natural” types and the gothic production of “unnatural” types through her depiction of Chandin Ramchandin’s acculturation as a colonial “mimic man” (to borrow Homi Bhabha’s famous term). Born to indentured field labourers from India, Chandin first becomes the stuff of Lantanacamaran lore when he is adopted by Reverend Thoroughly, a Wetlandish missionary who has decided to raise a boy from the barracks as his own son so that the child may grow up to be “a Christian teacher, theologian and missionary whose success in the field would be due, certainly to the blessings of God, but also to the novel idea that people were most likely to be swayed by one of their own kind” (32). Playing on the etymology of “cultivation” as a term that designates both the process of “preparing and using the land for growing crops” and the process of “refining or improving a person... by education,”¹³ the novel figures Chandin’s assimilation into British colonial norms in horticultural terms, imbuing this tale of cultivation with gothic registers as Chandin transforms from a faithful mimic man to a monstrous figure of perverse excess. In his role as an Indo-Caribbean mimic man who must function as intermediary between the mission and Lantanacamara’s Indian plantation workers, Chandin internalizes a host of horticulturally and taxonomically inflected ideas about the need to “cultivate” the tropics and about the hierarchical classification of racial “types” according to their “established” natural relationships – ideas that historically “sought to discipline not only unruly tropical landscapes but also transgressive social practices pertaining to sexuality, gender, and race” (DeLoughrey et al. 19). Thus, upon graduating from the Christian seminar, Chandin returns to the sugar cane fields to take on the

figurative role of a plantation “overseer” who must plant the soil not with sugar cane, but with Christian doctrine and colonial values (52).

As Sara Ahmed reminds us, racial and sexual prohibitions are often reproduced and naturalized through spatial relationships that shape “the kinds of orientations we have toward objects and others” within the space of the home (18). In the novel, Chandin internalizes the colonial prohibition against racial miscegenation through subtle forms of racialization he experiences while living in the Thoroughly household. Drawing on various spatial metaphors, the novel stresses that, just as the process of cultivation involves the pruning and staking of plants in order to ‘train’ them to grow in a certain direction, so too do the processes of socialization and acculturation involve various “straightening devices” that, to borrow from Ahmed, encourage us to “turn toward the objects that are given to us by heterosexual [and, in this case, colonial] culture” and to “‘turn away’ from objects that take us off this line” (21). Similarly, even though he is brought into the home to live as part of Reverend Thoroughly’s family, Chandin is prevented from making himself “too much” at home through subtle spatial cues that work to place certain objects and orientations out of his reach. When he is first adopted, Chandin is confounded by these spatialized norms, and feels “conspicuously lost” in the highly regulated spaces of the Thoroughly’s traditional Victorian home (33). However, he soon learns to take comfort in these strict demarcations, as they give him a sense that he has a “definite place” in the household (33). Thus, during the family’s daily “hour of relaxation” in the living room, Chandin makes a habit of sitting in a “straight-back upholstered chair [that] had come to be marked as his,” since the chair gives him a sense of grounding amidst the “chaos of his uprootedness” (33). Of course, what the young Chandin fails to recognize, but the reader is clearly meant to register, is that this household object also serves a disciplinary purpose: by

keeping him grounded in one end of the room, the chair also keeps him at a distance from his “newly acquired” sister Lavinia, thereby preventing them from associating too closely (33). As he grows older, Chandin begins to internalize the racial and sexual prohibitions that are encoded into these spatial relationships, and, realizing that his background and skin color make him an unlikely recipient for Lavinia’s affections, begins to develop an “immense distaste for his background and the people in it” and to “hate his looks, the colour of his skin, the texture of his hair, his accent, the barracks, his real parents and at times even the Reverend and his god” (34, 36). Chandin’s feelings of alienation and self-loathing intensify as he begins to notice that even though he purports to regard him as his own son, the Reverend always speaks to him “as though he were a third person standing off to the side observing the two of them” – a distancing device that subtly reinforces Chandin’s status as racialized other (42). Thus, as Mariam Pirbhai notes, “Chandin is soon disappointed to learn that even as an adopted son, his ‘definitive place’ in the Reverend’s family is not as filial equal but as a paternalistically acknowledged subordinate” (251). When Chandin transgresses this unspoken, but carefully enforced boundary by betraying his desire for Lavinia, Reverend Thoroughly attempts to redirect his affections towards more “appropriate” ends by reminding him that, being Lavinia’s sibling, he must love her only in a brotherly way, with a “love that must remain pure, as pure as God’s love is for his children” (39). Thus, as Hong notes, the Reverend “attempts to cloak his fear of miscegenation by recourse to the incest taboo” (91). When Lavinia becomes engaged to a cousin from the Shivering Northern Wetlands, thereby confirming Chandin’s growing suspicions that his own romantic aspirations have been rejected because they violate an unspoken prohibition against racial miscegenation, he resigns himself to the apparent intractability of his position and marries Sarah. In so doing,

Chandin reluctantly fulfills his filial and colonial duty to engage in a perfectly endogamous and heterosexual union.

In addition to dramatizing the process whereby colonial subjects internalized the sexual and racial hierarchies produced by colonialism, Chandin's story also works to highlight the persistence of such norms in post-independence contexts. In their discussion of the postcolonial gothic, Sugars and Turcotte note that many contemporary texts draw on the gothic motifs of haunting and monstrosity to evoke the "split subjectivity resulting from the inherent incommensurability of the conflicted subject positions that have emerged from a colonial context and persisted into the present" (xi). In *Cereus Blooms at Night*, Mootoo draws on the gothic motif of monstrosity to evoke the split subjectivities that emerged in post-independence Trinidad as the sexual and racial hierarchies imposed by the plantation economy coalesced with the ethnic nationalisms that emerged in the island following its independence from England. As Hong notes in her own reading of the novel, "despite the fact that oppositionalist, nationalist state movements exercised an anticolonial rhetoric, the postcolonial nation-state inherited from colonial rule notions of civilization and morality based on gendered and sexualized norms that it then instituted after independence" (77). More specifically, post-independence Trinidad saw the rise of Afro and Indo-Trinidadian nationalisms that relied upon "the abjection and exclusion of a variety of 'improper' sexualities" in order to consolidate a distinct ethnic identity (Hong 77). Within the Indo-Trinidadian diaspora, these norms hinged on the "management of Indian women's sexuality as heterosexual and properly in the service of [a] reproductive domesticity" that centered around ensuring the continuation of an "Indian tradition... that [was] not, could not be allowed to become, African" (Hong 79; Niranjana qtd. in Hong 79). In this sense, post-independence Indo-Trinidadian nationalism rested on a redeployment of the same prohibitions

against racial miscegenation and creolization that British colonizers had relied upon in order to maintain the racial hierarchies that formed the basis of the plantation economy. Chandin's management of his own family home mirrors this Indo-Trinidadian adaptation and redeployment of British colonial norms. After marrying Sarah, Chandin abandons his previous dream of building a "stone and mortar house with special rooms for this and that – a library, a pantry, a guest room – like the Thoroughly's" and constructs a "two-story house typical of modest dwellings in the area" using the wood of the *mudra* trees found in his property (53). The *mudra* tree is not an actual tree species, and might thus be regarded as one of the many magic realist elements that populate the fictional space of *Lantanacamera*. However, drawing on the Sanskrit origin of the word *mudra*, and on the term's connection to Hindu religious ceremony, the tree could be read as a symbol of Indo-Trinidadian transplantation and Hindu religious practice.¹⁴ Viewed in this context, Chandin's decision to build his house from the wood of the *mudra* and "atop *mudra* stilts" could be read as an implicit gesture of ethnic nationalism – one that signals both his retreat "into the sanctuary of a more readily available ethnic affiliation" (Pirbhai 8), and his commitment to a domesticity that centers around preserving an essentialist version of Indo-Trinidadian identity. However, this domestic order is violently disrupted by Sarah and Lavinia's subsequent elopement, which completely shatters the prohibitions against miscegenation and same-sex desire that Chandin first internalized through his cultivation as a colonial mimic man and has now remobilized within the framework of his own Indo-Trinidadian household. Chandin's subsequent abuse of his two daughters, which constitutes a perverse form of endogamy, can be thus be read as a displaced effort to reassert these racial and sexual hierarchies.

Chandin's transformation into a monstrous "disciplinary double" (Bhabha) who polices colonial norms around sexuality and filiation by abusing his own children not only illustrates the

violent consequences of the bioscientific production of racialized and sexualized others, but also stages an ironic reversal of the British colonial trope of the “gothic unnatural.” Countering the gothic’s traditional linking of this “unnaturalness” to the perceived evils of racial miscegenation, Mootoo attributes Chandin’s “monstering” not to his failed desire for Lavinia, but rather to his overzealous policing of endogamy and heteronormativity via the incestuous abuse of his two daughters. As Kim notes, “this sexual violence is compounded by the further symbolic violence Mala is made to endure by also fulfilling the domestic duties of her mother” (“Troubling the Mosaic” 157). Crucially, the domestic duties that Chandin imposes on Mala reflect an intersection between colonial ideas of racial purity and Indo-Trinidadian injunctions against the creolization of East Indian Trinidadian culture. It is not a coincidence that the two most violent scenes of physical abuse that occur in the novel follow directly after Mala violates this implicit prohibition against creolization. The first of these instances occurs after Chandin orders Mala to “[c]urry a brown fowl” for dinner (218). As soon as Chandin voices his demand, Mala understands that the meal will also have to include all the provisions that usually accompany a traditional East Indian meal: “rice, split pea dhal, curried channa or aloo and one sandha roti” (218). However, after spending the day with Ambrose, Mala fails to arrive at the market in time to buy a chicken, and is forced to buy shark meat instead. In a passage filled with culinary metaphors reminiscent of the “sexualized food imagery” that characterizes creole cultural traditions such as the calypso genre (Niranjana 149), Mala uses the shark meat to cook a creole fish stew, reveling in the thought that the dish will please Ambrose’s palate: “It was indeed for Ambrose that she was cooking. It would be fine with him to be served shark. Ambrose was not one to be afraid to indulge in all kinds of pleasures,” she thinks to herself as she prepares the dish (220). Mala completes the meal with an East Indian side dish – “bodi with onions and tomatoes

[prepared] the way [her father] liked best” – in an effort to appease Chandin (220). As she waits for his arrival that afternoon, Mala anticipates a confrontation, but “trust[s] that after the first drop of her stew touche[s] his tongue he [will] quietly finish his meal” (221). However, when Chandin enters the home to be greeted by “the smells of a creole stew,” he immediately registers this unfamiliar smell as a threat to the domestic order and ethnic integrity of his household (220). Thus, he accuses Mala of wanting to “have [her] own way – just like [her] mother” and subjects her to a brutal beating (223). The episode anticipates Chandin’s subsequent discovery of Mala and Ambrose’s affair, which only confirms Chandin’s fear that his household has been contaminated by the threat of creolization. Following this discovery, Chandin attempts to reassert control over his household by assaulting Mala with a savagery that brings her back to the night when he first attacked her, this being “the first time since that very first time when she was a child that she [has] felt so much pain” (241). It is during this violent sequence that Chandin completes his transmogrification into a figure of sexual perversion: not only does he take on monstrous physical features as he frantically assaults Mala (with his expression turning into a grotesque “snarl” [245]), but he also threatens to carry his violence to unspeakable extremes, declaring that he is prepared to kill Ambrose, Mala, and even himself “if it come to that” (238). Ultimately, by tracing the historical circumstances of Chandin’s transformation, the novel underscores that his moral deformity stems not just from his internal corruption, but also from a process of colonization that has resulted in widespread epistemic and material violence.

As I have shown, Mootoo’s deployment of gothic convention via the story of Chandin’s monstering serves to highlight both the violence engendered by bioscientific production of racial and sexual hierarchies in the colonial era, and the persistence of these norms in a post-independence context. In this sense, *Cereus Blooms at Night* participates in a well-established

tradition of postcolonial texts that draw on gothic conventions to evoke the “incomplete resolution of [colonial] histories” in the present (Sugars and Turcotte x). However, the novel takes this tradition into new territory by infusing the gothic with a materialist emphasis on what Jane Bennett describes as the “vibrancy” of matter in order to insist that the nature and magnitude of colonial violence need to be understood through an engagement with the material aspects of this violence, rather than through analytical modes that center on unearthing or bearing witness to repressed histories. Mootoo foregrounds the need for this re-evaluation by staging a metafictional questioning of the way in which Chandin’s story has been assimilated not only by Lantanacamara’s post-independence society, but also by Tyler, the psychiatric nurse who has taken on the postcolonial duty of “bearing witness” to Mala’s trauma. As suggested by Tyler’s declaration that he first learned about Chandin “long before arriving in Paradise to work in the alms house,” the events that unfold in the Ramchandin household following Sarah and Lavinia’s escape eventually become part of Paradise’s local lore, and play a central role in shaping the townspeople’s understanding of which modes of affiliation can and cannot be considered “natural” (26). Once again drawing on botanical/horticultural metaphors, Mootoo casts Chandin’s story as a seed whose “spore-like dispersal” has continued to engender an ongoing closeting and policing of sexual knowledge in present-day Lantanacamara (6). I want to examine how Sarah and Lavinia’s relationship gets treated both within the stories that circulate throughout Paradise, and within the narrative structure of the novel proper because, as I will demonstrate below, their story has a crucial bearing on the materialist interventions that are enacted in the novel.

As the Ramchandin story circulates around Lantanacamara, Sarah and Lavinia’s affair gets narrativized as the catalyst that propitiated Chandin’s incestuous abuse of his daughters.

Thus, even though the town is initially shocked by Chandin's actions, they eventually rationalize his behaviour by attributing it to Sarah's perceived sexual deviance:

While many shunned him there were those who took pity, for he was once [a] much respected teacher of the Gospel, and such a man would take to the bottle and to his own child, they reasoned, only if he suffered some madness. And, they further reasoned, what man would not suffer a rage akin to insanity if his own wife, with a devilish mind of her own, left her husband and children. (211)

This framing of events has far-reaching implications. First, it works to justify Chandin's abuse of Mala and Asha, thereby appeasing the townspeople's collective guilt over the horrific physical abuse they all know is taking place within the Ramchandin household. Second, by attributing Chandin's abuse of Mala and Asha to Sarah's "devilish" influence, the townspeople conflate Sarah and Lavinia's affair with Chandin's incestuous violation of his daughters, casting them both as comparable forms of sexual perversion. As Tyler's own childhood memories attest, this conflation of incest and same-sex desire has a powerful influence on the way that sexual and gender difference are imagined by subsequent generations of Lantanacamarans. More specifically, the framing of Sarah and Lavinia's relationship as the catalyst that set off Chandin's "madness" creates a framework in which non-normative sexualities and gender identities can be imagined *only* as perverse deviations from a received norm, as demonstrated when Tyler confesses that "Chandin Ramchandin played a part in confusing [him] about [gender and sex] roles, for it was a long time before [he] could differentiate between [Chandin's] perversion and what others called his" (51). This closeting of gender and sexual knowledge is further exacerbated by the townspeople's abjection of the Ramchandin home as a site of moral decay, which casts everyone in the family – including Mala and Asha – as potential agents of perversion.

The girls are subjected to a cruel enactment of the town's abjection when the children at the local playground torment them about their mother's supposed perversion and evict them from the park, threatening to beat Mala if they ever "catch [her] near any girl" (93). When Mala is brought to the Paradise Alms House many years later, Tyler quickly begins to establish what he describes as a bond of "shared queerness" with his new "patient," partly because he intuitively recognizes that they have both been scarred by the gender and sexual prohibitions generated by colonialism, albeit in different ways (52). As I will discuss below, Tyler attempts to honour this bond of "shared queerness" by bearing witness to Mala's story. However, in rendering his testimony, he engages in narrative practices that inadvertently reinforce the standards of authorship, as well as the gender and sexual binaries, produced by colonial epistemology.

Sarah and Lavinia's story has crucial implications not only for the ways in which gender and sexual difference are understood and negotiated by the characters in the novel, but also for the narrative structure of the text as a whole, and for the broader epistemological questions that arise from the breaks in this narrative structure. Following their escape to the Shivering Northern Wetlands, Sarah and Lavinia are completely excised from the narrative, never to be seen or heard from again – an absence that is made all the more apparent by the novel's contrasting treatment of Asha's escape. After suffering years of abuse, Asha emigrates to the Shivering Northern Wetlands in search of Sarah and Lavinia, finally moving to Canada after giving up her search. Mala believes that her sister abandoned her, but the final chapter of the novel reveals that Asha wrote to Mala repeatedly to try to convince her to join her abroad. However, Asha's letters "were never delivered because the righteous postman [deemed] the Ramchandin house to be a place of sin and moral corruption" (263). While the final lines of the novel articulate the hope for a deferred reunion between the two sisters and the exiled couple, Sarah and Lavinia are never

brought back into the narrative in the same way that Asha is. Perhaps this can be taken as an indication that the narrative framework of the novel cannot accommodate the forms of desire, interrelation, and affiliation that their relationship might mobilize, whereas Chandin's abuse of Mala and Asha, however horrific, *can* be imagined because it constitutes a perversion of the endogamous, heteronormative family unit established by colonial epistemology. In this sense, the disappearance of Lavinia and Sarah from the text suggests that thinking about the forms of interrelation that their relationship might mobilize demands a different kind of epistemological and narrative framework than the one supplied by the familiar postcolonial tropes of the return of repressed histories and the witnessing of colonial violence. The novel reinforces the need for new knowledge systems by dramatizing the epistemological limitations of Tyler's postcolonial testimony, and by staging a series of interactions in which these limitations prevent him from being able to engage with the material dimensions not only of Mala's trauma, but also of his own embodiment as a queer subject.

“I did fancy that she and I shared a common reception from the rest of the world”:

Troubling the Postcolonial Impulse to “Bear Witness”

In her influential essay “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” Donna Haraway argues that enacting a feminist and anti-racist renewal of empiricism requires questioning not only the totalizing knowledge claims made by imperialist forms of science, but also the knowledge claims made by those who appear to speak from a position of subjugation. In her words,

To see from below is neither easily learned nor unproblematic, even if “we”
“naturally” inhabit the great underground terrain of subjugated knowledges....

“Subjugated” standpoints are preferred because they seem to promise more adequate, sustained, objective, transforming accounts of the world. But *how* to see from below is a problem requiring at least as much skill with bodies and language, with the mediations of vision, as the “highest” technoscientific visualizations.

(584)

Written towards the end of the 1990s in the wake of the “Writing Thru Race” conference, the “appropriation of voice” debate, and the rise of “intersectionality” theory as a dominant framework for thinking about questions of racial and sexual difference, *Cereus Blooms at Night* combines its critique of the epistemic violence generated by imperial science with a deeply nuanced exploration into the politics of postcolonial knowledge production, particularly as they are enacted through the familiar trope of postcolonial witnessing. Indeed, even as it takes on the postcolonial project of unearthing the epistemic violence generated by colonialism, the novel actively interrogates the epistemological investments that inform such acts of historical retrieval, dramatizing how those who speak from a subjugated standpoint can inadvertently reify colonial forms of knowledge production. The novel enacts this critique through its portrayal of Tyler, the psychiatric nurse who supplies the central narrative perspective of the novel and assumes the ethical responsibility of bearing witness to Mala’s story. As a queer subject who grew up “preoccupied with trying to understand what was natural and what was perverse” and has spent a lifetime negotiating the “incremental degrees in... hostility” that go along with racism and homophobia, Tyler feels that he is uniquely suited to narrate Mala’s story of familial and colonial violence, even boasting that the particularity of his own positioning is precisely what “enabled [him] to gain the *full story*” of the events that took place in the Ramchandin household (51, 15, 52). In this sense, Tyler frames his relationship to Mala’s story in terms that echo the

“intersectional subject positioning” that has informed anti-racist and feminist organizing since the 1980s and 90s, and focuses on the need to address the uneven ways in which the intersection between race, class, and gender affects feminist, anti-racist, and queer constituencies in order to facilitate more ethical forms of dialogue and political solidarity across different identity categories (Puar, n.pag.). In an article interrogating the conceptual and practical limitations of this approach, Jasbir Puar argues that, insofar as it is wrapped up in a politics of recognition that focuses on giving a voice to “marginalized subject[s],” intersectionality tends to promote a “problematic reinvestment in the subject,” not only reinforcing normative understandings of authorship and political agency, but also eliding those forms of community and relationality that “cannot be seamlessly disaggregated into subject formations” (n.pag.). Tyler’s testimony promotes a similar reification of the liberal humanist subject at the expense of more relational modes of political action (52). Indeed, despite making a concerted effort to enact an ethics of “shared queerness,” Tyler engages in narrative habits that work to reinstall liberal humanist notions of agency and subjectivity, as reflected when he unironically declares to his reader, “I am sure you will agree it was no coincidence that I and the eye of the scandal happened upon Paradise, Lantanacamara on the same day” (5). The conspicuous punning between “I” and “eye” in this passage not only acts as a visual reminder that Tyler’s account is going to be filtered through his own partial perspective, but also suggests that his testimony, however well-intended, threatens to appropriate Mala’s story and thus silence her for a second time – a risk that becomes more and more palpable as Tyler begins to assume the narrative voice of a “modest witness” while describing his interactions with his “new patient” (13).

Being “the only Lantanacamaran man ever to have trained in the profession of nursing,” but having been relegated to janitorial work because of his gender (and also because of his

perceived sexual deviance), Tyler is at pains to validate his authority as a medical expert from the very outset of the novel. When Mala arrives at the Alms House showing what appear to be “symptoms of trauma,” Tyler receives an unexpected opportunity to use his expertise as a formally trained nurse (14). Convinced that Mala is not the madwoman that the rest of the town believes her to be, but a repressed subject who harbours an internalized trauma, Tyler takes it upon himself to incite Mala to speak. However, as he sets down to record Mala’s story, he assumes a voice that is highly reminiscent of the mode of narration traditionally used by colonial botanists and scientific explorers. As Donna Haraway has argued, this mode of narration hinged on the trope of “modest witnessing,” a “literary technology” that insisted upon scientists’ ability to observe and record natural objects without adding their “biasing embodiment” to their account, and thus enabled them to speak as “transparent spokesmen” for nature (“Modest” 223, 225). According to Haraway, then, it is by denying the corporeality of knowledge production that the modest witness is able to establish his authority to “speak” for nature. Tyler’s testimony reflects a similar impulse: convinced that rendering a credible testimony requires the ability to speak without being swayed by one’s embodiment, Tyler is constantly at pains to demonstrate that his “own intention, as the relater of [Mala’s] story, is not to bring notice to [him]self or [his] own plight” (3). Tyler’s self-construction as a modest witness who is capable of “speaking” for Mala is clearly reflected when he describes his first efforts to decipher the meaning of her “mutterings” (107). In his words, “I soon got the impression that she actually began to whisper in my direction, that I had become her witness. She spoke rapidly and with great urgency, in a low monotone, repeating herself sometimes for hours without end. There was little doubt that I was being given a dictation, albeit without punctuation marks or subject breaks” (107). These remarks not only elide the gaps in Tyler’s understanding of Mala’s gestures and expressions, but, by framing

Mala's "dictation" in terms of its deviations from standard grammar, they also reinforce his status as the authorial subject who *does* have logos at his disposal, and can therefore translate Mala's expressions into a coherent order.

Aside from evoking the epistemological and narrative conventions associated with the practice of modest witnessing, Tyler's compulsion to speak for Mala evokes a representational problem that, according to some feminist scholars, can often be observed in postcolonial Caribbean texts written by male authors: a tendency to cast "female characters [as] the un-speaking, un-thinking objects of violence and dominance" (Mahabir and Pirbhai 4).¹⁵ By invoking this tendency to construct Caribbean women as unspeaking subjects while also infusing Tyler's testimony with the narrative conventions associated with modest witnessing, *Cereus Blooms at Night* demonstrates how postcolonial acts of witnessing can themselves become wrapped up in colonial forms of knowledge production. This is not to argue that the novel rejects the value of such acts altogether. Instead, echoing Haraway's suggestion that the "narrative[s] about 'objectivity'" produced by colonial science need to be restructured through modes of witnessing that acknowledge the speaker's embodied participation "in the action of knowledge production" ("Modest" 223, 229), *Cereus Blooms at Night* highlights the need for modes of witnessing that attend to questions of materiality and embodiment. Indeed, it is only when he begins to pay closer attention to Mala's actions and gestures that Tyler slowly begins to surmise that, far from being speechless as he had initially assumed, Mala has established an alternate way of interacting and communicating with the world around her – one that is deeply attuned to the patterns of relation between living organisms (both human and non-human) and that privileges material gestures over linguistic expression.¹⁶ As Tyler puts it when he is trying to dissuade Mr. Hector from gifting a freshly cut flower to Mala, "I am beginning to understand some things

about her and I think she does not like things in nature to be hurt. To her, the flower and the plant would be both suffering because they were separated from each other. You know what I mean? It would be as if its arm had been cut off or something” (74). However, even as he develops an increasing curiosity over Mala’s interest in material forms of interdependence, Tyler remains so wrapped up in his project of producing an unbiased account of Mala’s experience that he fails to consider his *own* imbrication in these material relationships. Thus, he persistently fails to recognize the relational possibilities that emerge whenever he abandons his compulsion to speak for Mala and instead focuses his awareness on the material effects of their shared interactions. One such moment occurs when Tyler acknowledges that, upon first meeting Mala, he was overcome with an “urge to touch” her, adding that “this one touch turned her from the incarnation of fearful tales into a living human being, an elderly person such as those [he] had dedicated [his] life to serving” (11). Here, Mala’s proximity elicits an affective response that momentarily dislodges Tyler from his position as a neatly bounded subject and compels him to pay closer attention to her gestures and bodily cues. Later on in the passage, as he describes Mala’s frail physical condition, Tyler rests his attention on her smell – “an aroma resembling rich vegetable compost” (12). He further relates how, prompted by this “curiously natural smell,” and remembering that Mala had refused to eat fowl or fish while staying at the prison house, he concluded that she “had likely not eaten animal flesh in a long time,” and decided that he must procure a vegetable-based meal for her (12). Whether or not Tyler is right in assuming that Mala cannot eat animal flesh, his small gesture reflects an openness to embodied relation that gets increasingly closed off as Tyler labours to formulate a credible assessment of Mala’s psychological state. Ultimately, by staging this ongoing tension between Tyler’s compulsion for “modest witnessing” and the embodied interactions he shares with Mala, the novel points to the

necessity of crafting witnessing practices that – as I’ve already hinted above – attend to questions of embodied and material interrelation instead of claiming the authority to speak for others.

Though Tyler never manages to fully enact such a practice, he tacitly acknowledges the need for more materially oriented modes of witnessing when, reflecting back upon his first meeting with Mala, he declares that her “clenched fists, defiant stare, pursed lips and deep, slow, calculated breathing” prompted him to feel “an empathy that words alone cannot describe” (21). In many ways, *Cereus Blooms at Night* constitutes an experiment in producing a narrative form that might attend to such forms of empathy.

In her aforementioned critique of intersectionality, Puar argues that, in addition to fostering a troubling reification of liberal humanist notions of subjectivity, intersectional identity frames also run the risk of reinforcing normative racial, sexual, and gender categories. More specifically, she argues that, insofar as they continue to theorize difference as a “difference from,” such frameworks assume the centrality of established identity categories while eliding those forms of difference that “cannot be captured by intersectional subject positioning” (n.pag.). Tyler’s efforts to enact an ethics of “shared queerness” via his rendition of Mala’s story reflects a similar inability to think outside of the racial and sexual hierarchies established by colonial epistemology. This limitation is first made evident through Tyler’s description of the cereus clipping that Otoh and Ambrose Mohanty have brought to the Paradise alms house as a gift for Mala. Reflecting back on the first time he saw one of these plants in full bloom, Tyler declares, “I recognized it immediately. I had seen one in bloom in the Exotic Items Collection of the SNW National Botanical Gardens: the rare night-blooming cereus. Without blossoms the plant appears to be little more than an uninteresting tangle of leafage.... However, in bloom it is stunningly gorgeous” (23). As Vivian M. May has noted, Tyler’s assertion that his first encounter with the

cereus – a plant indigenous to Trinidad – occurred within the neocolonial setting of the National Botanical Gardens in the Shivering Northern Wetlands (a fictionalized version of England) echoes Jamaica Kincaid’s commentary on her own alienation from the botany of her place of birth in her essay “To Name is to Possess,” which appears in her collection of semi-autobiographical essays about gardening entitled *My Garden (Book)* (122). Reflecting on her troubling inability to name the plants of her native Antigua, and on the colonial transplantation of “exotic” species from other parts of the British empire to the island’s botanical gardens, Kincaid writes:

I can identify the hibiscus, but I do not know the name of a white lily that blooms in July, opening at night, perfuming the air with a sweetness that is almost sickening, and closing up at dawn.... This ignorance of the botany of the place I am from (and am of) really only reflects the fact that when I lived there, I was of the conquered class and living in a conquered place; a principle of this condition is that nothing about you is of any interest unless the conqueror deems it so. For instance, there was a botanical garden not far from where I lived, and in it were plants from various parts of the British empire, places that had the same climate as my own; but as I remember, none of the plants were native to Antigua.... The botanical garden reinforced for me how powerful were the people who conquered me; they could bring to me the botany of the world they owned. (119-120)

Like the white lily whose name remains a mystery to Kincaid, Mala’s cereus plant remains a mystery to most of the townspeople in Paradise, as evidenced by the head Sister’s dismissive treatment of the plant when it first arrives at the Paradise alms house: thinking that the cereus is “little more than an uninteresting tangle of leafage,” she curtly hands it over to Tyler, ordering him to “do something with it” (23). Even Mr. Hector, the gardener at the Paradise Alms House,

fails to recognize the cereus for what it really is, and declares it “too gangly... to be kept in a garden under his charge” (5). Tyler is the only Lantanacamaran character in the novel who is able to readily identify the cereus. However, with his self-fashioning as a cosmopolitan subject who has seen the “Exotic Items” collection at the National Botanical Gardens firsthand, coupled with his characterization of the cereus as “rare” and “stunningly gorgeous,” reflects a problematic internalization of colonial norms surrounding the classification of “exotic” species (23). This interpellation not only shapes Tyler’s perception of his island’s material environment, but also conditions the terms in which he comes to understand his own “nature.”

Tyler’s inability to think outside of the taxonomies he has inherited from colonial science is also reflected in the way he understands, articulates, and performs his own queerness. Meditating on why he left Lantanacamara to study abroad, Tyler declares that he wanted “to be somewhere where [his] ‘perversion’... might be either invisible or of no consequence to people to whom [his] foreignness was what would be strange” (51). In other words, Tyler decided to move to the Shivering Northern Wetlands so that his strangeness might be viewed as a function of his racial difference as opposed to his supposed sexual deviance. As Kim notes, then, “*Cereus Blooms at Night* articulates a vision of being able to manipulate social systems such as gender but not being able to be free of them” (“Troubling the Mosaic” 155). But to read the novel exclusively in these terms is to disregard its repeated invitations to think of gender and sexuality not as identity categories that are cemented through individual acts of gender performance, but as material processes that, as Ahmed reminds us, are made and unmade in the body’s “tending” toward other bodies and objects.¹⁷ The need for this kind of re-thinking is perhaps most visible in the exchange that occurs after Mala steals a female nurse’s uniform from the laundry line and offers it to Tyler in an apparent gesture of queer solidarity. Moved by this unexpected offering,

Tyler concludes: “she had been watching me and seeing the same things that everyone else saw. But she had stolen a dress for me. No one had ever done anything like that before. She knows what I am.... She knows my *nature*” (82, emphasis mine). But of course, the novel’s earlier references to the colonial naming and classification of Caribbean flora have already conditioned us to regard claims about “nature” and the “natural” with a certain degree of suspicion. Thus, instead of confirming his conviction that Mala understands his true essence, Tyler’s invocation of “nature” in this pivotal scene invites closer scrutiny of his identity claims. The need for this questioning becomes more evident when, inspired by Mala’s gesture, Tyler summons the courage to model the dress for his accomplice, completing his transformation by “powder[ing] [his] nose, daub[ing] rouge on [his] cheeks and carefully smear[ing] a dollop [of rouge] on his lips” (82-83). However, when he finally reveals himself to Mala, she seems completely unmoved by his transformation. In Tyler’s words,

When I stepped out from behind the curtain, I saw that Miss Ramchandin had made herself busy. She was piling furniture in front of the window. She glanced at me, made no remark and kept right on building the tower. ... I felt flat-footed and clumsy. Not a man and not ever able to be a woman, suspended nameless in a limbo state between existence and nonexistence. (83)

Here, Tyler’s disappointment arises not only from Mala’s lack of acknowledgement, but also from the fact that putting on the dress has not helped assuage the nagging sense of ambivalence he feels about his own gender identity. Steeped in a politics of recognition that, as Puar notes, “presumes that everything resides within signification,” and thus sees gender as function of the way in which the “body signifies” (that is, as male, female, or some recognizable variation thereof), Tyler anticipates that once he puts on the garment, he is going to feel unambiguously

feminine (n.pag.). Instead, he is left feeling “flat-footed and clumsy,” like an amorphous creature “suspended nameless in the limbo state” between femininity and masculinity (83). This discomfort with gender ambiguity works to close off the material potential that Tyler evokes earlier in the passage, when he describes the sensations he experienced when he first reached for the dress: “My body felt as if it were metamorphosing. It was as though I had suddenly become plump and less rigid. My behind felt fleshy and rounded. I had thighs, a small mound of belly, rounded full breasts and a cavernous tunnel singing between my legs. I felt more weak than excited by the possibilities trembling inside me” (82). Initially, then, the dress is presented as an invitation to think about the vibrancy and mutability of the body, or, to use Elizabeth Grosz’s terms, to think about “what it is in the *nature* of bodies,” in their material and biological constitution, “that opens them up to cultural transcription, social immersion, and production” (2). Tyler initially accepts this invitation, reveling in the possibilities he feels trembling within him. However, once he puts on the dress, he goes back to thinking in terms of established gender categories, and collapses the entire experience into (what he reads as) a failed act of gender masquerade. Although Tyler eventually realizes that Mala did not react to his transformation because “to her mind, the outfit was not something to congratulate or scorn,” he fails to fully register the relational possibilities that are offered by this exchange (83). This inattention to questions of materiality is also reflected in his lack of curiosity over Mala’s curious behaviour in this passage. As Tyler changes into the dress, Mala begins to build a barricade using the furniture found in her room. Elsewhere in the novel, it is suggested that Mala developed this compulsion to build barricades after killing Chandin, presumably to ensure that his body would remain confined to the room in which he died. In this sense, this curious habit reflects the ways in which Mala remains haunted by the threat of Chandin’s violence. However, Tyler remains so engrossed

in his own personal act of “coming out” that he fails to register the urgency of Mala’s actions, or question the motivation behind her tower-building behaviour. By foregrounding this missed opportunity to engage in a more reciprocal exchange, this passage once again suggests the need for an ethics that constructs queerness not as a discrete subject position, but as a mode of interrelation that is made and unmade through embodied encounters.

Towards a Materialist Ethics of Transcorporeal Relation

As I have shown, the disappearance of Sarah and Lavinia following their escape from the Ramchandin home, the residual colonial elements in Tyler’s rendition of Mala’s story, and Tyler’s repeated failure to recognize the ethical potential that is embedded in his material interactions with Mala all point to the epistemological limits of anti-imperial discourses that frame their resistance solely around questions of identity recognition and historical retrieval. In so doing, these disruptions all highlight the necessity of bringing a different kind of knowledge to bear on the relationships and interactions that take place in the novel. As I noted earlier, despite its many shortcomings, Tyler’s testimony is strewn with moments of possibility which suggest that this “other” knowledge must centre on questions of materiality and embodiment, or, to borrow from Puar (who concludes her critique of intersectional/identitarian politics with a call for more materially-oriented modes of analysis), on “the question of *how the body is materialized*, rather than what the body signifies” (n.pag., emphasis mine). It is within the physical and narrative space of Mala’s garden that the possibilities offered by materialist forms of inquiry are most fully explored.

As other critics have already noted, Mala’s garden is a site of multiple contradictions (Kim, “Troubling the Mosaic” 162). It is depicted as both “a primordial world containing rare

and exotic flora and fauna,” and a “sinister” space filled with “oppressive foul odours” and decaying matter (Casteel 19). Teeming with a biodiversity that recalls Alejo Carpentier’s famous characterization of the Caribbean environment as a place that is imbued with the “presence and vitality of the marvelous real” (87), the garden also houses what at times seems like a rather unlikely (even supernatural) cross-section of plant and animal species. In it, we find scientifically recorded species from the “Aves, Hexapoda, Gastropoda, and Repitilia” taxa, speculative/fictional species like the “mudra tree” and the elusive “peekoplats” who inhabit its canopy, and “other creatures that in the world of naming remain untitled” (137, 138). As a literary/aesthetic locus, the garden mobilizes a host of literary traditions – including the pastoral, the gothic, and the magic realist traditions, to name but a few – while also defying their respective conventions. These aporias put the reader in a position similar to that in which Otoh finds himself when he finally gains entry into Mala’s garden, only to feel “completely disoriented” by its contradictions and excesses (172). If, as Ahmed has noted, moments of disorientation can “open up another angle into the world” (26), then the disorientation induced by Mala’s garden does more than just subvert Linnaean botany and the other modes of colonial and neo-colonial systematicity invoked in the novel, as previous criticism has noted (Casteel 20; Pirbhai 260). Indeed, as I demonstrate below, the aporias that percolate in Mala’s garden disrupt all the main frames of reference – both colonial and postcolonial – that the novel initially sets up, challenging us to think in terms of entirely different systems of knowing. This “other” knowledge comes into view through a curious amalgamation of gothic metaphors of decay with a proto-materialist emphasis on the “vibrancy,” or material agency, that inheres through bodies and environments.

In keeping with Mootoo's ongoing evocation and revision of gothic conventions, and as Sarah Casteel has already noted in her reading of the novel, Mala's garden presents "a Gothic landscape [filled] with overripe fruit, rotting vegetation, and pungent odours of decay" (19). Thus, upon entering the garden, Otoh is immediately assaulted by a "miasma" of rotting matter so thick that he almost has to "wade" through it (165). The principal source of this "miasma," is, of course, Chandin's body, which has remained hidden in the interior of Mala's home for decades, decomposing at what appears to be an unnaturally slow rate. Like Roderick's entombment of his sister Madeline in Edgar Allan Poe's "The Fall of the House of Usher" and Emily's concealment of Homer Barron's corpse in William Faulkner's "A Rose for Emily," the staging of Chandin's cadaver evokes the gothic trope of the concealed corpse as a metaphor for the moral decay and private trauma of the gothic household. However, Mootoo subverts this trope by situating Chandin's corpse within a broader assemblage of decomposing bodies that provide sustenance for the plethora of living entities that populate Mala's garden. Preferring "not to intervene in nature's business," Mala allows the plants and animals in her garden to grow, live, and decompose at their own pace, contributing only one "service" to this ongoing cycle of regeneration: every season, she collects all the insect and animal carcasses found throughout the yard and disposes of them in the room that houses Chandin's corpse, which is teeming with "moths, centipedes, millipedes, cockroaches and unnamed insects" (137, 139). The corpse itself serves as fodder for "[t]housands of tiny white moths [that have] so tightly packed themselves side by side that the tiny hooks on the edges of their wings [have] locked together" to form a living blanket (198). In short, despite its being barricaded in the seemingly private/closed off space of the bedroom (arguably the primary site of trauma in the house), Chandin's corpse is linked to a transcorporeal network of decay and regeneration that extends through and beyond

Mala's garden (it is important to remember here that the garden is frequented by birds, moths, and various other pollinators from across the island). This recontextualization of the concealed cadaver as an organic entity that is linked in dynamic interrelation with other material entities, both living and non-living, is significant for two reasons. First, it works to emphasize that the decaying bodies in Mala's garden – and Chandin's body especially – need to be understood not as metaphors for a trauma that is grounded in the interior spaces of the Ramchandin home and of Mala's own psyche, but as material remnants of a history of colonial and neocolonial violence in which the entire island is implicated. Second, by foregrounding the environmental function of decay as a material process that facilitates the transformation of dead matter into new life, Mootoo's re-framing of Chandin's corpse draws attention to the importance of the patterns of interrelation between material entities, thus enabling a different way of thinking about questions of agency, relationality, and affiliation.

Mala's response to the smell of decay that permeates her house plays a central role in this conceptual push for more materialist forms of thinking. Unlike Otoh, who perceives the smell as an oppressive "miasma," a term that is etymologically tied to notions of "defilement" and "uncertain origins" and thus works to reinforce the longstanding abjection of Mala's home and garden as sites of perverse excess,¹⁸ Mala treats the smell as "proof that nothing truly end[s]," and "revel[s] in it as much as she [revels in] the smell of the cereus blossoms along the back of the house" (138). Thus, instead of being ashamed of the smell, Mala meets it with "aristocratic grace," an attitude that takes on a particularly subversive resonance when the police irrupt into her home to discover Chandin's body (139). Invoking, once again, the "split subjectivit[ies]" produced by colonialism (Sugars and Turcotte xi), the passages that lead up to this pivotal scene reveal that Mala's subjectivity has broken off into two separate personae –that of the adult Mala

and that of the child Popoh – in order to cope with the ongoing psychological and physical effects of Chandin’s abuse. As May notes, while it is “possible to read [this] psychic split into Mala/Popoh... simply [as] evidence of a flight into madness,” this phenomenon “could also signify a double consciousness, an epistemic practice that allows Mala to protect” Popoh and help her “escape what [she herself] cannot” (120). Indeed, having decided that “[h]ardly anyone ever cared for Popoh,” the adult Mala decides that she must be a friend and protector to her childhood self (185). Thus, when the police arrive, Mala instructs Popoh to keep close to her while she guides the policemen through the house and into Chandin’s room. When the chief constable and his men open the door to the room, only to be “assaulted” by the stench of Chandin’s decomposing corpse, Mala is “quite pleased” to see the men retch in disgust (195). In this brief but significant moment of defiance, Mala confronts the men with the material reality of the violence that Popoh suffered in that room, calling them (and the rest of the town) to account for their complicity in this violence.

In addition to illustrating the need for systems of knowing that are attuned to the material aspects of colonial violence, the corpses found in Mala’s garden – with their percolating gases, burgeoning smells, and decaying flesh that provides fodder for new life – foreground the environmental function of decay as a material process that facilitates the flow of matter and energy in living systems. By drawing the reader’s attention to these ecological relationships, Mootoo transforms Mala’s garden into a transitional space where those materialities that have previously been abjected to the realm of the gothic might be understood as something *other* than mere embodiments of a perverse or exotic excess. While *Cereus Blooms at Night* was published before the advent of new materialism, its treatment of the relationship between bodies, environments, and systems of domination, especially as it is enacted in the space of Mala’s

garden, anticipates new materialism's conceptualization of matter as vibrant, as exhibiting a material agency that can make things happen and therefore has the potential to drive political action (see Bennett 15-18). Viewed through this critical lens, the unruly bodies that populate Mala's garden can be understood as material agencies that, to borrow from Bennett, have the capacity to "make a difference, produce effects," and perhaps even "alter the course of events" (viii). Not surprisingly, Mala's cereus plant plays a central role in the mobilization of this material potential.

Previous criticism has emphasized that, with its hermaphroditic features and rhizomatic growth patterns, the cereus plant that covers the back wall of Mala's house and is later transplanted to the Paradise Alms House works to disrupt normative understandings of sexuality and affiliation. For instance, Hoving argues that, in its condition as a hermaphroditic plant that "boast[s] of both a stamen and an ovary, parts usually designated as respectively male and female," the cereus plant "becomes [a] token of border-crossing" in the novel, "mediat[ing] many transgressive relations [and] linking peoples and spaces that are not considered naturally related" (162). Along similar lines, Pirbhai argues that the cereus functions as a "metaphor... [that] pits the heterogeneity found in nature against the artifice of the ethnos as fixed and homogeneous" and that works to reframe "interrelation not as a neatly compartmentalized and spatially bound unity but a rhizomatic interweaving of its hybrid and heterogeneous parts" (261). While these readings highlight some key ways in which the cereus exceeds the sexual and racial hierarchies produced by colonial science, they treat it largely as a static symbol of androgyny and cultural hybridity, eliding the dense material processes in which the plant is imbricated. To borrow once again from Puar, then, I want to shift our attention from the way in which the cereus signifies to the way in which it *materializes*, since it is through the patterns of relation that it

shares with other material agencies (both non-human and human) that its queer potential is truly mobilized.

The defining quality of the cereus is, of course, its smell, which bursts forth “[w]ith the [kind of] force that comes from a broken fire hydrant,” attracting not only “thousands of moths and flies,” but also human passersby, to Mala’s garden (163). The scent has such a powerful influence over those who smell that it takes on an almost supernatural quality, recalling, once again, Carpentier’s sense of Caribbean flora and fauna as being imbued with a marvelous sort of vitalism. However, instead of grounding this sense of vibrancy in the perceived exoticism of the cereus, as Tyler does when he first describes the plant at the outset of the novel, Mootoo grounds it in the broader ecological processes in which the plant enmeshed. Of crucial significance here is the novel’s repeated suggestion that the cereus plant, as a discrete entity, is rather unexceptional. It is only on the night of its blooming, when the flower attracts a host of pollinators that hover around its blooms in a frenzy of activity, that its powers are fully realized. This dispersal of the cereus’s vitalism across a host of material entities anticipates new materialism’s assertion that material agency does not arise from a *single* locus, but is rather a “function of the tending of matter to conglomerate or form heterogeneous groupings” (Bennett xviii).¹⁹ According to Bennett, this means that engaging with the material forces that inhere through bodies and environments requires theorizing material encounters as events that bring together a diversity of actants, “some human, some not, though all thoroughly material” (xiv). The narrative sequence that describes the night of the cereus’s blooming conveys a similar sense of eventness, of an emergent potential arising from the interrelation between a diversity of actants, as opposed to a single source of origin. This sense of interrelation is foregrounded from the outset of the sequence, when, sensing that the long-awaited blooming of the cereus is about to begin, Mala

checks the state of the blossoms and is pleased to find that they will open up in time to “coincide with *another* blooming, that of the moon” (144). As the moonlight slowly coaxes them open, the cereus blooms begin to pump out their characteristic perfume, attracting a swarm of insects, bats, and other creatures to “find and pollinate” them (148). The scene of cross-pollination that ensues is rife with an eroticism that momentarily recalls the charged sexual imagery used by Linnaean botanists: “[c]razed bats... suckle the [cereus] blossoms” while “frantic moths... brus[h] their hairy bodies against [them] to sample [their] syrupy, perfumed juices” (148). However, as the scene unfolds, this network of transcorporeal exchange becomes so dense, so overwrought with a sense of co-constitution between multiple species, that it confounds not only the sexualized norms produced by Linnaean botany, but also those oppositional frameworks which define sexual difference as a “difference from” these norms. Thus, instead of providing a model of sexual or cultural identities that exceed the categories formulated by colonial epistemes, the “queer” assemblage formed by the cereus and its many pollinators fosters an understanding of sexual difference as a material process that emerges in the act of relating and, as Alaimo might say, “involves a multitude of naturecultures” (“‘Queer’ Animals” 52).²⁰ Even the townspeople who walk past Mala’s house on their way to El Dorado Park (Paradise’s pre-eminent site of heterosexual courtship) feel “compelled to stop in front of [the] house to caress and steal probing kisses” (148). In this brief moment of disorientation, they too become part of the queer assemblage that is taking shape in Mala’s garden. Ultimately, by arresting our attention on the dense patterns of interrelation involved in this assemblage, this passage evokes a different understanding of queerness than the one promulgated by Tyler: one based on an ethics of embodied interrelation as opposed to a shared identification between discretely bounded subjects.

New materialism holds that, aside from producing assemblages that can bring new modes of interrelation into view, material bodies have the capacity to affect us in ways that might “augment the motivational energy needed to move selves from the endorsement of ethical principles to the actual practice of ethical behaviours” (2). Mootoo’s description of the affective responses that Mala’s garden elicits in Otoh conveys a similar understanding of matter’s capacity to act as a powerful “affective catalyst” (Bennett xii). As I suggested earlier, Otoh’s initial response to the smells and sights he encounters in the interior of Mala’s garden is one of repulsion. Not only does he register the smell of decay that emanates from the place as a corrupting “miasma,” but when Mala shows him Chandin’s corpse, he flees the garden in a fit of terror, just as his father had done decades earlier (confusing Otoh with his father Ambrose, Mala is devastated to “see him running off and leaving her again” [176]). However, Otoh’s affective state undergoes a critical shift as he witnesses the series of events that unfold after he flees from Mala’s garden. When he reaches the road, Otoh collapses in a state of shock and, as he comes into his senses, makes the fateful mistake of revealing that there is a body concealed in Mala’s house. As news of his discovery begins to spread, the entire town is propelled into a frenzy of activity that begins when “women, children and men star[t] pouring out from their houses” to rush towards Mala’s house and culminates with the arrival of the police and subsequent plundering of Mala’s garden by some of the townspeople (179, 201). As he witnesses the assemblage that is forming around Mala’s house and realizes that Ambrose will never take action to protect Mala, Otoh is overcome with a sense of “anger and loathing” that drives him to perform the only tangible act of solidarity that occurs in the novel (185). A notorious ditherer known for his “vexing inability to make up his mind,” on this occasion, Otoh is quick to take action: he sets fire to Mala’s house to prevent her from being convicted for Chandin’s murder

(118). Otoh's actions recall a question that Tyler raises at the beginning of the novel, and which continues to reverberate as Otoh witnesses his father's protracted failure to act on Mala's behalf: "what [is] the point of empathizing without taking more positive action?" (21). By foregrounding the material and affective conditions that precipitated Otoh's act of solidarity, this narrative sequence suggests that the affects and sensations produced by the encounter with other material agencies can play a crucial role in facilitating a shift from "the endorsement of ethical principles to the actual practice of ethical behaviours" (Bennett xi). In so doing, this pivotal scene emphasizes the need for knowledge systems that promote what Bennett would describe as an "aesthetic-affective openness to material vitality" (x).

Of course, the destruction of the garden at the end of the novel is not without its problems. Viewed in light of the material potential that is mobilized in the sequences that describe the assemblages that form around Chandin's corpse and around the cereus patch, this destruction could be viewed as a sign that the novel ultimately cannot support the materialist possibilities it sets in motion. The cereus clipping that Otoh brings to the Paradise Alms House is the only element of Mala's garden that survives to the end of the narrative. Although the novel ends on the eve of the cereus's blooming, with Tyler anticipating the "promise of a cereus-scented breeze" (270) and the new forms of interrelation that such a breeze might mobilize, this sense of possibility is punctured by the fact that the cereus has been transplanted to an institutional setting where its roots might not be allowed to spread with the same freedom as they did in Mala's garden. At the same time, however, we must recall that this is not the first time the cereus has been transplanted: earlier in the novel, we learn that Mala originally received the plant as a gift from Lavinia Thoroughly, who had taken a couple of cereus cuttings from her mother's British colonial garden to give them as gifts to Mala and Asha (57). The conclusion of the novel

emphasizes this complex genealogy, reaffirming the cereus's longstanding imbrication within colonial knowledge systems while also highlighting the vital materiality that remains immanent within the plant despite its transplantation to the institutional setting of the Paradise Alms House. In this sense, the novel leaves us in a transitional space where the postcolonial knowledge systems invoked by Tyler's testimony have been rendered unequal to the task of capturing the material agency that flows through the cereus, but the knowledge required to understand this material potential remains out of reach for the time being. Yet even though the novel fails to fully theorize the material potential it mobilizes through its depiction of Mala's garden, its repeated calls for more corporeal and materially inflected forms of witnessing gesture towards a different kind of engagement with scientific ways of knowing – one that might mobilize the productive power of scientific knowledge to construct a more complex account of the memory and kin-reckoning processes associated with diasporic experience. In this sense, *Cereus Blooms at Night* offers an early articulation of some of the key “matters of concern” that Thien, Lai and Wong raise through their respective engagements with scientific discourse.

Chapter 2

Uncertain Landscapes: Risk, Trauma, and Neuroscientific Knowledge in Madeleine

Thien's *Certainty* and *Dogs at the Perimeter*

In a poignant scene of Madeleine Thien's novel *Certainty*, the protagonist, Gail Lim, and her mathematician friend Harry Jaarsma reflect on a visual representation of the Mandelbrot Set, a fractal image that evokes the complex geometrical patterns that shape the universe. The image prompts them to consider what it means to inhabit a vast ecosystem of complex structures, many of them operating at scales that exceed the powers of common human understanding. As Jaarsma says to Gail,

I can imagine what the rest of the picture is like because this is a fractal image, and it is self-similar. It repeats. But to imagine the entire picture is akin to standing on a street corner and trying to imagine what England looks like from an airplane, or from Mars. I can extrapolate, but what I see at this level may not conform to my expectations of what it will look like as we move in space and time. (218-219)

Jaarsma's observation invokes a problem that Frederic Jameson has identified as the quintessential dilemma of our cultural moment: "the incapacity of our minds, at least at present, to map the great global... network in which we find ourselves caught as individuals" (50). According to Jameson, the confrontation with this overwhelming totality frequently produces a "spatial and social confusion" that neutralizes our capacity to "act and struggle" both as individuals and as part of larger collectivities (54). Risk theorists like Anthony Giddens and Ulrich Beck have complicated matters even further by arguing that the task of global cognitive mapping involves an exercise not only of constant spatial and social rescaling, but also of

constant risk assessment. According to Beck, we are living in a global risk society permeated by public health hazards that demand the mediation of the sciences in order to be adequately understood (27). More recently, ecocritics like Ursula Heise and Stacy Alaimo have taken up the questions posed by these theorists with renewed urgency, drawing attention to the novel narrative and aesthetic forms that have emerged in response to global risk culture. Heise traces the rise of what she describes as the “Google Earth imaginary” – an aesthetic mode that combines various forms of scientific data with the zooming capabilities of contemporary imaging technologies to visualize how global risk scenarios interact with “local, regional, and global processes” (11, 12). Meanwhile, Alaimo maps the emergence of the “material memoir,” a genre that dramatizes life in contemporary risk society by enacting the “profound sense of uncertainty” that can arise when subjects are forced to engage with scientific discourses in order to grapple with the material risks that surround them (93). According to these theorists, then, narrative representations of the global are increasingly drawing on tropes from the sciences in an attempt to visualize the positioning of individuals and communities within the complex globalized structures that characterize the contemporary geopolitical landscape.

While the concept of risk society has gained considerable currency in ecocriticism thanks to the work of Heise and Alaimo, it has received little attention in diaspora studies. And yet, as Heise argues, risk perceptions are increasingly shaping not only the way in which the global is imagined, but also the collectivities that are borne out of these global imaginings (121). Heise’s observation is prompted by Beck’s later work on cosmopolitanism, which argues that the sharing of global risks can become a “powerful basis for community” and foster the emergence of transnational networks that “place globality at the heart of imagination, action and organization” (“Cosmopolitan Manifesto” 227). Although Heise agrees with Beck’s suggestion that the shared

experience of risk can create “alternative networks” of cultural and political practices that transcend “national and regional borders,” she insists that his model of cosmopolitanism needs to be complicated through a more sustained engagement with the “power differentials and cultural conflict[s]” that risk communities must frequently face despite their investment in “shared political struggles” (123). One crucial question that needs to be considered in this regard is how contemporary risk culture is being negotiated by those communities who are themselves disproportionately targeted as potential agents of various public health risks. This question has important implications for current debates in Canadian diaspora and critical race studies around the need to re-imagine political collectivities in terms other than those provided by the framework of the nation-state (Fleischmann et. al xiv-xv). In her essay “Diasporic Citizenship,” Lily Cho insists that such a project must remain attentive not only to the “differential histories of dislocation” that inform Canadian experiences of diaspora, but also to the experiences of marginalization, racialization, and biopolitical management that constitute the “underside of transnational mobility” (101). Madeleine Thien’s fiction bridges the concerns articulated by risk theorists like Beck and Heise and diaspora theorists like Cho by situating contemporary risk culture – along with the scientific discourses through which it is mediated – as a crucial site where the problems and possibilities associated with diasporic collectivity are currently being negotiated.

In her novels *Certainty* (2006) and *Dogs at the Perimeter* (2011), Thien draws heavily on the language of risk assessment to explore the shifting grounds of Asian Canadian collectivity in the 21st century. Both novels explore how diasporic subjects are renegotiating their relationship to globality in light of emergent scientific discourses and the risk perceptions that such discourses enable. In keeping with Heise’s insistence that global risks need to be understood as

“shared... realities that are nevertheless shaped by and filtered through a range of different cultural frameworks” (123), Thien’s novels suggest that engaging with risk culture in a diasporic context demands that we consider how global risks interact with other sources of uncertainty that South East Asian diasporas have historically had to contend with: most notably among these, the violent histories of colonization which have made such populations subject to various forms of trauma and, by extension, to biopolitical interventions aimed at normalizing traumatized subjects (Ong 1995; Troeung 2012).²¹ Set in a transnational context that transports us back and forth between Canada and various locations throughout South East Asia, the United States, and Europe, and populated by characters whose family histories are permeated not only by geographical displacement, but also by the traumatic effects of the violence that devastated Southeast Asia during and in the aftermath of decolonization and WWII,²² these novels narrativize the intersection between diasporic trauma and contemporary risk society. Echoing Beck’s and Alaimo’s insistence that grappling with life in risk society demands an engagement with technical and scientific ways of knowing, Thien draws heavily on language and imagery from the life sciences – and particularly from neuroscience, with its increasing scientific and cultural influence as a framework for understanding the material underpinnings of psychological trauma – in order to explore the place of diasporic communities within these globalized phenomena. Indeed, both novels are filled with characters who rely on technical discourses to negotiate the landscapes of uncertainty generated by the collision between postcolonial trauma, diasporic displacement, and biomedical risk. Far from yielding any positive knowledge, however, their various scientific investigations work to emphasize the difficulty of mapping the complex biopolitical structures that shape the lives of contemporary Asian Canadian diasporas. Thien’s interest in exploring these interconnections resonates with recent work by Asian American

writers like Ruth Ozeki and Gish Jen, whose novels *A Tale for a Time Being* (2013) and *World and Town* (2010) also draw on scientific tropes to grapple, on one hand, with the nihilism and uncertainty of global risk culture and, on the other, with the fragmentation induced through historical trauma.

Existing scholarship on Thien's work has argued that her engagement with bioscientific discourse works to expose "the limits of a scientific epistemological framework for understanding the traumas induced in socially – and historically – situated contexts" (Troeung, "Intimate Reconciliations" 72). This chapter extends and complicates this reading by arguing that, despite her emphasis on the failure of any one scientific discipline to quell the uncertainties associated with diasporic displacement and trauma, Thien stresses that such unknowns need to be confronted through multiple avenues, as opposed to a single field of inquiry. Thus, I argue that, instead of rejecting science, Thien's novels prompt us to consider how diasporic communities might constructively interface with scientific disciplines to construct the "ecologies of knowledge" (to borrow a phrase from Boaventura de Sousa Santos) that are necessary for grappling with the complex histories of trauma that continue to shape their lives. I therefore argue that these texts make an important contribution to ongoing efforts – by people like Bruno Latour and Donna Haraway in science studies and Boaventura de Sousa Santos in decolonial studies – to rethink the cultural critique of science in order to produce epistemologies that might "deal simultaneously with the sciences, with natures, and with politics, in the *plural*" (Latour 3, my emphasis). In closing, I consider what these novels have to say about the specific contributions that narrative fiction can make to this important reconfiguration of knowledge. I argue that, by demonstrating that literature can enable us to engage with the *affective* (and not just cognitive) tensions that arise from cross-disciplinary dialogue in ways that other frameworks

cannot, Thien's novels figure literary production as a crucial site for enacting the collaborative modes of knowledge-making that are necessary for grappling with contemporary experiences of globality.

Global Cognitive Mapping via Scientific Knowledge

Although Thien does not address the concern with environmental toxins that is central to Heise's and Alaimo's discussions of risk society, she imagines the global explicitly in terms of the risk scenarios that can proliferate as people, viruses, and other health threats move across borders. Writing in the aftermath of the 2003 SARS crisis, Thien situates her exploration of diasporic displacement and trauma firmly in the context of current cultural anxieties around the links between transnational mobility and the spread of viral disease threats. The impulse to map and manage these risks via scientific knowledge is embodied in the figure of Gail's partner Ansel, a pulmonary specialist who spends his days screening patients for various respiratory infections. In an early scene foregrounding the connections between transnational mobility and biomedical risk, Ansel tracks down a family who had flown on the same plane with a woman who had "contracted tuberculosis on her travels" in order to place them on a preventative TB screening regimen (81). Ansel's relationship to the risk scenarios posed by viral disease is not just professional, but deeply personal: at the beginning of the novel, we learn that Gail died from a sudden respiratory infection six months ago, and that Ansel is still struggling to come to terms with her death. Ansel keeps Gail's extensive medical files – "[her] radiology report, her EKG chart, the pages creased from too much handling" – on his dinner table and studies them obsessively in an effort to uncover the etiology of the infection that killed her (4). As Ansel himself comes to realize, his search to trace the immunological changes that Gail experienced in

the last weeks of her life is motivated by a need to understand not only her illness, but also “who she was” and “what she [had] hoped for” at the time of her death (96). This belated effort to understand the substance, both material and immaterial, of Gail’s life is rendered all the more poignant by the subsequent revelation that the couple had been on the verge of reconciling after a long of period of estrangement brought on by an infidelity on Ansel’s part. Trained as a pulmonary specialist to model the trajectory of various respiratory health risks across time and space, and haunted by the question of what could have been if he had managed to “find the detail that might have saved her,” Ansel draws instinctively on the resources of his discipline to project the future he and Gail might have shared one day – or, as the first line of the novel puts it, “what was to have been [their] future” (95, 3). However, Thien makes it clear that tracing a linear causality between “past, present, and the anticipated future” (143) may not always be possible in a turbulent world in which “lives [can] change in an instant” (96). This sense of contingency is foregrounded through Ansel’s growing suspicions that Gail’s death might have been caused by an undiagnosed medical condition that made her susceptible to pneumonia (95). The possibility that Gail’s death might be attributed to the unexpected interaction between an underlying illness and a sudden bacterial infection – a chance event that Ansel could never have anticipated despite his specialized training – works to emphasize that grappling with contemporary risk society can be a daunting task even for those who are seemingly endowed with the “expert” knowledge to do so. Ansel’s struggle to understand Gail’s life and death in the context of her medical history thus resonates with Alaimo’s observation that some of the most compelling accounts of the uncertainties associated with the quest to “understan[d] the material self within a scientific matrix” come, surprisingly enough, from scientific experts themselves (97). Alaimo illustrates this point through a reading of Sandra Steingraber’s memoir *Living Downstream: A Scientist’s*

Personal Investigation of Cancer and the Environment, which documents Steingraber's efforts "to understand the world" as she sifts through "'bulging files' of scientific studies" to uncover the probable environmental causes behind her bladder cancer (97). In a similar vein, Ansel's attempts to trace the causality of Gail's death fail to yield a sense of authoritative knowledge, emphasizing instead that, as Alaimo would put it, the "scientific understanding of unpredictable material agencies will never be sufficient to protect us from unforeseen harms" (22).

But it is through Gail's character that the search for a secure science takes on an explicitly diasporic register. The novel's non-linear narrative structure takes us back to the months before Gail's death, when she was creating a radio documentary feature about the diary of the late William Sullivan, a war veteran who was held as a prisoner of war in Hong Kong during WWII. Sullivan had encrypted his diary in order to avoid detection by his captors, and could no longer remember the encryption code when he bequeathed the text to his daughter Kathleen years later. Gail's unfinished documentary follows Kathleen's search to decode the diary in a belated effort to understand "the mystery [that was] her father" (203). More specifically, Kathleen hopes that the diary will reveal the causation behind the alcoholism and violent behavior that consumed her father later in life (204). Her search mirrors Gail's lifelong quest to uncover the mystery of her own father, who lived through the Japanese occupation of North Borneo (present-day Malaysia) during WWII, but has never spoken to her about his past. Thus, as Y-Dang Troeung suggests, "Thien constructs many parallels between Gail and Kathleen as subjects of postmemory.... Kathleen, like Gail, is searching for answers that can explain the broken intimacies of the present" ("Forgetting Loss," n.pag.).²³ Hopeful that the science of cryptography will shed light on Sullivan's and, by extension, her own father's past, Gail asks her mathematician friend Harry Jaarsma to help her decode Sullivan's diary. Jaarsma accepts the

assignment, but cautions Gail about the dangers of looking for a secure knowledge via the science of cryptography. As he says to her during an interview, “someone says, ‘Break this,’ and then it becomes a game, a chase. Of course, you assume that there is something to be pursued, some meaning to be unraveled. It is exactly the kind of thing that can destroy a person” (105). When Jaarsma finally cracks Sullivan’s code and discovers that, instead of an account of “violence witnessed and endured” (220), the veteran had left a simple record of his daily rituals in prison camp, Gail begins to recognize that certain memories “have no consolation” (216), and that she may never be able to decode the silences that permeate her own family history.

Aside from questioning the presumed certainty of empirical knowledge, Thien’s novels, like Mootoo’s *Cereus Blooms at Night*, emphasize that any effort to engage with scientific knowledge in diasporic and postcolonial contexts must grapple with the role that Western science has played in the history of imperialism and, more recently, in modernization discourses that frame technical expertise as the key to “Third World” development. As Sandra Harding explains, this development paradigm emerged in the aftermath of WWII, when Western policy makers reached a consensus that “world peace could not occur without democratic social relations, and this in turn required [an] economic prosperity” that could only be achieved through “Western scientific rationality and expertise” (1-2). In *Certainty*, Thien mounts a subtle critique of these development discourses by juxtaposing Gail and Ansel’s present-day quest for a secure science against the unprecedented flight of human capital that took place in South East Asia in the aftermath of WWII, when young people from across the region migrated to Western metropolises to “tra[n] as doctors and engineers” in the hope that they would one day return “home to their countries” to bring about “a sea change” (171). Here again, Thien remains highly skeptical of science’s ability to deliver a life “free from uncertainty,” both at a personal and

macroeconomic scale (168). This skepticism is also palpable in *Dogs at the Perimeter*, where Thien repeatedly questions the position of biomedical and other technical experts who travel to crisis zones to provide humanitarian aid, only to fly out when they run out of supplies or when the violence escalates. One of the protagonists of the novel, the neuroscientist Hiroji Matsui, witnesses the devastation left behind by absentee experts when he travels to Cambodia in the wake of the Khmer Rouge revolution to search for his brother James, who has disappeared from his post as a doctor with the Red Cross mission in Phnom Penh. As Hiroji walks the streets searching for a clue to his brother's whereabouts,

People follow him, [asking] if he knows the man from UNHCR who promised to bring charcoal last week, or the technician from the factory who was supposed to repair the sewing machines, or the doctor who ran out of bandages but said that he would be back. Hiroji cannot bring himself to say that these experts have already flown out. (236)

Thien's ongoing critique of the problematic legacies of scientific rationalism in the developing world raises an important question: why, when she is so insistent on the insufficiencies and ethical problems that attend scientific discourse, does she seem so interested – and, indeed, so invested – in mapping the interconnections between diasporic experience and contemporary bioscientific culture?

We might answer this question by considering Thien's ongoing fascination with contemporary neuroscience – a fascination that is already apparent in the many references to the neurobiology of memory and emotion that abound in *Certainty*, but comes fully to the fore in *Dogs at the Perimeter*, which can be read as an extended exploration into the material/biological basis of diasporic trauma. As part of her research for this novel, Thien enrolled in the

Neuroscience Boot Camp at the University of Pennsylvania, where she participated in workshops dealing with “cellular electrophysiology and chemistry, behavioral and cognitive research, and [the] ethical and societal implications” of current neuroscientific advancements (qtd. in Lam, n.pag.). As Thien indicates in a tumblr page dedicated to *Dogs at the Perimeter*, the novel is also heavily informed by the popular writings of the neuroscientists Eric Kandel and Antonio Damasio, as well as the neural sketches of the 19th-century painter turned neuroanatomist Santiago Ramón y Cajal, who is widely regarded as the father of modern neuroscience.²⁴ Thien’s engagement with the intersection between neuroscientific culture and diasporic trauma could not be more timely, as it comes at a moment in which the groundbreaking advances made by modern neuroscience are raising important questions around (what some denounce as) the increasing biomedicalization of various psychological disorders, including post-traumatic stress disorder. In *The Politics of Life Itself*, for instance, Nikolas Rose argues that neuroscientific investigations are “not merely processes of discovery, but of intervention” that visualize the living brain as “just one more organ of the body to be opened up to the eye of the doctor” (196). According to Rose, thanks to such investigations, psychological conditions like post-traumatic stress disorder are increasingly being understood as biomedical risks that need to be monitored and managed through pharmacological means (220-223). Rose’s critique paints a somewhat reductive picture of current neuroscientific discourse; however, it does raise some important ethical issues, some of which are actively being debated by neuroscientists themselves. Indeed, as Troeung mentions in her reading of *Certainty*, through his research into the neurobiology of memory, Nobel laureate Eric Kandel has brought attention to the possibility of developing drugs that can prevent “post-traumatic stress disorder, while allowing the experience and some aspect of memory, except emotionally reduced” (qtd. in Troeung, “Forgetting Loss,” n.pag.). Placing such

developments explicitly in the context of diasporic trauma, neuroscientist Joseph LeDoux asks, “what would it mean to a Holocaust survivor... to lose such memories after having lived for many years having developed an identity based in part on them?” (*Synaptic Self* 162). In her discussion on *Certainty*, Troeung references these scientific debates in passing, to situate Thien’s work as part of a larger cultural conversation around the need to open up a “dialogue about remembering and forgetting trauma” (“Forgetting Loss,” n.pag.). However, in her reading of *Dogs at the Perimeter*, she takes a more critical stance towards scientific discourse, arguing that Thien’s engagement with neuroscience works to highlight the failure of scientific discourses to “adequately account for the traumatic experiences of specific cultural groups such as Cambodian genocide survivors” (“Intimate Reconciliations” 72). Troeung concludes that Thien finally rejects Western scientific epistemology in favour of a “Khmer Buddhist epistemology of healing and trauma recovery” that emphasizes the “centrality of spiritual ritual in bringing about healing and traumatic closure” (“Witnessing” 152, 161). I want to complicate this reading by showing that Thien engages with current debates on the biomedicalization of trauma in a way that seeks not merely to question the ethical and sociopolitical implications of this phenomenon, but also to explore the ways in which neuroscientific knowledge can be mobilized *alongside* alternative epistemologies to challenge dominant psychiatric and biomedical frameworks for understanding diasporic trauma.

Diasporic Trauma and the Neurobiological Self

Thien’s representation of diasporic trauma in *Certainty* and *Dogs at the Perimeter* draws heavily on the current neuroscientific understanding of the brain as a network of neurons that communicate with each other by firing electrochemical signals across the small junctures, or

synapses, that separate them. Since our feelings, thoughts, and memories all get encoded and stored at these junctures, some neuroscientists posit that synapses hold the key not only to the workings of consciousness, but also to our sense of self. For instance, Eric Kandel (2006) notes that because our synapses hold all of our memories, from the most traumatic to the fondest, they could be seen as the “biological basis of human individuality” (218), while Joseph LeDoux (2002) goes so far as to suggest that the self is a product of the synaptic connections in our brain. This interest in the “synaptic” constitution of the self stems partly from the growing recognition that the patterns of synaptic connectivity in the brain are not static, but are constantly changing as a result of experience and learning. The notion that synaptic connections are malleable, or plastic, first emerged in the late 1940s when psychoanalyst Donald Hebb speculated that if neighbouring neurons “are active at the same time... the connection between them will be strengthened” – a principle that has been immortalized in the popular saying “cells that fire together wire together” (*Synaptic Self* 79). Hebb’s hypothesis was confirmed in the 1980s when studies by Eric Kandel and others revealed that learning not only alters existing neural pathways, but can actually create “profound structural changes” in the brain (Kandel 215). More specifically, Kandel discovered that the formation of short-term memories will strengthen or weaken pre-existing connections between neurons, while the consolidation of long-term memories will cause neurons to grow new terminals, contributing to the formation of entirely new connections (215). In short, Kandel’s findings revealed that alterations in the synaptic connectivity of the brain are the main mechanism underlying the creation and maintenance of our memories, and thus of our unique sense of self. As LeDoux puts it, “we all have the same brain systems, and the number of neurons in each brain system is more or less the same in each of us

as well. However, the *particular* way those neurons are connected is distinct, and that uniqueness, in short, is what makes us who we are” (*Synaptic Self* 303, emphasis mine).

In *Certainty*, Thien engages the scientific and popular fascination with the neurobiological basis of selfhood by constructing scenarios in which her characters question what it means to think of themselves as products of the networked interactions between the neurons, neurotransmitters, and synapses that make up the architecture of the human brain – interactions that are becoming increasingly accessible thanks to technologies like single-unit recording (which enables scientists to record the firing of individual neurons), functional magnetic resonance imaging (which enables them to visualize entire neural circuits at work), and, most recently, Brainbow imaging, (which uses recombinant DNA technology to colour-code individual neurons so as to better distinguish between them).²⁵ One moment that poignantly evokes the challenges and possibilities of understanding the material self in light of these emergent technologies occurs when Gail is lying awake in bed, ruminating about her faltering relationship with Ansel. Still hopeful that they might be able to salvage their relationship, she wonders what a functional MRI scan would reveal about the nature of their feelings for one another:

... what does it see? The work of thousands of synapses. The chemical traces of memory and love. If it could peer into Gail’s mind in a moment when she thinks of Ansel, how many patterns would it see awakened? The incoming tide, wave after wave of memory. The accelerated heartbeat, the charge Gail feels in his presence, none of this has changed. But for him? If she could see into the darkness, would she find in him what she hopes for? An echo of her own desire,

as strong and sure as it was in the beginning, before something between them
faltered and lost hope. (201)

Aside from exploring the implications of being able to visualize “the chemical traces of memory and love” through contemporary neuroimaging technologies, *Certainty* also evokes the ways in which contemporary neuroscience has troubled the Cartesian impulse to locate the conscious mind within a specific region of the brain. This impulse is invoked in the passage in which Gail’s parents, Matthew and Clara Lim, are hosting Ansel and a group of close friends for dinner and Gail’s friend and collaborator Glyn announces that she is working on a documentary feature on the biology of mind (11). When Ed, another guest, offhandedly remarks that one of the reasons why scientists find it so difficult to study the brain is that it contains “lots of surface area in a very small space, tucked away between folds and such,” Clara wonders out loud whether the most “important” parts of the brain might reside at its centre, where they would be “less liable to damage” (12). Glyn responds with an ambiguous “yes and no,” and then goes on to elucidate neuroscience’s current view that mental functions arise from the interaction between different regions of the brain, as opposed to a single brain location.²⁶ As Glyn puts it, “some parts, like the cerebral cortex, are on the surface. Others, like the thalamus or the amygdala, are buried. So thought comes from these different regions working together, like a piece of music. Activity sweeps across the brain. Synapses are excited, connections are made” (12). The neuroscientific insights foregrounded in this somewhat transparently didactic episode take on broader, more nuanced significance as Thien explores the parallels between the synaptic activity of neurons and the networked interactions that inform diasporic relatedness. Thus, in the novel, the neuroscientific understanding of the self as the product of “the work of a thousand synapses” stands as a metaphor for the complexity of diasporic relatedness, which emerges not from a

single center of origin (whether geographical or genealogical), but from the tangled interactions between heterogeneous, sometimes conflicting, sources of affiliation, or what kinship scholar Janet Carsten refers to as “cultures of relatedness.”²⁷ Ansel’s subsequent invocation of biologist S.J. Singer’s famous phrase “I link, therefore I am” at the dinner table can thus be taken as a reference not only to the synaptic basis of selfhood, but also to the networked dynamics that characterize diasporic collectivity. As Eleanor Ty has pointed out, *Certainty* enacts these dynamics by creating multiple links across space and time to “tell the stories of clusters of people who are not necessarily related biologically,” but who have come together by chance, common circumstance, or shared affinity (46). By constructing a scene in which Gail’s friends and family come together at the dinner table to share the burden of her loss, Thien evokes the provisional, yet powerful forms of community that can emerge from these unconventional sources of relatedness.

But despite its potential for enriching our understanding of both the biological basis of memory and emotion and the networked relationships that inform diasporic identity, this neuroscientifically informed conception of selfhood also carries some unsettling implications. Indeed, as LeDoux argues, imagining the self as a product of synaptic connections that can be altered or disassembled as a result of experience also means recognizing “how *fragile* a patch job [the self] is” (*Synaptic Self* 304, emphasis mine). In *Dogs at the Perimeter*, Thien seizes on this very problem, complicating her engagement with the neurobiological self by raising a series of important questions: If, as the contemporary biology of mind teaches us, our synapses hold our selves together, what happens when these connections break down as a result of a brain lesion or a traumatic experience? Is there a center of identity or essential self that remains tucked away somewhere deep within our minds, safe from these potential failures in connectivity? And finally,

how do these shifting conceptions of selfhood affect our understanding of human relationships, both at an intimate and a communal level? Thien explores these concerns through the interrelated stories of Janie and Hiroji, two friends who work together as researchers at the Brain Research Centre in Montreal, and who also share a common history of trauma as immigrants who fled to Canada to escape the wartime violence raging in their native countries during and in the aftermath of WWII. Janie arrived in Canada as a child refugee thirty years ago after losing her entire family to the Khmer Rouge genocide in Cambodia, while Hiroji and his family fled Japan after the American fire-bombings of Tokyo during WWII. Hiroji also shares an unexpected, but profound, connection to the Khmer Rouge revolution: thirty years ago, he travelled to Cambodia to search for his brother James, who went missing while working as a doctor with the Red Cross mission in Phnom Penh. While in Cambodia, Hiroji took care of an orphaned boy named Nuong, whose traumatized condition as a Khmer Rouge survivor continues to haunt him to this day. The boundaries between past and present, between Canada and Cambodia, and between scientific objectivism and personal experience begin to blur as the novel's plotline interweaves Janie and Hiroji's collaborative efforts to shed light on the biology of various memory disorders with the fractured accounts of their respective struggles to assimilate their own traumatic memories. Through this postmodern narrative structure, Thien is able to explore the implications of various kinds of disruptions to the neurobiological self, from those caused by overt brain lesions, as seen in the case of the neurological patients that Janie and Hiroji study at the Brain Research Centre, to the more subtle changes in connectivity that result from psychological trauma, which are seen most vividly in the case of Janie herself.

In their work as researchers, Janie and Hiroji deal frequently with patients who are suffering from brain lesions that have disrupted the existing connections between different

regions in their brains, leading them to develop what some neuroscientists refer to as “disconnection syndromes” (LeDoux, *Synaptic Self* 306). One of these patients is Elie, a middle-aged woman who has been experiencing difficulty remembering and articulating words. A diagnostic MRI reveals that the left side of Elie’s brain (the side associated with language functions) has begun to atrophy, while the right side (the side responsible for processing images) is burgeoning with activity (13). Though curious at first glance, this imbalance reflects the neuroplasticity of the brain, how “when one region or pathway [of the brain] is damaged, others may be able to compensate, at least partially, for the loss” (Kandel 124). But as the right hemisphere of Elie’s brain steps in to compensate for the damage suffered by the left hemisphere, it creates an “imbalance... between words and pictures” in her conscious mind, completely transforming her subjective experience of reality (13). A former biomechanical engineer whose life used to revolve around the analytical operations of the mind, Elie now perceives the world entirely in sensory terms, as swirl of visual impressions. Thus, her consciousness is described in terms that recall the fluid composition of an impressionist painting:

Now, experience unfolded in a different pitch and tone, it was more fluid, more transitory, it enclosed her like the battering sea of broken light. When she closed her eyes she saw how the corners of improbable things touched – a bird and a person and a pencil rolling off a child’s table – entwined, and became the same substance. Even her loved ones seemed different, more contained and solid, like compositions, iterations in her head. (11)

At first, Elie welcomes this shift, as it opens up what she perceives as a heightened, more “holy,” vision of the world – one that she brings to life in vibrant canvases that “tur[n] music into images, the musical phrases playing out like words, the words breaking into geometric shapes, her

paintings grasping all the broken, brilliant fragments” (14, 12). Elie is so exhilarated by her newfound vision that she concludes that she is prepared to “live with losing language, if that [is] the price” she must pay for this unexpected gift (12). However, her condition calls to mind LeDoux’s insistence that, although disconnection syndromes might announce their presence through a specific, seemingly isolated cognitive deficit (in Elie’s case, the loss of language), such deficits result “not from the loss of a particular function, but from the inability to exchange information between brain areas” (*Synaptic Self* 306). Thus, according to LeDoux, “disconnection syndromes illustrate how critical internal coordination between brain systems is in maintaining the unity of mind and behavior” (*Synaptic Self* 306). In a similar vein, Elie’s paintings suggest that there is more to her condition than just a loss of language – that the cognitive deficits she has been experiencing stem from a more systemic breakdown in the connectivity of her neural circuits. Indeed, her depiction of musical melodies as geometrical images suggests that the synaptic connections between the visual and auditory systems in her brain have been altered in such a way that auditory inputs are now registered in her consciousness as images. As Elie loses more and more neurons and brain tissue, the severed links in her neural circuitry continue to proliferate, further eroding her ability to integrate inputs from different regions of her brain into a unified experience of consciousness. Thus, her inner world gradually becomes a blur that threatens to engulf her. Elie herself suggests as much when, during a consultation with Hiroji, she describes her current mental state with the ominous prediction that “soon, there will be no inside” (12).

After placing Elie on a surveillance MRI regime that continues to show a widening imbalance between her left and right brain hemispheres, Hiroji confirms that she is suffering from a degenerative condition that is slowly killing all the neurons and glia in her brain. But

although he is able to keep close track of the structural damages caused by her condition, he cannot determine exactly how this damage is affecting the patterns of connectivity in her brain, let alone understand how this ongoing rewiring is affecting her inner world. In this sense, Hiroji's efforts to understand Elie's condition work to emphasize the gap between neuroscience's growing understanding of brain structure and its still very restricted understanding of brain *function*. As neuroscientist Terrence Sejnowski explains, "pinning a broad label like 'vision' or 'motor' on a brain region is a poor substitute for understanding how it works" (168). In the absence of such an understanding, Hiroji has to rely on Elie's paintings to get a sense of how the structural changes happening in her brain are affecting both her brain function and her conscious experience of self. But once Elie loses her motor functions and, with them, her ability to paint, Hiroji loses all access to her inner world. Elie continues to communicate with Hiroji by calling him and then tapping a kind of morse code into the phone receiver – a gesture that confirms that she has retained some form of self-awareness despite the atrophied tissue and growing "disconnections" in her brain circuitry. However, the novel underscores that Elie's consciousness is now completely foreclosed to Hiroji and, by extension, to neuroscience at large. In this sense, Elie's poignant case history works to emphasize both the fragility of the self – its contingency on synaptic connections that can be disassembled by various memory disorders – and neuroscience's still very uncertain grasp of how different regions of the brain interact to make us who we are and, conversely, to erode our sense of self when things start to break down. This gap in neuroscientific knowledge is further reinforced in the passage in which Janie describes a letter that Hiroji once received from a patient who had recently been diagnosed with Alzheimer's. In it, the man asks, "*How much circuitry, how many cells have to become damaged before I, before the children my person know, is gone? Is there a self buried in the amygdala or the*

hippocampus? ... I would like to know which part of the mind remains untouched, barricaded, ... the absolute centre of who I am” (16, emphasis in the original). Thien ends the passage abruptly, leaving the man’s words to hang in the air as if to emphasize that modern neuroscience is far from being able to answer his query. However, this anxiety over the need to protect the integrity of the self from potential failures in neural connectivity continues to haunt the narrative as a whole, taking on wider sociopolitical resonances as Thien transfers the questions posed by Hiroji’s patient to the context of Janie’s own experiences as a subject of diasporic trauma.

Indeed, while Thien is clearly intrigued by the “disconnection syndromes” that can emerge from overt brain lesions and degenerative brain conditions, what she seems most interested in are those failures in connectivity that emerge from experience, particularly from the kinds of traumatic events that can frequently accompany diasporic displacement and postcolonial struggle. In *Certainty*, this concern with the synaptic failures engendered by trauma is foregrounded in the scene in which Gail and Ansel discuss the contingencies surrounding memory retrieval. Gail reveals that her radio interviewees will sometimes “remember things they haven’t thought about in years,” and accounts for this curious phenomenon by referencing Nietzsche’s argument that memory loss is a survival mechanism, for “the ability to forget is what brings us peace” (85). Gail’s comment prompts Ansel to respond that Nietzsche “was on to something in a biochemical way, too. If there’s a trauma, or a difficult memory, sometimes that severs the links. The memories themselves don’t disappear, but you can’t find your way back to them, because the glue that connects the different streams is somehow dissolved” (85). In *Dogs at the Perimeter*, Thien builds upon this insight by suggesting that although trauma-driven changes in the neurobiological self may not be as readily visible as the changes created by degenerative brain conditions such as the one suffered by Elie, their effects are no less material

or devastating. Thien illustrates this point by examining the far-reaching effects of the fear conditioning tactics that the Khmer Rouge regime deployed in order to maintain its pervasive control over the Cambodian population during and in the aftermath of the revolution.

Specifically, the novel relates how the Khmer Rouge government – or “Angkar,” as it called itself – systematically conditioned its people to sever all the ties that might connect them to their previous life and their families. Children in particular were indoctrinated to eradicate all the memories of their past and look to Angkar as their only source of filiation – a practice that facilitated their subsequent recruitment as Khmer Rouge cadres and labour camp leaders. Thus, Janie recalls how, in a chilling perversion of the Buddhist doctrine that the origin of suffering is attachment, a work camp supervisor instructed her and her brother to “cut loose” all the memories of their loved ones. In Janie’s words,

He called us the new people, he said we must abandon our diseased selves, we had to cut loose our dreams, our impurities, our worldly attachments. To pray, to grieve the missing, to long for the old life, all these were forms of betrayal. Memory sickness, [he] called it. An illness of the mind. (79)

The novel suggests that this doctrine of detachment became deeply entrenched in the minds of the children who lived through the revolution not only because it was imposed through various forms of violence, but also because, in many cases, it was actively reinforced by their parents and loved ones. Indeed, Thien invokes how, recognizing that having a family and a life story made their children more vulnerable, many parents encouraged their children to shed their old identities and forget about their families. A case in point is that of Janie’s childhood friend Bhopan, who relates that her mother instructed her and her sister to flee to work camps at opposite ends of the country and claim they were orphans once they had reached their respective

destinations (124). Similarly, Janie recalls being selected to join a children's brigade in a faraway district and clinging to her mother in a desperate attempt to escape familial separation, only to be pushed away – “gently, so gently that [she is] not sure if [she] imagined it” (97). The significance of this gesture is lost upon Janie's childhood self, but the circumstances suggest that, by pushing her away, her mother was trying to protect her from the dangers that familial attachment posed under the Khmer Rouge regime.

In an added layer of complication, Thien illustrates how the Khmer Rouge kept obsessive records of the biographies and family relationships of the entire population, and used its knowledge of these “networks of connection” to hunt down potential traitors and their families (107). The fear that their life story might be used to “destroy [them] and all the people [they] loved” led many civilians to adopt false identities, so that, by the time the regime fell, “nearly everyone” had accumulated “many aliases” (25; 157). The novel suggests that this phenomenon, coupled with the doctrine of detachment that the Khmer Rouge instilled in the population at large, but especially in children, engendered an entire generation of Cambodians for whom “names were empty syllables, signifying nothing, lost as easily as a suit of clothes, a brother or a sister, the entire world” (161). Thus, aliases and discarded identities proliferate as the novel begins to untangle the past lives of the characters who lived through this traumatic period in Cambodia's history. We learn, for instance, that Hiroji's brother James had to assume the name of Kwan in order to escape execution – hence his disappearance from the official records kept by the Khmer Rouge and later compiled by the Documentation Center of Cambodia in preparation for the War Crimes Tribunal. Meanwhile, the birth name of Nuong, the boy whom Hiroji cared for during his time in Cambodia, is never revealed. As Nuong himself says to Hiroji when they re-connect many years after the revolution: “I don't even know if that's my name. It's what my brothers

called me. It's just the name I remember" (160). Janie's birth name remains similarly elusive: her Khmer name, Mei, turns out to be an alias that she adopted at the suggestion of a Khmer Rouge cadre who advised her that "if you want to be strong... you have to become someone else. You have to take a new name" (92). But perhaps the most haunting example of a character who learns to survive by "cleavi[ing] his soul" (107) and eradicating the memories of his past is that of Janie's brother Sopham (later known by the alias "Rithy"), who becomes so adept at "concealing himself like a stem overlaid with branches" (102) that he quickly rises through the Khmer Rouge ranks to become the youngest interrogator at a prison camp.

As Troeung argues, Thien highlights the multiple forms of fragmentation suffered by Cambodian refugees in order to expose the limits of biomedical and psychiatric models that highlight the "closed interiority of trauma" while ignoring the historically situated circumstances from which it arises ("Witnessing" 157). But while Troeung is interested in Thien's use of "Khmer Buddhist notions of health and healing" to question the "cognitive imperialism" associated with "Western epistemologies of healing and trauma recovery," my interest lies in her use of neuroscientific tropes to question the psychiatric and biomedical construction of trauma as a phenomenon that is primarily psychic in nature ("Witnessing" 159). On the surface, the fragmentations suffered by Thien's characters recall the psychoanalytic understanding of trauma as a psychic wound that is not readily locatable in the past, but "returns to haunt the survivor later on" through intrusive dreams and flashbacks (Caruth 3-4). Indeed, for all of the characters in the novel, the past remains largely inaccessible except in the form of flashbacks and nightmares that continuously disrupt the lives they have constructed for themselves in the present. James is able to escape execution and rebuild his life as Kwan, but he remains haunted by dreams of his missing wife and child (204); Nuong tries to embark on a new life as Nick in

America, but the “broken edges” of his previous selves resurface time and again, “injuring him every time he moves” (229); Sopham clings to the memory of his sister long enough to find her and lead her to safety at the Vietnam border, but his subsequent suicide suggests his inability to live with the memories of the atrocities he committed as an interrogator (138). Janie is able to construct a seemingly stable identity for herself as a researcher, wife, and mother in Canada, but when memories of her childhood in Cambodia begin to resurface, she realizes that she has “too many selves and they no longer fit together” (143). Yet despite the affinities it shares with psychoanalytic understandings of trauma such as the one formulated by Cathy Caruth in her seminal work of trauma theory *Unclaimed Experience*, Thien’s depiction of the trauma experienced by her characters works to problematize the Cartesian dualism reflected in psychoanalytic distinctions between psychic and bodily trauma. We might recall that, drawing on Freud’s *Beyond the Pleasure Principle*, Caruth argues that

... the wound of the mind – the breach in the mind’s experience of time, self, and the world – is not, like the wound of the body, a simple and healable event, but rather an event that... is experienced too soon, too unexpectedly, to be fully known and is therefore not available to consciousness until it imposes itself again in the nightmares and repetitive actions of the survivor.

(3-4)

In short, not only does Caruth theorize psychic trauma as an immaterial phenomenon that occurs entirely independently of the biological body; she also posits that it is *precisely* because of this immateriality that “wounds of the mind” are notoriously difficult to assimilate. This mind/body dualism raises two interrelated problems: first, it reinforces an understanding of psychic trauma as a “functional” (as opposed to “organic”) disorder that occurs entirely independently from

biological processes and is thus “all in the [subject’s] mind” – a perception that, as Kandel explains, has all too often contributed to the social stigmatization of traumatized subjects (336).²⁸ But more importantly for the purposes of our discussion, the Cartesianism implicit in Caruth’s model elides the fact that, as trauma scholar Iddit Dobbs-Weinstein points out, “mental experiences” emerge from the “concrete experiences” of “materially... and historically constituted bod[ies]” (104). Such an omission becomes especially problematic in postcolonial and diasporic contexts, where experiences of trauma frequently arise from racialized forms of exclusion and violence. In a recent article on Thien’s short story collection *Simple Recipes*, Cho challenges this longstanding tendency to read trauma as a purely psychic phenomenon, insisting that “there is a materiality to [diasporic] melancholia that illuminates the violence of processes of social production and reproduction” (“Affecting Citizenship” 109). Emphasizing the need to engage with this materiality, and challenging the Cartesianism of dominant frameworks for understanding diasporic trauma, *Dogs at the Perimeter* suggests that the psychic and embodied aspects of this phenomenon are deeply interconnected, and that the language and metaphors provided by contemporary neuroscience might offer a useful framework for thinking through this mutually affecting relationship. Indeed, contrary to Caruth’s insistence on the immateriality of psychic trauma, Thien underscores that part of what makes this phenomenon so devastating is *precisely* its underlying materiality, which is manifested in its ability to reshape the neural networks that enable us to think, remember, feel, and engage with the world around us.

Before examining how Thien’s novel engages with the neurobiological basis of trauma in *Dogs at the Perimeter*, a few comments about the difficulties of mapping such connections are in order. Kandel has noted that understanding the biology of psychological conditions like post-traumatic stress disorder is an extremely difficult task because, unlike overt brain lesions and

degenerative brain conditions, such disturbances cannot be correlated with “clearly discernible structural damage” (337). However, functional neuroimaging studies of patients with post-traumatic stress disorder have suggested that trauma alters the neural connectivity of two key brain regions associated with memory and emotion: the hippocampus, a brain region central to the retrieval and contextualization of conscious memories, and the amygdala, a brain region that participates in the production of emotions and initiates fear responses (Hughes and Shin 2011; Sripada et. al 2012). In other words, there is growing evidence that, although trauma may not generate the kinds of synaptic “disconnections” associated with overt brain lesions, it *can* engender “malconnections” in the hippocampus and the amygdala, thereby disrupting our ability to process the memories and emotions that make us who we are.²⁹ Still, because trauma involves disturbances in higher mental functions like thinking and feeling, which are mediated by an extremely “complex neural circuitry,” its neural basis “remains incompletely researched and understood” (Kandel 338; Hughes and Shin n.pag.).

In *Dogs at the Perimeter*, Thien negotiates the gaps in the current neuroscientific understanding of trauma in a poignant and nuanced way: instead of attempting to represent the neurobiology of trauma directly, she alludes to it obliquely both through the narrative form of the novel, and through the tropes she uses to invoke her characters’ conflicted relationship to the past. The fragmented, non-linear structure of the novel offers a formal enactment of the neuroscientific principle that, if experience can strengthen pre-existing connections between neurons and even trigger the creation of new synapses, it can also erode these connections, disrupting the flow of information in the neural circuits that participate in the retrieval and consolidation of memories (Kandel 215). Thus, with its constant shifting back and forth between the past and present and its juxtaposition of the fragmented memories of a cluster of characters

whose stories are linked, but in ways that have been obscured by the effects of time and experience, the form of the novel recalls a neural network whose connectivity has been eroded by trauma. Thien reinforces this motif of synaptic “malconnection” by dividing the novel into sections by character and then assigning two separate sections by the protagonist – one under her current name “Janie” and another under her Khmer alias “Mei.” This structuring device, which frames Mei’s narrative as a displaced stream of Janie’s memory, evokes the way in which trauma can disrupt the synaptic connections that underpin a person’s sense of self. This self-fragmentation becomes increasingly evident as Janie sifts through the files that document James’s disappearance during the revolution, and begins to undergo a resurgence of her own childhood in Cambodia. Forced to confront these unassimilated episodes of her past, Janie feels like something has “broken and come undone” inside her, so that she can no longer contain the fragments of her previous selves (140).

The “malconnections” established through the formal structure of the novel are further reinforced by a series of spatial tropes that liken the memory disruptions suffered by traumatized subjects to fading signposts in a topographic map. For instance, in the passage in which she recalls being forced to leave her mother’s bedside as she was dying in the work camp infirmary, Janie describes her subsequent suppression of this painful memory as an erasure of the landmarks that might have led her way back to the homespaces she inhabited as a child: “A space grew around me, it rose from the soil, a space in which there were no doors, no light or darkness, no landmarks.... I saw myself as I had been many years ago, carried by my father. He swung me down and laid me in my mother’s arms. I carried this image with me as I walked away... [t]urning so completely away from it, [that] the image slowly disappeared” (121). Through this description, Janie offers a spatialized representation of the same problem Ansel

alludes to in *Certainty* when he states that trauma can “dissolve” the synaptic links between the multiple neural circuits that house our memories, making it difficult for us to find our “way back to them” (85). Thien’s use of spatial and cartographic metaphors to invoke this problem is especially fitting, since the region of the brain that is thought to be largely responsible for integrating context into conscious memories – the hippocampus – also houses our cognitive maps of the external world, and is thus central to the production and maintenance of spatial memory (Sripada et. al 242; Kandel 298-306). Moreover, as Kandel explains, one of the key ways in which our brain can retrieve and consolidate memories that are distributed across different brain systems – or different “streams of memory,” as Ansel puts it – is by situating them within a spatial context. Kandel illustrates this point through a discussion of his own recollections of Kristallnacht in Vienna:

I think back and recall the two police officers coming to our apartment and ordering us to leave on the day of Kristallnacht.... I can visualize the worried expression on my mother’s face, feel the anxiety in my body, and perceive the confidence in my brother’s actions while retrieving his coin and stamp collections. Once I place these memories in the context of the spatial layout of our small apartment, the remaining details emerge in my mind with surprising clarity. (280)

Read in light of Kandel’s comments regarding the role of spatial maps in the retrieval and contextualization of conscious memories, the images of fading landmarks that recur throughout *Dogs at the Perimeter* can be taken as references to the malconnections that trauma can generate in the neural circuits that enable us to carry out these functions. The novel demonstrates how such disruptions can not only compromise the ability of traumatized subjects to navigate the

memories of their past and thus maintain a coherent sense of self, but can also disrupt their ability to consolidate and contextualize emotional memories in their present lives. In Janie's case, this ongoing disturbance becomes apparent through the telling breaks in grammatical structure that occur whenever she speaks about her son Kiri. Throughout the novel, she constantly shifts the terms of address she uses to identify the boy, switching back and forth between his first name and the possessive identifier "my son" – a pattern that suggests her underlying inability to bridge the gap between her mental image of Kiri, the affective responses triggered by his image, and the boy's conceptual status as her child. Through these subtle grammatical discontinuities, Thien invokes how the lasting material traces of trauma can compromise the neural circuits that might enable diasporic subjects to engage meaningfully not only with the memory of those they have left behind, but also with the individuals and communities with whom they share their current lives.

As mentioned above, recent neural imaging studies have suggested that, in addition to altering the connectivity of the hippocampus, thereby impairing subjects' ability to consolidate and contextualize conscious memories, trauma also alters the connectivity of the amygdala – a region of the brain that is linked to the production of emotions and is crucially implicated in the initiation of fear responses. One important feature of the amygdala is that it stores information *without* our conscious awareness, thus contributing to what neuroscientists term "implicit" memory – that is, the kind of memory that underlies our perceptual and motor skills, and is "recalled directly through performance, without any conscious effort or even awareness that we are drawing on memory" (Kandel 132). This form of memory functions differently from explicit memory, which draws on information that is "explicitly available for conscious recollection" and is thus central to the construction of our self-concept (LeDoux, *Synaptic Self* 97; 28). As LeDoux

explains, the neurobiological self is constructed and maintained through the interaction between implicit and explicit memory processes. The amygdala contributes to implicit memory by gathering sensory information *directly* from the various sensory systems through which we process the external world and then using this information to trigger emotional responses – all of this without us ever becoming aware that this operation is taking place (LeDoux, *Synaptic Self* 214). This configuration enables the amygdala to “respond to potentially threatening stimuli before we fully know what the stimulus is,” a feature that “can be very useful in dangerous situations” (LeDoux, *Emotional Brain* 164). But in addition to receiving information about the world from the brain’s sensory systems, the amygdala also receives inputs from the hippocampus, which “by virtue of its role in relational/configural/spatial processing... provides the amygdala with information about a context in which the emotional [response] is taking place” (LeDoux, *Synaptic Self* 216). Thus, the way in which we respond to emotional situations depends upon an interplay between the conscious or “explicit” memories mediated by the hippocampus and the implicit memories mediated by the amygdala and other unconscious processors.³⁰ This interplay works to coordinate learning across different brain systems, modulating our responses according to the emotional situation at hand and thus promoting the “development and unification of the self” (LeDoux, *Synaptic Self* 322). But, as Kandel and LeDoux both explain, the implicit and explicit memory processes that inform our emotional responses do not map neatly onto one another – a problem that becomes especially evident when we experience a traumatic event (Kandel 133; LeDoux, *Synaptic Self* 322). During a traumatic experience, the amygdala will record a wealth of information about the situation at hand, *including stimuli we may not be consciously aware of*, with the result that it might form associations between these neutral stimuli with the original trauma. And, as LeDoux explains, because these connections are formed

implicitly, without our conscious awareness, “those stimuli might on later occasions trigger fear responses that will be difficult to understand and control, and can lead to pathological rather than adaptive consequences” (*Synaptic Self* 225). There is also growing evidence that, aside from altering the connectivity of the amygdala, leading it to develop fear responses to neutral stimuli and thus putting it in a state of heightened “responsivity,” trauma might also alter the synaptic links between the amygdala and the hippocampus, disrupting the ability of the latter to “modulate amygdala activity according to context” (Hugues and Shin par 6; Sripada et. al 242, 246). In short, current neuroscientific knowledge suggests that, by disrupting the synaptic links that help keep the amygdala and the hippocampus on the same track, trauma can engender an embodied (and not just psychic or mental) dissociation between the implicit and explicit memory processes that make us who we are.

In *Dogs at the Perimeter*, this dissociation between the implicit and explicit aspects of the neurobiological self is invoked through Janie’s struggle to maintain her self-identity as a neuroscientist with “expert” insight into the material basis of memory. Throughout the narrative, Thien mobilizes the tropes of scientific objectivity and modest witnessing to stage an ongoing tension between Janie’s explicit self-construction as an objective witness to the neurobiology of various memory disorders and her subjective experience as a trauma survivor still haunted by the fear responses she learned as a child. Of particular significance in this regard is the way in which Janie’s trajectory as a trauma survivor turned neuroscientist mirrors the life story of Eric Kandel as it is chronicled in his 2006 memoir *In Search of Memory: The Emergence of a New Science of Mind*. In this neuroscientific incarnation of what Alaimo terms the “material memoir,” Kandel interweaves the story of his personal quest to understand his identity as a Holocaust survivor with an account of contemporary neuroscience’s ongoing efforts to “understand the mind in

cellular and molecular biological terms” (403). But while Kandel’s memoir reflects a relentless optimism that, despite its current limitations, neuroscience will one day be able to shed light on the neurobiological basis not only of memory and selfhood, but also of psychological conditions like post-traumatic stress disorder, Janie’s trajectory works to emphasize how difficult it is to understand the workings of trauma even when one is equipped with “expert” insight into the neurobiological activity of the brain. This tension becomes increasingly evident as Janie comes to realize that her possession of specialized neuroscientific knowledge cannot forestall the far-reaching effects of the fear conditioning she experienced as a child in Cambodia.

Janie’s self-construction as an objective witness to the neurobiology of memory is heavily informed by her experiences growing up as the foster daughter of a historian of science whose house was filled with books that detailed the life and work of various scientific figures – most notably, the neuroscientists Santiago Ramón y Cajal and Alexander Luria (22). Shortly after moving in with her foster mother, Janie – then known by her Khmer alias “Mei” – asks Lena to give her a new name, presumably in an attempt to distance herself from her traumatic past and construct a coherent, livable identity for herself in the present. As she grows accustomed to her new life and identity, Janie finds an unexpected sense of comfort in Lena’s books and papers. As Janie puts it, “[f]rom the time I was sixteen years old, I worked... helping Lena organize her documents.... I liked the idea that I could stand in her place and find my way along the avenues she had built, the knowledge she had accumulated” (22-23). Drawing parallels between the acts of sorting documents and sorting one’s memories, the novel constructs Janie’s obsession with organizing her foster mother’s documents as a displaced attempt to assert some form of control over her haunting past. Thus, Janie gravitates towards Lena’s papers and books because she seems to associate them with the promise of epistemic certainty – a promise that she

continues to pursue later on as an adult through her work at the Brain Research Centre in Montreal. Now a neuroelectrophysiologist in her own right, Janie spends her days recording and measuring the electrical activity of brain cells – a skill that seems to give her privileged insight into the neurobiological underpinnings of memory and trauma. Speaking about her work harvesting the brain cells of *Aplysia*, the same marine mollusk that is featured in *In Search of Memory* as the protagonist of Kandel’s seminal experiments on the biological basis of memory, Janie says, “I feel as if I can operate on *Aplysia* blindfolded: first, removing a tangle of nerves, then, carefully, delicately, extracting a particular neuron and its spindly axon, the axon sagging out like a fishing line” (150). Her statement suggests that, just as she once looked to Lena’s books and papers as sources of certainty, Janie now associates her work with *Aplysia* with the promise of a certain knowledge that might enable her to neutralize the uncertainties that pervade her past.

Janie attempts to share this sense of security with her son Kiri by teaching him numerous facts about the neurobiological activity of the brain. For instance, she takes great comfort in the thought that Kiri “knows about pipettes and single-unit recording... that there are neurons and also glia, that *Aplysia* is a kind of marine snail, and that the brain, full of currents and chemistry, is never at rest” (149). Thus, in a scene that recalls Kandel’s metaphorical description of synaptic transmission as a “conversation between nerve cells” (90), Janie and Kiri play-act the electrochemical process whereby neurons fire signals to each other:

Here it comes: my signal amp is connected to a speaker, so we can hear the cell itself. *Boom. Boom.* It sounds like artillery fire, like a parade.

This is Kiri’s favourite part. “What’s he saying?” My son asks.

I close my eyes, listening. “He’s saying, ‘Open the door, let me in! I have a message!’”

“Come in, come in,” Kiri whispers. “Tell me.” (151)

The sense of reassurance created by this moving exchange between mother and son is punctured, however, as Thien underscores the gap that remains between the neurobiological data Janie gathers in her lab and the mental states these data are ultimately meant to describe. Kiri points to this disconnect inadvertently when, after listening to his mother’s single-unit recording of the firing nerve cell, he asks the philosophical question, “where do thoughts come from, Momma?” to which Janie replies with the equally abstract remark, “From what we see. From the world inside us” (150). Of course, what Kiri presumably wants to know, and what Janie’s explanation fails to elucidate, is *how* this translation from the material to the immaterial occurs – in other words, how the neurobiological activity of the brain ultimately produces the inner world that constitutes the self. In a moment that further emphasizes the difficulty of “translating philosophical questions about the mind into the empirical language of biology” (Kandel 403), Kiri continues to probe the limits of Janie’s empirical methods for studying the brain, this time asking her whether thoughts can be “grown in a dish,” like the nerve cells she harvests in her laboratory (150).

The contradictions exposed in the above scene work to underscore the limits of scientific reductionism, which has long been the predominant approach to the study of the brain.³¹ Indeed, as indicated by the novel’s many references to lab experiments involving *Aplysia*, much of what is currently known about the neurobiology of memory has come from experiments that study the neural connections behind mollusk’s gill-withdrawal reflex. Kandel, who was one of the first neuroscientists to use *Aplysia* in his research, explains that he chose this mollusk as his

experimental subject because he “wanted an animal with a simple reflex that was controlled by a small number of large nerve cells whose pathway from input to output could be identified,” thus enabling him to “relate the changes in the reflex to changes in the cells” (145).³² Many experiments involving *Aplysia* take the further reductive step of harvesting “a single sensory and a single motor neuron that grow synapses between each other in a dish” (LeDoux 165). Thanks to these and other reductionist techniques, modern neuroscience has gained an unprecedented understanding not only of the signaling mechanisms that neurons employ in order to communicate with one another, but also of the neural circuitry behind various specialized brain functions. And yet, as Kandel stresses, and as Thien subtly indicates through her depiction of Kiri’s anxieties as to whether or not thoughts can be “grown in a dish,” neuroscientists still lack “an adequate theory of how an objective phenomenon, such as electrical signals in the brain, can cause a subjective experience, such as pain (Thien 150; Kandel 381). Moreover, as Kandel explains, “because science as we currently practice it is... reductionist... while consciousness is irreducibly subjective, such a theory lies beyond our reach for now” (Kandel 381). By highlighting this epistemological uncertainty, Kiri’s questions regarding the origins of conscious experience work to de-stabilize Janie’s pursuit of certainty via her work as a neuroelectrophysiologist.

Janie’s self-construction as a “modest witness” to the neurobiology of memory is eroded even further as the novel reveals the ongoing, implicit effects of the fear conditioning she experienced as a child. In a poignant reversal of the trope of the scientist as objective witness, Janie begins to display fear responses that place her on equal footing with the subjects (both human and non-human) she studies in her lab. Indeed, despite her efforts to maintain an aura of epistemological certainty and scientific objectivity around her laboratory, Janie’s description of

her research on *Aplysia* betrays a lurking sense that the boundary between herself and her “object” of study is much more permeable than she would like to think. For instance, in the same passage in which she declares that she would be able to operate on *Aplysia* even while blindfolded, Janie describes the mollusk in curiously gendered terms, noting that, “in the sea, she looks like a petal swirling through the water, her gills clapping softly together” (150). The empathic tone of this musing, coupled with its telling gendering of *Aplysia* as female, suggests a doubling between Janie and the sea slug whose brain cells she has harvested with “stoic precision” (149). This doubling is reinforced by the novel’s many intertextual references to Kandel’s memoir, which call to mind the Nobel laureate’s extensive discussion of the groundbreaking experiments in which he mapped the synaptic changes behind memory storage by applying electrical stimuli to the neural pathways of *Aplysia* (161). Crucially, Kandel describes how he subjected *Aplysia*’s brain cells to a form of fear conditioning, “training” them to associate a neutral stimulus with a stimulus “strong enough to produce instinctive fear” and thus habituating them to react to the neutral stimulus with an instinctive fear response (170; 343). In other words, Kandel subjected the neural pathways of *Aplysia* to the same kind of fear conditioning that can occur as a result of a traumatic experience, whereby the amygdala will form implicit associations between neutral stimuli and the original trauma, thus setting the stage for an ongoing recurrence of uncontrolled fear episodes (Kandel 343). It is perhaps inspired by these interconnections that Thien constructs a poignant parallel between Janie and *Aplysia* as fellow subjects of learned fear.

The ongoing effects of the fear conditioning that Janie experienced as a child are revealed in their full magnitude as the narrative leaps from the scene of her lab experiments with *Aplysia* to a fragmented account of the last in a series of recurring episodes in which Janie loses control

of her emotional and motor responses in the presence of her son Kiri. Janie alludes to these episodes several times throughout the novel, but never describes them in full detail. Instead, she describes the episodes through ambiguous phrases like “when the unthinkable happened” (27), “the first time it happened” (36), and “it happened once” (150), tacitly suggesting that the triggers that occasioned these episodes, as well as the full details of what occurred during them, are not available to her consciousness. When Janie is finally able to reconstruct the last of these instances, and recalls how she struck Kiri in the face twice as he attempted to soothe her, she describes her actions in terms that reflect her inability to control her body’s neurophysiological responses: “I didn’t know anymore, I couldn’t explain, how this could have happened, why I could not control my hands, my own body.... Our son didn’t understand and I saw that he blamed himself, that he tried so hard not to be the cause of my rage, my unpredictable anger” (153). Janie’s insistence on the unpredictability of her emotional responses, as well as her inability to maintain control over her movements, recall LeDoux’s description of the fear episodes experienced by PTSD subjects as “hostile takeover[s]” whereby the amygdala will come to dominate consciousness, triggering “alarm-related behaviors and... changes in body physiology” that can be extremely difficult to understand and control (*Synaptic Self* 226, 228). Through her devastating depiction of Janie’s troubled relationship with Kiri, Thien foregrounds how these learned responses can not only compromise subjects’ ability to forge new lives for themselves in the aftermath of trauma, but can also work to perpetuate trauma from one generation to the next. In other words, Thien invokes how, as Marianne Hirsch argues in her work on postmemory, the fear responses that take root in traumatized subjects can spawn “transferential processes – cognitive and affective – through which the past is internalized” by new generations “without fully being understood” (*Generation of Postmemory* 31). This

realization is not lost upon Janie, who comes to recognize that, despite her efforts to protect Kiri, the boy has internalized her learned fears, and now “aspires to a sort of perfection, as if it were up to him to keep us safe” (153).

Finally recognizing that her status as a neuroscientific expert has done little to forestall the learned fear responses that have “taken refuge” inside her (154), Janie finds herself in a position analogous to that of the neurological patients whose synaptic failures she describes at the outset of the novel. Thus, echoing the anxieties of the Alzheimer patient who wishes he could “barricade” the self that his children know against neural damage, Janie regrets not being able to guard the neural pathways that contain her dearest memories (presumably the essence of her self) from the damage that trauma has wreaked on them: “I remembered beauty. Long ago, it had not seemed necessary to note its presence, to memorize it, to set the dogs out at the perimeter,” she states (135). In this variation of the synaptic-link-as-spatial-landmark trope used throughout the novel, Janie likens the impulse to protect the neural circuits that encode her memories and emotions to a policing of spatial boundaries – an image that invokes the fierceness of her commitment to maintain the memory of her loved ones, yet also carries connotations of imprisonment and surveillance, suggesting a darker underside to this impulse. As Thien explained in a recent interview in which she talked about the dual meaning behind the title of the novel,

Janie needs to protect this childhood, this life from before.... But later on, this remembering means that all the heartache and violence of the revolution are embedded in her self and in her memories; she is actively guarding these memories against the outside world, and against the life she has made for herself in Canada. I think, for me, the question became: when can Janie let the dogs go?

... At what point does her love for those she has lost, and her responsibility to the past, become a prison? (qtd. in Leighton, n.pag.)

Thus, the double-edged image invoked by the title of the novel foregrounds what Troeung, in her discussion of *Certainty*, has identified as one of the central concerns of Thien's work: the question of how to reconcile the postcolonial impetus to "keep our gazes focused on a difficult past in order to combat historical erasure" with the duty to "take better ethical care of those who bear the burden of remembering" ("Forgetting Loss," n.pag.). According to Troeung, *Certainty* negotiates this tension by showing that "an ethics of representing trauma" must "allow a critical and lived space for forgetting when remembering threatens to re-injure" ("Forgetting Loss," n.pag.). In *Dogs at the Perimeter*, the potentially fatal costs of not allowing for spaces of forgetting – or not letting the dogs go, to use Thien's metaphor – are invoked through the figure of Sopham/Rithy, whose defiant refusal to forget his previous life as Mei/Janie's brother enables him to save her life, but arguably also compromises his ability to continue reinventing his own identity in order to survive.

Thien draws explicit links between the ethical question of how to ease the burden placed on remembering subjects and current debates about the biomedicalization of trauma in a moving passage in which Hiroji meditates upon his relationship with Nuong, the boy he has been taking care of in Cambodia, and "finally perceives [that there is] a limit to what Nuong will say and what he, Hiroji, will ever be able to understand" (229). Grasping for an answer to this void in understanding, Hiroji considers how modern neuroscience might help reduce Nuong's suffering, declaring that "[s]omewhere, now, a surgeon could burn a lesion into the boy's brain. It's possible to lessen Nuong's suffering if the boy accepts some degree of loss. They can turn down the volume on his emotions, pinch the air out of his sadness, turn him dull and pure as snow"

(231). The suggestion that Nuong's trauma might one day be treatable through neurosurgical means takes on important sociopolitical implications when considered in the context of the boy's experiences as a refugee claimant: earlier in the novel, we learn that Nuong was deported from the United States after making "too many mistakes, starting with the wrong friends, a quick temper, drinking, drugs, and finally a vicious fight that ended up blinding a man" (159). In short, Nuong's quick temper and erratic behavior, both by-products of his unresolved trauma, are labeled by the American state as biomedical "risks" that render him ineligible for the rights accorded to "normal" citizens. In her discussion of the biomedical management of Cambodian refugees in the United States, Aihwa Ong notes that, from the time they started arriving the United States in the late 1970s, Khmer Rouge survivors were constructed as bearers of mental health threats that might jeopardize the integrity of the American body politic and thus need to be normalized as willing subjects of the Western biomedical gaze ("Biopolitical Subject" 1244). Ong explains that the perception that refugees from Cambodia and other Southeast Asian countries were "disproportionally affected" by various mental health risks "stimulated the invention of a field called 'Southeast Asian Mental Health' that through the systematic naming and ordering of refugee illnesses, has [had] the effect of controlling and reproducing their minority status" ("Biopolitical Subject" 1247, 1244). By emphasizing Nuong's background as a deported refugee claimant, Thien situates his story firmly within the larger biopolitical context described by Ong. Thus, despite being motivated by a well-intentioned desire to ease the boy's suffering, Hiroji's speculations about the possibility of mitigating Nuong's trauma through neurosurgery inadvertently raise the spectre of a long history of biomedical interventions aimed at "normalizing" Khmer refugee populations affected by trauma.

Even though she brings this biomedical framework into question, Thien does not reject the insights offered by contemporary neuroscience altogether. In addition to highlighting the particularities that distinguish emergent neuroscientific approaches to trauma from their psychoanalytic counterparts, Thien explores the possibility of establishing a dialogue between neuroscientific and Buddhist frameworks for understanding trauma. Throughout the novel, Janie's neuroscientific inquiries into the nature of memory and consciousness are held in tension with her childhood memories of the Buddhist teachings she learned from her mother. As Troeung has suggested, this juxtaposition foregrounds the necessity of "recuperating elements of a Khmer Buddhist epistemology of healing and trauma recovery as an important part of witnessing the Cambodian genocide" ("Witnessing" 152). Troeung further explains that Thien's recuperation of Khmer Buddhism places particular emphasis on the importance of spiritual ritual in bringing about closure for Khmer Rouge survivors who, like Janie, suffer from "the affliction known among Cambodians as '*sramay* (ghost haunting), caused by the visitation of spirits... of family members or other loved ones who were murdered and not given proper burial rites'" ("Witnessing" 157). Troeung argues that the novel ultimately reinforces "incommensurability between Janie's experience of *sramay*... and her work as a brain research neurologist" ("Witnessing" 161). However, I would suggest that, instead of privileging the insights of Khmer Buddhism over those of neuroscience or vice versa, Thien highlights potential points of convergence between these seemingly divergent frameworks in order to emphasize that negotiating the complexities of trauma demands a collaboration between multiple (and sometimes conflicting) ways of knowing. In other words, Thien allows both of these modes of knowledge production to hang suspended alongside one another, emphasizing that although neither one of them can resolve the complex material, psychological, and spiritual effects of

trauma on their own, both of them can aid trauma recovery by offering valuable insights into the resilience of self – its capacity to accommodate not only multiple existences, but also multiple connections with others.

Aside from the importance of giving proper burial to deceased loved ones, another crucial insight that Janie must recover from her mother's Khmer Buddhist teachings is the recognition that the soul – or “*pralung*,” as her mother refers to it in Khmer – is capacious enough to carry and honour the lives and people we have left behind in our past while also allowing for the creation of new lives and new relationships in the aftermath of trauma. As Janie puts it when she recalls her mother's teachings,

The soul is a slippery thing. A door slammed too loudly can send it running. A beautiful, shining object can catch its attention and lure it away. But in darkness, unpursued, the soul, the *pralung*, can climb back in through an open window, it can be returned to you. We did not come in solitude, my mother told me. Inside us, from the beginning, we were entrusted with many lives. From the first morning to the last, we try to carry them until the end. (252)

The neuroscientific insights referenced throughout *Dogs at the Perimeter* work towards a similar philosophy of trauma recovery as the one contained in Janie's childhood Khmer teachings.

Indeed, the novel suggests that the value of neuroscience as a tool for understanding diasporic trauma lies not in its potential ability to mitigate the emotional import of traumatic memories through pharmacological or surgical means, but rather in its ability to shed light on the resilience of the neural circuits that enable us to think, feel, and engage with the world around us. As I have been arguing throughout, Thien underscores that this neuroscientific insight can help elucidate the interrelationship between the psychic and embodied/material costs of trauma, thus redressing

the Cartesianism implicit in dominant psychiatric models for understanding this phenomenon. But just as Cho has argued that this kind of engagement with the materiality of diasporic trauma can “enabl[e] a shift from focusing on *individual* injury to *collectivities* borne out of the losses of dislocation” (“Affecting Citizenship” 109), so too does Thien suggest that, aside from shedding light on the materiality of trauma, an engagement with neuroscientific understandings of the self could help illuminate some promising avenues for trauma recovery. This sense of possibility stems from the recognition that the same plasticity that makes our neural circuits vulnerable to the “malconnections” engendered by trauma also renders them capable of forming new synaptic connections. To borrow from LeDoux, “if the self can be disassembled by experiences that alter connection, presumably it can also be reassembled by experiences that establish, change, or renew connections” (*Synaptic Self* 307).

Once again drawing parallels between the dynamics of synaptic interaction and those of diasporic relatedness, *Dogs at the Perimeter* suggests that one key avenue for forging new synaptic connections may lie in creating new interpersonal connections with others. More specifically, the novel underscores the possibility that subjects of diasporic trauma might be able to reclaim their identities through empathic acts of collaboration that might enable them to share the burden of knowledge-seeking with other people who, like them, have also experienced unspeakable losses. Moreover, the novel underscores that being able to establish such connections is particularly vital for Khmer Rouge survivors who lived under a regime that viewed intimacy as “the ultimate threat to state control, something that [should] be repressed through state violence” (Troeng, “Witnessing” 160). Thien suggests that, in such a context, reclaiming the ability to make intimate connections can work as a powerful vehicle for trauma recovery. Fittingly, then, many of the characters in *Dogs at the Perimeter* attempt to reclaim their

personal history by helping others to make sense of their own life stories. As Thien herself has pointed out, Janie is able to reassemble the broken fragments of her life not through a “perfect rendering of her own story, but in her attempt to make a wholeness of another person’s story, in this case, the stories of James/Kwan and Hiroji Matsui” (qtd. in Lam, n.pag.). The possibility of reassembling the traumatized self by establishing new interpersonal connections is also invoked during the reunion between Hiroji and James/Kwan towards the end of the novel. Disconcerted by James/Kwan’s apparent indifference at seeing him for the first time in thirty years, Hiroji wonders whether his brother has forgotten who he is: “How could you prove to someone that you knew them? How could you prove that you were related by blood and something more than blood?” he asks himself (247). When Hiroji presses his brother to remember the family he left behind, James/Kwan thinks back not to his mother and brother, but to the wife and child he lost during the revolution, insisting that he looked for them everywhere but that “in the end,” he “had to give [them] up” (249). This fraught encounter suggests that if Kwan were to re-assume his old identity as James, as Hiroji hopes, he would be forced to relive the pain of losing Sorya and Dararith once again. The passage therefore suggests that instead of restoring old connections, the two brothers will have to create new ones. In short, Hiroji will have to learn to relate to James with the kind of empathy that, as Thien commented in a recent CBC interview, “comes from [the] acceptance of not understanding the full story... and letting that be.”³³

Ultimately, Thien emphasizes that forging these kinds of connections with others can provide a way out of the double-bind between remembering trauma at the risk of re-injuring those who have experienced it first hand and forgetting it at the risk of obscuring the losses from which it stems. Janie begins to surmise this possibility when, meditating on what her friendship with Hiroji has taught her, she recognizes that allowing for other connections (both neurological

and spiritual) to take root does not necessarily mean that she must erase old ones. In Janie's own words, "I could be both who I was and who I had come to be. I could be a mother and a daughter, a separated child, and adult with dreams of my own" (147). By way of conclusion, and to return to some of the questions I posed at the opening of this chapter, I wish to explore the implications of Janie and Hiroji's relationship – and the empathic modes of collaboration this relationship invokes – for current debates around the knowledge practices that are needed in order to grapple with the cognitive challenges posed by contemporary experiences of globality.

Towards an "Empathic" Collaboration Between Scientific and Literary Ways of Knowing

Thien's understanding of the knowledge practices required to negotiate the condition of globality – with all its problems and possibilities – is most powerfully reflected in the passage in which Janie and Hiroji begin to talk about Janie's past in Cambodia as they wait for their computer to "crunc[h] its way through layers of statistical analysis" (146). This initial vignette of the two scientists sorting through layers of statistical data telescopes out into an image of the same two people sharing a walk through a wintry landscape, talking leisurely as colleagues and close friends about the scientists and philosophers who have influenced their way of thinking. In Janie's words, "for hours we talked, roaming together, stopping at the wide branches of Gödel and Luria, the winter stillness of Heisenberg, the exactitude of Ramón y Cajal" (147).

Interestingly, the figures referenced by Janie and Hiroji all share an important commonality: they all formulated conceptual frameworks for thinking through the complex interactions that shape the world around us, while also recognizing that we can never know these interactions in full detail, and that, consequently, our representations of the world will always only be partial. From Heisenberg's formulation of the "uncertainty principle," to Gödel's creation of the

“incompleteness theorem,” to Luria’s use of narrative to bridge the gaps in his empirical observations of his neurological patients, the scientific references in this passage work to re-frame science not as a source of positive knowledge, but as a tool that might enable us to construct functional representations of the world in the face of doubt and uncertainty.

What emerges from this passage, then, is a recognition that, much like the visual arts and narrative fiction, science at its core is also concerned with questions of imaging and representation, of how to best manage the “resolution gaps” – to borrow a term used by neural imagists – between the complexity that surrounds us and our own imperfect attempts to capture this complexity. In this sense, the novel suggests that we have arrived at a cultural moment in which narrative fiction and neuroscience have converged on a similar problem: how to represent processes that are happening simultaneously, yet at varying temporal and spatial scales. This challenge, which neuroscientists refer to as the “levels” problem, has become a key focus of neuroscientific research in recent years. As Sejnowski explains, “if the study of neural circuits weren’t sufficiently complicated, it is now known that circuits are dynamic on many timescales.... In order to fully address the challenges posed by this constant flux, researchers must map many circuits at different stages of development and in many different environments” (170). In *In Search of Memory*, Kandel anticipated that resolving the “levels” problem would require a shift away from the reductionist study of “elementary processes” such as the functioning of single nerve cells and towards the study of the connections and interactions between various neural circuits (423). Neuroscientists are increasingly recognizing that this shift demands a collaboration between traditionally segregated disciplines, and are thus “welcoming into their ranks specialists from other more theoretical traditions (physics, computer science, and mathematics) to work together and devise ways of making sense of... raw data” (Sejnowski 188).

This climate of collaboration has given rise to projects such as the Human Connectome Project, which is drawing on the resources and expertise of various fields in its attempt to map how the different neural circuits that make up the human brain “are wired together, what the connections between them are, and how they function” (Baklajian, n.pag.). But even as they develop increasingly sophisticated tools for visualizing these networked interactions, neuroscientists frequently acknowledge the resolution gaps in the various imaging technologies they use to study the brain. As Martone and Ellisman explain, “[w]e... have at our disposal a battery of marvelous instruments and techniques that are capable of revealing truly astonishing features. Each one has its particular strengths but none can achieve everything on its own” (116).

In her latest work, Gayatri Spivak engages the “levels” problem from a literary perspective, arguing that contemporary experiences of the global cannot be understood in terms of the polarities between tradition and modernity, colonial and postcolonial.³⁴ According to Spivak, what we need instead are aesthetic and narrative practices that enable us to think in terms of the *simultaneity* of the global. As reflected in her use of non-linear temporalities that interweave contemporary events with the complex history of South East Asia, Thien shares Spivak’s understanding of globality as a condition that is characterized by the simultaneity between the colonial and the postcolonial, and between the local and the (seemingly) distant. Indeed, speaking about her depiction of the Khmer Rouge genocide in *Dogs at the Perimeter*, Thien has indicated that the novel narrates not just “Cambodia’s story but also a story of our generation, from Western presence and interference in Southeast Asia, to the flow of Marxist ideas into Vietnam, Cambodia and Laos, and the way those ideas were reshaped within the regional political discourse,” to Canada’s complicity in the UN’s continued recognition of the Khmer Rouge regime well into the 1990s, to the lives of “Cambodians who [now] live abroad,”

but who remain connected to Cambodia and its history (qtd. in Leighton). In both *Certainty* and *Dogs at the Perimeter*, Thien foregrounds the representational problem of how to capture this simultaneity through her sustained exploration of the capabilities and limitations associated with various visual and audio technologies. As Ty points out, Thien's attitude toward such media is "unconventional" in that it is "neither fully modernist nor postmodernist in attitude": even though she emphasizes the way in which these technologies construct reality, she also underscores their ability to "help us see and hear things we would miss otherwise" (48, 49). In *Certainty*, Gail's fascination with radio's ability to capture entire ecosystems of sounds is tempered by her recognition of the inherently entropic nature of radio transmission. As Gail puts it, "in radio, sounds might be translated into microwave signals and then shot at a satellite floating in space.... These signals are then broadcast back to us, but some parts always escape. Some parts turn their way back to Earth, and maybe they keep traveling forever" (106). Similarly, in *Dogs at the Perimeter*, Janie is captivated by the "magical" ability of telescopes and microscopes to "collapse space and time" even as she recognizes the various optical illusions and manipulations of light these technologies must rely upon in order to make the distant and the microscopic visible to the human eye (168). This tension between the search for the best instrument with which to capture the complex dynamics of globality and the recognition that none of these tools can capture everything on its own is a recurrent motif in both novels, and serves to foreground Thien's concern with the resolution gaps in her *own* medium, that of narrative fiction. As she has stated in interview, "[all] my life I've turned to fiction. It's my main form of expression. But... [t]here are questions that only science and nonfiction seem to answer, or even ask. I want a novel to be open to that. I'm trying to find the language to do that" (qtd. in Mudge, n.pag.).

Ultimately, Thien demonstrates a profound interest in realizing the potential for empathic collaboration that arises from the recognition that arenas of knowledge-production as seemingly divergent as neuroscience and narrative fiction not only share an interest in similar philosophical questions, but also struggle with the same representational problems. I have chosen to characterize the modes of collaboration that Thien is calling for as empathic because, in both *Certainty* and *Dogs at the Perimeter*, Thien repeatedly emphasizes that grappling with the totality we live in now is as much a question of *affect* as it is of cognition, since it involves negotiating those “visceral forces” that, as affect theory teaches us, always lie “beneath [or] alongside... conscious knowing” and produce feelings and sensations that can sometimes leave us feeling overwhelmed by the world’s apparent intractability” (Seigworth and Gregg 1). From the scenes in *Certainty* in which Gail and Jaarsma discuss the Mandelbrot set, and in which Gail’s parents and friends discuss the biology of mind at the dinner table, to the scenes *Dogs at the Perimeter* in which Janie and her foster mother Lena sift through Lena’s research notes together, and in which Janie and Hiroji confide in each other in the lab, both novels are filled with intimate moments in which Thien’s characters recognize the importance of helping and encouraging one another as they struggle to grasp phenomena that exceed their current understanding. Such moments work to underscore that, just as her characters must learn to relate to each other with “the kind of love that comes from [an] acceptance of not understanding the full story” (as Thien stated in a CBC interview), so too must actors on different sides of the disciplinary divide learn to make new connections while also respecting and empathizing with the gaps in their respective ways of seeing and knowing.³⁵ As well, these scenes emphasize that approaching interdisciplinary knowledge-making with an eye to the role that affect plays in knowledge production might also help to better account for the feelings of uncertainty,

defamiliarization, and otherness that can arise when we are confronted with epistemologies that exceed or challenge our conceptual categories, as well as the feelings of fascination, delight, and hope that can emerge when we find unexpected points of commonality between seemingly divergent methods of inquiry. In both novels, these insights are often mediated through artistic representations of scientific concepts such as the image of the Mandelbrot set in *Certainty* and Cajal's neural sketches in *Dogs at the Perimeter*, suggesting that the cognitive and affective challenges associated with knowledge-seeking call for creative responses that straddle the boundary between art and science. It is fitting, then, that Thien punctuates the scene of Hiroji and Janie working together in the lab with a reference to Santiago Ramón y Cajal, who was able to "infer the properties of living nerve cells from static images of dead nerve cells" through what Kandel describes as "leap of the imagination, perhaps derived from [Cajal's] artistic bent" (Kandel 61). By emphasizing that modern neuroscience was founded on what one neuroscientist has described as an "improbable melding of scientific and artistic practices" (DeFelipe 53), and filtering this reference through the image of the two friends Janie and Hiroji engaging in an act of intimate knowledge-sharing, Thien stages broader questions about the kinds of knowledge practices that are required to grapple with globalized processes happening at multiple spatial and temporal scales. Indeed, she enacts a shift from an objectivist and individualist model of knowledge making to a model of collaborative knowledge-making in which "experts" and "non-experts" work together to grapple with phenomena that exceed their current understanding. These instances of empathic knowledge sharing occur constantly in Thien's work, and entail collaborations not only between specialists from various disciplines, but also between specialists and non-specialists, as it does in the scenes from *Certainty* in which Gail and Jaarsma discuss the Mandelbrot set, and in which Gail's family and friends discuss the workings of the human mind.

Thien's emphasis on the need for these kinds of collaborations not only suggests potential avenues for a more fruitful interaction between scientific and literary ways of knowing, but also offers a hopeful corrective to modernization discourses which, dating back to the post-WWII era invoked in both novels, have framed scientific rationality as the key to global development, and transfer all agency to "experts" equipped with technical ways of seeing and interpreting phenomena. In place of this model of individual agency grounded in the specialized knowledge of the "modest witness," Thien constructs a model of collaborative agency in which diverse actors have to work together to try to understand processes happening at different scales of geography and time. Ultimately, Thien's novels hold out hope that such acts of empathic knowledge sharing might enable diasporic communities to negotiate the landscapes of uncertainty produced by the conditions of postcoloniality and globality while continuously challenging themselves to cultivate more competent and ethical ways of approaching these unknowns.

Chapter 3

“DNA both new and old”: Genetic Genealogy and Biosocial Activism in Larissa Lai’s *Salt*

Fish Girl

Asian Canadian writers have long questioned the validity of traditional genealogy as a means of establishing kinship relations. For instance, Wayson Choy’s 1999 memoir *Paper Shadows: A Chinatown Childhood* explores the problems associated with the genealogical search for ancestral roots in a Chinese-Canadian context haunted by the familial separations that were triggered by the *Chinese Exclusion Act* in the early 20th century. Choy’s memoir highlights how, in the context of such dispersals, the search for genealogical roots persistently turns up missing or incomplete archival records – “paper shadows” that frustrate the search for a direct line of ancestry. But cultural, theoretical, and literary conversations around the problems associated with diasporic genealogy have undergone an interesting reconfiguration in the last decade or so as a result of recent developments in genetic science. As sociologist Alondra Nelson explains, the sequencing of the human genome at the beginning of the new millennium “precipitated a change of paradigms in genetics research, from an emphasis on what then president Bill Clinton, in his announcement of this scientific achievement, described as ‘our common humanity’ ... to a concern with molecular-level differences among individuals and groups” (“Bio Science” 759). This line of inquiry has led, among other things, to the widespread commercialization of genetic ancestry tests that offer to analyze consumers’ DNA samples to shed light on their “family history, ethnic affiliation, or ‘biogeographic ancestry’” (Nelson “Factness” 253). Such technologies promise to quell the uncertainties associated with diasporic genealogy by enabling diasporic “root-seekers” to trace a biological connection to their homelands (Nelson, “Factness,” 254). Addressing this phenomenon from an Asian Studies perspective, Aihwa Ong has noted that

technologies such as genetic ancestry testing hold a powerful appeal for dispersed Chinese communities because they offer the possibility of establishing a concrete biological basis for the “collective imaginings and affective mappings of identities” that inform their kinship identifications (“Asian Biotech” 3).

Published shortly after the sequencing of the human genome, and amidst the ensuing corporate race to identify and capitalize on the genetic information of racialized populations, Larissa Lai’s novel *Salt Fish Girl* (2002) actively engages with ongoing debates surrounding the geneticization of racialized and diasporic identities. Set in a fictional industrial city of the near future, the novel narrativizes the diasporic search for genealogical roots in a globalized landscape characterized by transnational mobility and environmental risk. The plot centers around Miranda Ching, a second generation Chinese-Canadian girl who possesses two very peculiar features: an overpowering bodily odour resembling the pungent smell of the durian fruit, and two reptilian-looking fistulas that ooze with bodily secretions whenever she is affectively aroused. These uncanny traits cast an uncomfortable doubt on Miranda’s biological origins: it remains unclear whether they are the product of a genetic variant inherited from her Chinese ancestors, a gene transfer from a durian fruit eaten by her mother around the time of her conception, or a mutation triggered by environmental exposure. Lai offers an apparent answer to the questions raised by Miranda’s ambiguous embodiment by casting her as a modern-day reincarnation of Nu Wa, the “snake goddess” who is said to have engendered the Chinese nation in Chinese folk tradition. Fusing Chinese folk belief with genomic metaphors, Lai invites us to read Miranda’s peculiar phenotype as a potential imprint of Nu Wa’s ancient reptilian genotype – a gesture that not only seems to re-contain the uncertainties generated by Miranda’s peculiar bodily features and affects,

but also evokes the possibility of using knowledge derived from the genomic sciences to fulfill the diasporic desire to reconnect with the ancestral past.

Lai's figuration of Miranda as a genetic descendant of Nu Wa offers a timely commentary on the popularization of genetic genealogy as a means of establishing diasporic claims of belonging. Moreover, by invoking the possibility of tracing the biogenetic roots of Miranda's queerness, this genomic reimagining of Chinese folk mythology also calls to mind the recent cultural fascination with tracing the biogenetic origins of sexual orientation (through projects like Simon LeVay's controversial work on the "gay brain").³⁶ While Lai's novel emphasizes the affective appeal of such biogenetic projects, it also highlights their problematic underside, showing how the impulse to trace one's genetic genealogy can work to reinscribe notions of racial "purity" and "natural kinds" which are often deployed to marginalize racialized and queer subjects alike. Thinking through Lai's ambiguous depiction of the relationship between genomic discourses and the search for genealogical origins, this chapter advances two claims. The first is that Lai seizes on this phenomenon not just to mount a critique of the hegemonizing effects of contemporary biotechnology, as most existing critiques of *Salt Fish Girl* have already pointed out, but *also* to imagine ways in which genomic knowledge might be remobilized to challenge the racist, heteronormative, and scientifically reductive versions of genetic science on which bioimperialism is predicated.

Previous scholarship on the novel has stressed that Lai troubles received notions of origins, both biological and cultural, in order to carve out a space for a coalitional politics of resistance that addresses the intersecting forms of oppression faced by queer women of colour (Reimer 2010; Phung 2012).³⁷ But while several critics have insisted that Lai's queer anti-imperial project hinges on a reclamation of various dimensions of embodied experience,³⁸ her

use of genomics-inspired tropes to enact this reclamation remains unexplored – a curious omission given the novel’s explicit interest in exploring the ways in which the complex interaction between “DNA both new and old” (*SFG* 259) informs human and non-human embodiment. In the interest of elucidating the political stakes of this re-mobilization of genomic knowledge, in the second part of my analysis I argue that Lai’s re-imagining of the “genomic” self enables a shift from a model of diasporic “biosociality” (Rabinow 1996) based on a shared genetic heritage to a model of *biosocial activism* that evokes the possibility of forming biocultural coalitions between Asian Canadian diasporas and other constituencies affected by contemporary bioimperialism – most notably, the seed sovereignty movements that have flourished across the Global South in recent years in response to the corporate patenting and commercialization of genetically modified seeds. This model of biosocial activism finds its clearest manifestation in the agroecological practices of the “Sonias,” the genetically engineered factory workers who resist their inscription as bioavailable bodies by exploiting the cross-pollination between GMO and non-GMO plants to reclaim control over their own reproduction. While the Sonias’ activism is not without its problems (a central one being that it roots anti-imperial resistance in a reproductive futurism that sits at odds with the novel’s queer politics), it invokes the need for forms of resistance that address the material, and not just discursive, dimensions of bioimperialism. Lai’s efforts to imagine what such an activism might look like demonstrates her interest in establishing a dialogue between cultural critiques of biotechnology and new materialist philosophies that emphasize the self-organizing capacity of living systems, and locate a potential for political change in this biological open-endedness.

Biocapital, Racialized Others, and Canadian Speculative Fiction

Before exploring how *Salt Fish Girl* speaks to the geneticization of diasporic identity, I want to situate the novel in relation to recent discussions around the role of racialized minorities within the globalized circuits of biotechnology. As I noted in my introduction, recent theories of biopolitics have called attention to the unprecedented commercialization that the life sciences have undergone in recent years thanks, in large part, to new advances in the realm of biotechnology. For instance, Kaushik Sunder Rajan argues that the genomic revolution has inaugurated a new phase in the life sciences, one in which bioscientific knowledge production is increasingly being controlled by market forces, resulting in an economic regime which he has famously termed “biocapital” (*Biocapital* 6). Sunder Rajan identifies three key factors that have contributed to the unprecedented co-production between the life sciences and capitalism that we are witnessing today: the emergence of recombinant DNA technologies (RDT) that allow for the splicing and joining together of DNA molecules from diverse sources, enabling scientists to create DNA sequences not typically found in living organisms (*Biocapital* 5); the creation of legal frameworks that allow for the patenting of genetically manipulated organisms on the grounds that these constitute human “innovations” (*Biocapital* 6, 60),³⁹ and the development of genomic sequencing techniques that enable scientists to translate the genetic makeup of living matter into information databases that can be sold as commodities (*Biocapital* 16). He argues that the confluence of these factors has led to the emergence of a global economy in which living processes have become the objects of intense capitalist speculation, and in which biotech corporations are locked in a fierce competition to generate “biovalue” in the form of proprietary biological materials and genetic databases. One of the earliest manifestations of this climate of biocapitalist speculation was the rivalry that broke out between the Human Genome Project

(HGP), the publicly funded consortium that originally set out to sequence the human genome in 1990, and Celera Genomics, a private corporation that challenged the HGP by launching its own human genome sequencing project in 1998.⁴⁰ This confrontation between public and private genome research raised pressing questions about the potential privatization of human genome data, with HGP researchers publicly questioning the ethics of Celera's avowed intentions to patent any DNA sequences it might generate (Sunder Rajan, *Biocapital* 39).

Pertinent to Lai's (and my) interest in the biotechnological mediation of racialized and diasporic identities, many critics have suggested that, over the last two decades, the biotechnology industry has come to rely on material and discursive practices that persistently construct racialized populations as sources of biovalue. As I mentioned at the outset, following the sequencing of the human genome in 2001, the race to capitalize on the commercial value of genomics data shifted its focus to new horizons. One sub-field of genomics that has become the subject of keen biomedical and corporate interest is that of "genetic variation" research, which analyzes the genetic differences between populations in the hope of establishing potential correlations between genome variations and various kinds of phenotypic (or observable) traits, from skin color, to disease vulnerabilities, to drug sensitivities (Sunder Rajan, *Biocapital* 60; Koenig et al. 4). Genetic variation research relies on data from biorepositories that "collect, store, and classify genetic information for use by biomedical researchers" (Kahn 132; see also Sunder Rajan, *Biocapital* 60-61). With the advent of software tools that process sequencing information at "speeds and resolutions inconceivable before" (Sunder Rajan, *Biocapital* 16), yielding unwieldy volumes of "largely undifferentiated data," these biorepositories are increasingly drawing on racially inscribed categories to organize their pools of data (Koenig et. al 3). Indeed, as Jonathan Kahn notes, it has become quite common for databanks to "mix and match crude

categories that variously employ racial and ethnic constructs” to describe genetic variations that “could be ultimately identified without reference to race” (133, 135). This practice has far-reaching epistemological and ethical implications, for, as Khan and many others have noted, databanks “provide working models of acceptable schemes of categorization” that are bound to get replicated, and therefore naturalized, in future genomics research (Kahn 133; see also Koenig et. al 3 and TallBear 242). Moreover, because research on genetic variation is perceived by many as a “stepping stone to a future goal of [developing] therapies tailored to individual bio genetics” (Koenig et. al. 5), the genetic information of racialized populations has become a highly marketable commodity, with many biotech companies rushing to file patents for race-targeted products and services (Kahn 134).⁴¹ As several critics have noted, this phenomenon has encouraged a troubling reification of race and ethnicity into biological categories, re-animating racial taxonomies that have long been deemed scientifically untenable (not to mention ethically questionable) by anthropologists and geneticists alike (Marks 24; Wald 249).⁴² Moreover, this geneticization of race is producing new forms of commodity fetishism in which the biogenetic materials of racialized and “Third World” populations are increasingly being constructed as “sources” of biovalue ripe for Western consumption. As Sunder Rajan puts it, “in the global (South-North) travel of genetic material, the South or Third world gets framed as “source” – and this is of course a framing with a colonial legacy” (*Biocapital* 70).

In a more recent article analyzing the “experimental machinery” of biocapitalism, Sunder Rajan argues that, in addition to being constructed as “sources” of biogenetic materials and data, racialized populations are increasingly being targeted as experimental subjects by biotech corporations. He chronicles how, over the last two decades, many biotech companies have been outsourcing their clinical research to developing countries like India and China, where there is a

burgeoning clinical research industry that specializes in the “management and administration of clinical trials” (Sunder Rajan, “Experimental” 57). He notes that although some critics have read this phenomenon as a straightforward case of “neo-colonial exploitation” of Third World populations in which “cutting corners is the norm and ethics is easily sacrificed,” in practice, the organizations that manage outsourced research are notoriously diligent about enforcing “good clinical practice” standards (“Experimental” 68). A key regulatory mechanism that such organizations rely upon is the “liberal contract that is embodied in the consent form[s]” signed by trial subjects (73). But instead of ensuring the egalitarian treatment of trial participants, this liberal contract paradoxically *enables* their exploitation: as Sunder Rajan explains, “just as wages become the materialized contractual form through which individuals are ‘freed’ from serfdom and converted into workers in industrial capital, so too does the informed consent form ‘free’ experimental subjects from being coerced guinea pigs by providing them with the autonomous agency that such a contract signifies” (“Experimental” 73). The assumption of autonomous agency that is embedded in these consent forms also glosses over one key detail: unlike experimental subjects in “First World” contexts, who agree to risk their health under the implicit understanding that they will be aiding the development of drugs/therapies that will eventually become accessible in their own countries, experimental subjects in “Third World” contexts have no such guarantee (“Experimental” 70). Instead, they “are used purely as experimental subjects, without the implicit social contract of therapeutic access at the end of the day” (“Experimental” 70). Thus, in a formulation that echoes Giorgio Agamben’s distinction between “bare” and political life,⁴³ Sunder Rajan argues that, by giving their informed consent, trial participants become “merely risked” subjects who no longer count as “*political* subjects” in their own right (“Experimental” 73). In other words, they become bare life, or mere “bodies that are made

bioavailable to the global circuits of experimentation” (“Experimental” 73). As Sunder Rajan notes, the structural violence of this situation is “exacerbated by preexisting global structural inequities” which have led to the availability of “more... bodies for less cost in Third World locales than in First World ones” (“Experimental” 75). In this sense, the experimental practices of the biotech industry obfuscate not only the risky nature of the work that clinical trial subjects are required to perform, but also the sociohistorical circumstances that have forced them to take on this high-risk labour in the first place.

The technoscientific world that Lai creates in *Salt Fish Girl* is rife with the forms of structural violence that Sunder Rajan associates with biocapitalism. The novel constructs a dystopian near-future in which the nation-state has dissolved to make way for “economic unions” comprised of corporate-governed city compounds. In a world in which corporate interests dominate every aspect of social and political life, citizens are defined primarily by their place within the relations of production: they are hailed either as “corporate citizens” whose main function in society is to consume material goods, or as labourers who must provide the conditions of possibility for this consumerism. Miranda and her family are initially cast as corporate citizens who live a “middle class, suburban sort of lifestyle” (95) in Serendipity, a walled compound owned by the Saturna Corporation. Their relatively comfortable life is shadowed, however, by a vague awareness that beyond the walls of Serendipity lie the dangers of the “Unregulated Zone,” a bombed-out slum which is inhabited by the urban poor, and which Miranda’s parents often characterize as a hazardous dumping ground for various kinds of environmental pollution. Miranda spends most of her childhood sheltered from the harsh realities of the Unregulated Zone. However, once her family is forced to move out of Serendipity, she learns that her previous life as a corporate citizen, which she had always regarded as innocuous

and “not excessive” (95), depended upon the exploitation of legions of genetically engineered women who live in the Unregulated Zone, and have been cloned for the sole purpose of fulfilling Saturna’s infinite demand for cheap factory labour (202). Miranda learns about the plight of the “Sonias” (as the workers are known) from Evie, a Sonia clone turned political activist who eventually becomes her lover, and who “describes to [her] in lurid detail the mad, dark factories, the greed that drove pay ever lower as contractors moved their factories to more and more desperate places” (202). Evie reveals that the Sonias were cloned from human DNA samples which were recombined with the DNA of “*Cyprinus Carpio*, fresh water carp” in order to circumvent human cloning regulations (158). The exact source of the Sonias’ human DNA is unknown, but Evie hypothesizes that it came from one of two sources: a Chinese-Canadian woman who was interned along with her Japanese-Canadian husband “in the Rockies during the Second World War” and whose body was “sold to science” after she died of cancer, or, alternatively, the “Diverse Genome Project,” a biorepository which houses DNA from “peoples of the so-called Third World, Aboriginal peoples, and peoples in danger of extinction,” and which was “bought out” by a corporation shortly before the Sonias were created (160). Evie’s speculations not only frame the biocapitalist exploitation of the Sonias as a new chapter in the longstanding history of colonialism, but they also call to mind two key controversies which came to public attention in the years leading up to the publication of *Salt Fish Girl*, and which raised a number of pressing ethical questions around the appropriation and potential commodification of biogenetic materials extracted from racialized donors.

The possibility that the Sonias might have been created using DNA from the so-called “Diverse Genome Project” quite explicitly invokes the public controversy that arose in the early 1990s over the now defunct “Human Genome Diversity Project” (HGDP), a public initiative that

set out to sequence the genetic profiles of “isolated” indigenous populations around the world in order to create a better scientific understanding of human evolution and migration patterns (Reardon 307). From its inception, the HGDP was heavily criticized by indigenous rights groups for its frequent characterization of indigenous peoples as “vanishing” entities that “needed to be ‘preserved’ for study before they [became] extinct” (Reardon 308). In addition to the criticism it attracted for using “vanishing indigene” tropes to justify its research, the project also generated a great deal of public anxiety about the many ethical issues involved in the sampling and sequencing of indigenous DNA, including “the patenting of cell lines, the manipulations of rights and identities, the meaning of voluntary informed consent in a cross-cultural context, [and] the social and political legacy of colonialism” (Koenig et. al 30-31). As Haraway explains, some of the groups who spoke out against the HGDP “were adamant that genes or other products derived from indigenous material not be patented and used for commercial profit,” while “others were worried that the genetic information about tribal and marginalized peoples could be misused in genocidal ways by national governments” (“Biological Kinship” 269). The HDGP made some efforts to address these concerns by drafting more comprehensive informed consent protocols and asking indigenous communities to comment on their proceedings (Reardon 309-312). However, as Haraway notes, researchers “did not involve members of the communities to be studied in any formative way in the science,” and even though the “people to be sampled might give or withhold permission,” they were “not regarded as partners in knowledge production who might have ends and meanings of their own in such an undertaking” (“Biological Kinship” 268). To make matters worse, when the HDGP was cancelled due to insufficient funding, many of its researchers went on to join the Genographic Project, an enterprise launched by National Geographic and IBM which has been heavily criticized for making “much the same claims about

their good intentions” as the HGDP while paying “even less attention... to the [ethical] issues” raised by the sampling and sequencing of indigenous DNA (Koenig et. al 31).

The second theory of origins that Evie relates to Miranda – that that the Sonias’ DNA might have come from a Chinese-Canadian woman whose body was “sold to science” after she died from cancer – recalls a controversy that arose independently from the HGDP debate, but that seemed to confirm the anxieties of critics who feared that the biogenetic samples gathered by HGDP researchers might be patented and used for commercial profit. In 1990, the U.S. Secretary of Commerce filed a patent for an “immortalized” cell line that was developed from a blood sample taken from an indigenous Guaymi woman in Panama.⁴⁴ When the Guaymi General Congress learned about the cell line, they denounced it as a case of biopiracy, and lodged an official complaint with the Convention on Biological Diversity in Geneva (Haraway, “Biological Kinship” 270). Guaymi leaders insisted that even though the blood sample had been obtained with informed consent, the donor was not informed that her cell line would be taken out of the country, let alone patented for commercial ends (Mooney qtd. in “Patenting and Human Beings,” n.pag.). Much like, the controversy surrounding the Human Genome Diversity Project, this dispute raised pressing questions about the ethics surrounding the extraction of biogenetic materials from racialized or “Third World” donors. Additionally, by exposing the limitations of the informed consent protocols used by the biotechnology industry, the controversy over the Guaymi cell line also highlighted the potential for structural violence that is embedded in the experimental and economic machinery of contemporary biocapitalism.

In Lai’s novel, this potential is realized to its full extent with the creation of the Sonias, whose status as patented life forms created from racialized DNA not only precludes them from being recognized as political subjects under the law, but, to borrow from Agamben and Sunder

Rajan, also configures them as “bare life” that is readily available for biotechnological experimentation. On the surface, the Sonias’ categorization as “bare life” seems to follow as a direct consequence of their status as bioengineered clones. But more than simply illustrating the uncertain legal and ontological status of bioengineered life forms, their predicament serves to highlight the contingency of the rights and legal personhood that are normally taken for granted as de facto consequences of the *human*. This contingency is highlighted in an early scene in which Miranda and her friend Ian sneak into their school’s boiler room and unexpectedly encounter a group of women who work there as janitors. When Miranda asks about the women’s identities, Ian responds that the workers are “not women,” but “Janitors” – a statement that seems to stand as an implicit commentary on the women’s status as alienated labourers within the global economy, but could just as well be taken as an assertion that they are not, ontologically speaking, human (76). Ian goes on to add that the janitors are not only “illegal,” but are also suspected of being “primary carriers of the Contagion,” a strange disease which causes people to exude overpowering odours and experience intense, dream-like memories, and which Miranda has begun to suspect she might be infected with herself (76). When Miranda notices, much to her horror, that the women’s bodies have been altered “with some kind of transparent silicone composite so that you could see their spines and behind them, their hearts pounding, their livers and kidneys swimming in oceans of blood and gristle,” Ian speculates that they are being subjected to “some kind of experimental therapy” (77). It is unclear if the women have been recruited as experimental subjects because they are suspected of being prime carriers of the contagion, or because they are illegal immigrants who will readily take on high-risk labour due to their lack of legal status. Of course, there is also a possibility that the women’s bodies have not been altered at *all* – that, unbeknownst to Ian and Miranda (the episode precedes Evie’s

revelations about the existence of the Sonias), they are clones who have been bioengineered to look the way they do.

The ambiguity surrounding the boiler room workers serves to highlight the permeability of the boundary between the non-human and the human and, by extension, the contingency of the rights that are typically accorded to the latter, especially in a geopolitical context in which, as Sunder Rajan points out, certain groups have historically been more vulnerable to being categorized as “bare life” and “experimental subjects” than others. Miranda experiences this contingency for herself later on in the novel when, driven by the gnawing suspicion that she might be infected with the “Contagion,” she agrees to become a subject in a clinical research program headed by Dr. Flowers, a biomedical researcher who claims to be studying the disease. Although Miranda enters into this contract as an autonomous agent, once she is admitted into the clinic, she begins to feel “unpleasantly vulnerable in [her] patient’s uniform, as though [her] relationship [with Dr. Flowers] ha[s] suddenly deeply changed” (111). Miranda cannot articulate the nature of this change, but it soon becomes clear that, by granting her consent to participate in Dr. Flower’s study, she has become a “merely risked” experimental subject who can no longer exercise any political agency. This symbolic shift is enacted on a material level when Miranda attempts to leave the clinic, but she is immobilized by a device that Dr. Flowers has implanted in her spinal chord, allegedly for the purpose of “measur[ing her] brainwaves” (112).

By constructing multiple parallels between Miranda, the Sonias, the undocumented immigrants who work as janitors in the school, and the Asian Canadian and Indigenous subjects who may have supplied the germline DNA from which the Sonias were created, Lai emphasizes that contemporary biocapitalism has exacerbated longstanding structural inequalities that have historically contributed to the exploitation of racialized minorities. However, even as she

highlights these circuits of oppression, Lai refuses to cast her racialized and diasporic characters as passive objects of commercialized bioscience. As I will demonstrate throughout the rest of this chapter, not only does she highlight some key ways in which diasporic communities have become affectively invested in contemporary biotechnology, but she also exploits the generic possibilities offered by the cross-fertilization between speculative fiction, feminist science fiction, and fantasy to imagine ways in which such communities might productively engage with genomic ways of knowing to challenge the structural violence and biologically reductive practices of contemporary biocapitalism. Before examining how Lai enacts this remobilization of genomic knowledge, I want to briefly situate *Salt Fish Girl* in relation to current critical discussions around Canadian speculative fiction. More specifically, I will contrast Lai's revisionary project with the dystopian vision reflected in what is perhaps the best known contemporary example of this genre: Margaret Atwood's *MaddAddam* Trilogy.

In her recent collection of critical essays *In Other Worlds: SF and the Human Imagination*, Atwood establishes a clear distinction between the genres of science fiction and speculative fiction, arguing that the former deals with "things that could not possibly happen," while the latter deals with "things that could *really* happen" based on current technoscientific and sociopolitical trends (6, emphasis mine). Atwood has famously refused to label her own work as science fiction, placing *The Handmaid's Tale* and the *MaddAddam* Trilogy firmly in the category of speculative fiction – a move that takes on interesting resonances when viewed in the context of Sunder Rajan's ideas regarding the role of speculative temporalities within the discursive machinery of biocapitalism. He argues that, like other forms of capitalism, biocapitalism relies on a dialectical relationship between material and discursive processes – the latter of which, according Marxist philosophy, do not contribute to the creation of value in and of themselves,

but do so “indirectly by constantly perpetuating the circulation of capital” (*Biocapital* 9). In other words, if, at the material level, biocapitalism involves the production of technologies such as patentable cell lines and bioengineered life forms, at the discursive level, it involves the production of speculative narratives that create an “economy of hype” around these technologies (*Biocapital* 14). According to Sunder Rajan, one key way in which biocapitalism is able to sustain this “economy of hype” is by taking the statements of *probability* produced by the genomic sciences and turning them into statements of *causality* that can then be deployed to make “promissory” statements about the future (*Biocapital* 168, 34). In this sense, biocapitalism relies on the promise of scientific innovation to shift the “grammar of life [...] toward a future tense” so as to “generate the present that enables that future” (*Biocapital* 14, 34). Building on Sunder Rajan’s ideas surrounding the relationship between biocapitalism and speculative narratives, I want to suggest that one of the problems created by Atwood’s insistence on establishing a clear boundary between speculative fiction and science fiction (even as she paradoxically acknowledges that the boundary between these two genres is “increasingly undefended” [7]) is that it leaves very little room for imagining possible futures *outside* of the “promissory futures” constructed by biocapitalism. In *Oryx and Crake*, the first installment of the *MaddAddam* trilogy, this lack of possibility is violently manifested in the novel’s treatment of diasporic and “Third World” subjectivities via the figure of Oryx.

Released a year after the publication of *Salt Fish Girl*, *Oryx and Crake* grapples with many of the same themes and concerns as Lai’s text. Although *Oryx and Crake* does not address the biotechnological appropriation and commodification of racialized DNA as explicitly as *Salt Fish Girl* does, its critique of contemporary biotechnology is undergirded by a recurrent preoccupation with the place of immigrants and “Third World” subjects within the economic and

technoscientific structures produced by biocapitalism. As I noted in my introduction, this concern is most readily evident in the novel's depiction of Oryx, the mysterious Asian woman who haunts the memories and fantasies of Snowman. An immigrant of unspecified Southeast Asian origins, Oryx is recruited from the urban slums to work as an assistant in Crake's research program. Oryx assists Crake in distributing a new pill which she believes has been designed to curb human overpopulation, but is actually embedded with a "rogue hemorrhagic" that is meant to annihilate the human race to make way for Crake's bioengineered life forms (325). Oryx's true motivations remain unclear, as our only insight into her character comes by way of Snowman's memories and ruminations, which persistently cast her in the role of an alienated – if auspiciously positioned – labourer within a biotechnological industry that is relentlessly geared toward exploiting the urban multitudes. Indeed, Snowman's memories of Oryx are set against a broader technoscientific landscape in which racialized others are persistently constructed as "bare life" ripe for various forms commodification. This dynamic is invoked through the many passages in which Crake and Snowman surf the internet in search of websites that exploit the populations of impoverished Southeast Asian countries. Some of their most notable finds include "headsoff.com," a snuff site that features "live coverage of executions in Asia" (82), and "Hott Totts," a "global sex-trotting" site that features the exploits of "real sex tourists" in "countries where life was cheap and kids were plentiful, and where you could buy anything you wanted" (90). Snowman develops an obsession with one of the little girls featured in the "Hott Totts" website, and when he meets Oryx years later, he convinces himself that the two are actually the same person. Thus, in a narrative pattern that evokes the orientalist impulses of conventional science fiction fantasies "whose condition of possibility is access to the body and mind of a woman, especially a "Third World" woman... who is violently destroyed" (Haraway,

“Inappropriate/d Others” 109), Snowman persists in casting Oryx as a passive victim of biocapitalism – an impulse that culminates with his description of her violent demise towards the end of novel. In this sense, *Oryx and Crake* not only constructs a dystopian world in which diasporic subjects figure largely as passive objects of biocapitalism, but also deploys a temporal structure that forecloses the possibility of imagining possible futures outside of these restrictive structures. As I will demonstrate later on, Lai’s novel counters this determinism by constructing a temporality that figures futurity not as a pre-determined outcome, but as an open-ended process that is contingent on the complex interaction between genes, bodies, and environments.

“Lively” Capital, Diasporic Affect, and Genetic Genealogy

Atwood’s relentlessly dystopic representation of the place of “Third World” subjects within the flows of contemporary biocapitalism sits rather uneasily with a growing body of sociological and anthropological research that indicates that racialized minorities are imbricated in these systems not simply as passive objects of western commercialized bioscience, but as active producers and consumers of biovalue in their own right.⁴⁵ This paradox has not been lost upon Sunder Rajan, who qualifies his argument that the machinery of biocapitalism relies heavily on an exploitation of racialized and “Third World” populations by acknowledging that the attitude of non-Western subjects towards contemporary biotechnology “cannot be explained simply by recourse to structural inequalities, because they are animated by a range of individual and collective desires” (*Biocapital* 20). In *Biocapital*, Sunder Rajan characterizes these desires almost exclusively in terms of the investments of “Third World” corporate actors who are eager to be recognized as “free market player[s]” in the global circuits of biocapital (20). However, in his more recent work, he takes up the question of affect with more urgency and subtlety,

replacing the term “biocapital” with the more ambivalent construct “lively capital” to better account for the complex range of emotions and desires that mediate individuals’ interactions with contemporary biotechnology. He thus explains that,

in one register... *Lively Capital* is about the commercialization of the life sciences – its institutional histories, epistemic formations, and systems of valuation. In a second register, however, it refers to the *lively affects* – the emotions and desires – at play when technologies and research impinge on experiences of embodiment, kinship, identity, disability, citizenship, accumulation, or dispossession. (“Liveliness” 16, emphasis mine)

As Alondra Nelson has demonstrated in her extensive work on the geneticization of African American “root-seeking” practices, one affective domain that contemporary biotechnology is increasingly exerting an influence upon is the construction and negotiation of diasporic kinship. As she and many other commentators have noted, one unanticipated consequence of the recent explosion of “genetic variability” research has been the widespread commercialization of genetic ancestry testing services that promise to use genomic sequencing data to shed light on peoples’ ethnic and “biogeographic” origins (Nelson 2008a; Nelson 2008b; Koenig et. al. 2008; Greely 2008). Popular interest in this type of testing exploded after the 2001 publication of Bryan Sykes’ bestselling book *The Seven Daughters of Eve: The Science that Reveals Our Genetic Ancestry*. A renowned geneticist from Oxford University, Sykes employed the “mitochondrial Eve” model of human origins to study the genetic makeup of contemporary European populations (Sommer 232).⁴⁶ Drawing on mitochondrial DNA analysis, which examines the DNA material that individuals inherit exclusively from their mothers through cellular organelles known as mitochondria, he theorized that the current European population could be traced back to “seven

Paleolithic founder tribes or clans that originated in Europe... between 45,000 and 8,500 years ago” (Sommer 232-33). Sykes further hypothesized that “the seven ancestral DNA-sequences of the seven current European clusters were once in the bodies of seven actual women” (Sommer 233) – the “seven daughters of Eve” that he refers to in the title of his book. In the book, which adapts his academic research for popular audiences, Sykes brings these inferred “clan mothers” to life, not only assigning them names (Ursula, Xenia, Helena, Velda, Tara, Katrine, and Jasmine) and ancestral homelands, but also drawing on “well-established archaeological and climatic records” to imagine what their lives would have been like thousands of years ago (201). As one commentator explains, Sykes’ efforts to recreate the “imagined lives” (Sykes 201) of these women was so successful that “many readers of the book” were left under the impression that he was writing about *real* “women whose bodily remains [had] actually been found” (Sommer 233). Sykes capitalized on the popular success of his book by establishing Oxford Ancestors, a genetic ancestry testing company that offers, among other services, a “Matriline™” test that promises to match customers’ DNA to one of the seven “clan mothers” featured in *The Seven Daughters of Eve* (Sommer 233; see also Greely 220).

As the popularity of Sykes’ book and genetic ancestry testing services indicates, *Salt Fish Girl* was published at a time when mitochondrial DNA was looming quite large in the popular imagination as a potential vehicle for reconnecting dispersed populations to their ancestral homelands. At the time of the novel’s publication, there were at least a dozen genetic ancestry testing companies in existence, many of them offering mtDNA tests similar to the one carried by Oxford Ancestors (Skloot par 1). Moreover, as Nelson explains, some of these companies marketed their services specifically to diasporic communities, the most famous example being African Ancestry, a company that markets its products specifically to the African American

community and promises to “matc[h] customers to their ancestral homelands in Africa” (24).

Nelson explains that genetic ancestry testing holds a particular appeal for the African American diaspora because it seems to offer a means of circumventing the archival roadblocks that African American “root-seekers” frequently encounter as a result of the “scarcity of written records from the era of the slave trade” (“Bio Science” 764). The promotional materials featured in the African Ancestry website exploit this assumption, assuring potential customers that their test results that “will reach back hundreds – maybe even a thousand years – to tell [them] things that aren’t always in historical records, but are recent enough to be important parts of [their] family history” (africanancestry.com). Most notably for the purposes of my discussion, African Ancestry offers an mtDNA test called “Matriclan” that promises to shed light *specifically* on the “maternal roots” of customers’ family trees. Emphasizing the value of this information for diasporic subjects wishing to learn more about their ancestral homeland, the company insists that discovering these genetic roots will enable customers to “solidify a *true* connection to the motherland” (africanancestry.com). To my knowledge, there have yet to be any anthropological studies on the use of genetic ancestry testing in the Chinese diaspora specifically, but, as Wen-Ching Sung notes in a recent article on the geneticization of Chinese ethnic identity, the traditional concept of “Zonghua Minzu” (which roughly translates into “Chinese ethnicity”) is increasingly being reimagined in genomic terms as a result of China’s ongoing involvement in various national and international human genome projects (277). In her introduction to the collection that Sung’s article appeared in, titled *Asian Biotech*, Aihwa Ong notes that this biotechnological reimagining of Chinese “folk beliefs in fixed ethnic essences” could have important consequences for the genealogical and kin-reckoning practices of diasporic subjects wishing to “reconnec[t] with ancestral, mainland China” (38).

Lai's novel dramatizes the same yearning for a biologized connection to the homeland that genetic ancestry testing services like African Ancestry attempt to capitalize on, and that Ong has briefly commented on in her recent work on Asian biotechnologies. Lai has stated that, although she is not interested in the "production of fixed identities" or in tropes of cultural authenticity, her work is in many ways "an exercise in nostalgia" – one that attempts to weave a "consciously artificial history for those... who come from histories that are broken, fragmented and discontinuous, histories that exist in multiple languages and that have survived multiple traumas and multiple acts of forgetting" ("Afterword" 257). Lai's assertion that her project combines a skepticism of fixed identities with a desire to recover a broken sense of history and belonging recalls Avtar Brah's insistence that "diaspora places the discourse of 'home' and 'dispersion' in creative tension, inscribing a homing desire while simultaneously critiquing discourses of fixed origins" (192). In *Salt Fish Girl*, Lai figures this tension explicitly in genomic terms, questioning the cultural and biological essentialisms that inform the search for genetic ancestry while simultaneously highlighting the anxieties and homing desires – or the "lively affects," to borrow Sunder Rajan's term – that might render this search compelling from a diasporic perspective. This paradox is memorably evoked in the passage in which Evie speculates on the potential origins of the Sonias. Although she notes, somewhat ironically, that the notion that their DNA came from a Chinese-Canadian woman who was interned in the Rockies is likely just a "rumour," she nevertheless acknowledges the powerful affective resonance that such a possibility might hold for queer women of colour who, like the Sonias, have lived through histories of oppression that are persistently occluded from official historical records. In such a context, the possibility of tracing one's roots to an Asian-Canadian clan mother or mitochondrial Eve would yield, in Evie's words, both an appealing "myth of origins"

and a “perfect focus for a revolt” (160). However, the novel suggests that this yearning for a genetic connection to the ancestral motherland is animated not only by a desire to redress the historical erasures experienced by queer women of colour and other racialized minorities, but also by the need to account for the ambivalent affects experienced by second-generation diasporic subjects who, like Miranda, have not experienced historical trauma or geographical dispersal for themselves, but have nevertheless been profoundly affected by the legacies of these destabilizing forces.

Indeed, Lai has stated that her writing is interested in exploring the “psychic territory of those who missed the historically acknowledged events, and yet are still living through an ongoing history of colonization that has not (yet) been monumentalized” (“Afterword” 254). Thus, as Malissa Phung argues in her reading of *When Fox is a Thousand* and *Salt Fish Girl*, Lai’s work speaks directly to the experiences of what Marianne Hirsch refers to as the “postmemorial” generations – that is, those generations who never experienced the trauma of their ancestors, but who have nevertheless internalized this trauma through the “acts of transfer” which inevitably take place within familial and relational networks, and which “enable memories to be shared across individuals and generations” (Hirsch, *Postmemory* 31). As Hirsch explains, although postmemory “*approximates* memory in its affective force and its psychic effects,” it differs from regular recall in that it “it has lost its direct link to the past” (*Postmemory* 31, 33, emphasis mine). Thus, subjects of postmemory are often assailed by affective states which are felt with the same forcefulness as direct embodied experience, but which elude the possibility of causal explanation or emotional catharsis *precisely* because their origin cannot be traced. Writing about this phenomenon from an Asian Canadian studies perspective, Lily Cho has memorably stated that “diasporic pasts live on in secret or forgotten gestures, habits, and desires.... And so

we carry anger that is not our own. We have cravings for tastes we cannot name” (“Diasporic Citizenship” 107). In *Salt Fish Girl*, Lai evokes the somatic force of these ambivalent affects by figuring postmemory explicitly as an *embodied* condition that manifests itself with such somatic potency that it leads those who experience it to search for a direct biological causation for their affliction. Known in the novel as the “dreaming disease,” this embodied condition is characterized by three key “symptoms”: the secretion of overpowering smells “that follow the person without actually emanating from the body,” the possession of “strange fistulas” that release odd bodily fluids and smells, and the recurrence of dreams that seem to recall the traumatic experiences of past generations – dreams so vivid that they can “drive [sufferers] to commit suicide by drowning” (100, 108). Lai has stated that she chose to focus on smell as a vehicle for figuring the affective force of inherited histories for two reasons: first, because she “wanted to tap into a visceral bodily sense of memory, [to the] kind of immediate connection one gets to a moment in the past when one is confronted by a scent,” and second, because smell is “a powerful means by which the mainstream denigrates its other, particularly racialized and sexualized others” (“Future Asians” 4). Thus, in the novel, smell has two closely related, but contradictory effects. On one hand, it provides the sufferers of the “dreaming disease” with an embodied connection to the occluded histories of their ancestors. On the other, it makes them vulnerable to being categorized as pathological others who pose a threat to the health of the body politic, as indicated by the biomedical labeling of their condition as a “disease.” These ambivalent associations trigger in Miranda a powerful desire to find a causal explanation for her distinctive durian smell and the strange memories that accompany it – one that might account for the deeply embodied nature of these affects without pathologizing them as “symptoms” of a disease. It is in this context that genetic genealogy emerges as a powerful form of “lively capital,”

one whose reductive construction of the relationship between genetic inheritance and the development of phenotypic (or observable) traits seems to supply all the causal explanations that Miranda so desperately yearns for.

Miranda begins to display all of the physiological markers associated with the “dreaming disease” from an early age. Not only does she exude an overpowering durian smell “so sour and acrid that no amount of roll-on deodorant, however liberally applied, [can] take [it] away,” but, as she grows older, she begins to experience dreams that recall “things that went on before [she] was born, things that happened in other lifetimes” (70). Although Miranda confesses that “the intensity of [this] dream world sometimes frightened [her]” (70), she does not come to regard her condition as problematic until she moves to the Unregulated Zone and begins to hear stories about other people who have been afflicted with symptoms similar to hers, including “a girl who smelled of cooking oil, who remembered all the wars ever fought” and “could recall and recount every death, every rape, every wound, every moment of suffering that had ever been inflicted by a member of her ancestral lineage” (85). Later, when she comes to work as a medical assistant at Dr. Flowers’ clinical research facility, Miranda learns that the so-called “dreaming disease” has become the subject of an ongoing biomedical investigation, and that there are several conflicting theories surrounding the condition’s etiology, all of them equally unsettling. As she learns from Dr. Seto, Dr. Flowers’ research assistant,

Seto and Flowers seemed to think that it was something that could be caught, by walking barefoot on the sand, or on the earth, especially when it was barren and there was no grass or moss or leaves to protect the feet from open soil. They theorized it might be the product of mass industrial genetic alteration practices – that the modifications of agricultural products in recent years had contaminated

the soil, that the microbes that lived in the earth were mutating and infecting humans. That humans could get diseases once only possible in plants, or that indeed, the new disease was a strange hybrid, combining those that affected plants and those that affected animals. (102)

Unsettled by the multiplicity of risk scenarios invoked by Dr. Seto, Miranda develops an increasing anxiety over the source of her own dreams and bodily smells, and begins to wonder whether she “too [is] afflicted with the dreaming disease, and might find [herself] one day walking down to the beach and not stopping at the water’s edge” (104). Her fears are mediated not just by the risk perceptions she begins to harbour as a result of her conversations with Dr. Seto, but also by her childhood memories of the uneasiness that her durian fruit odour used to elicit in her father. Indeed, in an earlier part of her account, Miranda recalls how, driven by the suspicion that her smell had been caused by a gene transfer from durian fruit that he and her mother had illicitly consumed just before conceiving her, her father had not only made various attempts to “treat” her odour with the help of Chinese herbal remedies, but also contacted Dr. Flowers to enlist his help in isolating the causality of her strange “condition” (70). As Phung notes, Miranda’s father’s anxieties are compounded by the racialized stereotypes which are associated with the durian fruit smell, and which he fears will mark him and his family “as immigrant[s] even though they have lived a comfortable suburban life as assimilated model minorities in Saturna long before [Miranda’s] birth” (8). Motivated by a combination of environmental risk perceptions and internalized smell-based prejudices, then, Miranda’s father pathologizes his daughter’s postmemorial affects as “symptoms” of a disease that needs to be contained through biomedical intervention.

At first, Miranda submits to this biomedicalization, willingly volunteering to become an experimental subject in Dr. Flower's clinical trials. However, she soon begins to question Flowers' pathologization of her "condition," and seeks out alternate ways of understanding her peculiar smell and the strange dreams that seem to accompany it. This shift is prompted partly by the influence of Evie, who encourages Miranda to question her labeling as a subject of biomedical risk by asking her if she "feel[s] unwell" (164). It is only then that Miranda recognizes that "through all the years of [her] strange durian odour, it never occurred to [her] to tell anyone that nothing hurt" (167). But the questions surrounding the causality of her strange bodily features and affects linger on, acquiring even more urgency as her postmemories become increasingly vivid. As Miranda puts it after she experiences one particularly powerful episode of déjà vu, "this knowing without consciousness of what it was I must remember ate at me. I felt a terrible hunger inside, a hunger without a name" (106). Lai offers a tentative answer to the questions raised by Miranda's ambivalent affects by casting her as the modern-day reincarnation of Nu-Wa, the snake goddess who is said to have engendered the Chinese nation in Chinese folk tradition. Lai has stated that although her depiction of Nu Wa has a concrete "material basis" in Chinese mythologies of origin, it is also mediated by "many more traditions" ("Future Asians" 4). Thus, her rendering of Nu Wa's story is replete with echoes from the Bible and from Hans Christian Andersen's fairy tale "The Little Mermaid." But this "messing around with mythic tropes" ("Future Asians" 4), as Lai calls it, is also heavily mediated by popular and scientific discourses surrounding genetic ancestry and the possibility of using mitochondrial DNA to establish a biological connection to the lost motherland. Indeed, in a gesture that playfully mirrors the double helix structure of the DNA molecule, Lai interweaves Miranda's account of her coming of age and eventual encounter with Evie and the Sonias with Nu Wa's chronicle of

her first entry into the world and subsequent reincarnation into various human forms across time and space, from pre-Shang Dynasty Southern China, to 20th century Hong Kong, to 21st century Vancouver. When placed in the context of Lai's explicit interest in genomic discourse, this narrative structure not only positions Miranda as a spiritual reincarnation of the snake goddess, but also invites us to read her peculiar physical traits, and the affects that accompany them, as potential phenotypic expressions of Nu Wa's ancient reptilian genotype.

This refiguring of the Nu Wa myth in genomic terms, which is at first only subtly foregrounded through the double-stranded narrative structure of the novel and the striking phenotypic similarities between the snake goddess and her human descendant/reincarnation, becomes fully manifest in the passage in which, ostensibly flooded by memories of her earlier embodiment, Miranda begins to draw sketches of a woman-snake who combines the features of her mother with those of Nu Wa (186). When her father sees the sketches, he is immediately reminded of the snake goddess of Chinese mythology, and tells Miranda about "Nu Wa and Fu Xi, the snake-bodied brother and sister who were supposed to have created the first people" (187). Disturbed by the incestuous overtones of her father's story, Miranda proceeds to sketch out different variations of the myth, eventually producing a series that refigures Nu Wa and Fu Xi as queer lovers, and portrays Nu Wa as a mother cell who engenders the "first people" through a feat of asexual reproduction reminiscent of mitosis, the biological process whereby mother cells divide into daughter cells that are genetically identical to them (187). In Miranda's words, "I drew a series in which Nu Wa was transparent like a long cell beneath a microscope. The first people grew in her belly and pressed out through her skin" (187). Through this cellular imagery, Miranda implicitly casts herself as the genetic descendant of a maternal line that can be traced directly to a mitochondrial "clan mother" who inhabited her ancestors' homeland

thousands of years ago. This genomic reimagining of the Nu Wa myth provides an appealing antidote to the uncertainties generated by her curious phenotypic traits, not only assuaging her fears that she might be suffering from a possible illness or genetic mutation, but also enabling her to isolate an ostensible biogenetic basis for her intense durian fruit smell and the ambiguous affects that accompany it.

But even as it emphasizes the profound affective appeal of genetic ancestry, and of matrilineal DNA analysis in particular, *Salt Fish Girl* also illustrates the problematic underside of these technologies, showing how the diasporic yearning for a direct mitochondrial connection to the motherland not only overestimates the significance of mitochondrial DNA as an index of ancestral lineage, but also reinforces essentialist constructions of race and ethnicity as biological categories. In a discussion of the methodological limitations of various genetic ancestry testing technologies, bioethicist Henry T. Greely notes that one key problem surrounding mitochondrial DNA analysis is that it speaks only to *one* line in an individual's ancestral lineage – specifically, to “the direct maternal line for mitochondrial DNA [that] is inherited only from one's mother, who inherited it from her mother, and so on back to the hypothesized mitochondrial Eve” (Greely 225). Because of this, mitochondrial DNA findings “say absolutely nothing about one's paternal grandmother... or, in fact, the vast majority of one's ancestors,” a fact that “places very serious limitation on the value of such analyses for genealogy, one that increases exponentially as one goes back in time” (Greely 225). Thus, while genetic ancestry companies like African Ancestry promote the view that mtDNA findings can shed important light on an individual's ancestral origins, in reality, such findings can only provide information about a single line out of the *thousands* that make up a person's family tree (Greely 225).⁴⁷ In a similar vein, Miranda's pictorial reimaginings of the Nu Wa myth emphasize the line that links her back to the snake

goddess while ignoring other potential sources of inheritance that may have contributed to her ancestry. Crucially, her drawings do not contain any trace of the durian fruit which was undoubtedly (if ambiguously) involved in her conception. As I suggested earlier, this casting of Nu Wa as Miranda's mitochondrial "clan mother" is made possible largely by reimagining human reproduction as an asexual process, one in which Nu Wa is able to "incubate" and give birth to exact copies of herself through a process that recalls the division of mother cells into daughter cells which occurs during mitosis. While this reimagining may seem appealing from a queer standpoint in that it enables Miranda to construct a myth of origins that isn't predicated on heterosexual reproduction, it is highly problematic in that it is instead predicated on an instance of extreme endogamy, one in which Nuwa, figured as a Chinese-Canadian mitochondrial Eve, is able to spread her lineage through a highly sterilized process of self-propagation. Crucially, this imagery problematically elides the ongoing process of recombination (the shuffling of genes from different parental origins) that DNA undergoes during sexual reproduction, and that gets repeated *ad infinitum* as DNA sequences are passed on from one generation to the next. In short, Miranda's sketches construct a myth of genetic ancestry that flattens out the complexities of genetic inheritance in order to trace a direct line of ancestry between Miranda and Nu Wa.

Several commentators have noted that, in addition to exaggerating the significance of matrilineal descent in establishing kinship ties, popular discourses around mtDNA testing persistently reinforce the notion that race is a biologically determined category. Indeed, as Greely explains, insofar as mtDNA tests "are used to make statements of broad origin – European, Native American, African, etc – they... serve as genetic tests of, and hence definitions of, race," such that "being Irish, or Yoruba, or Han becomes a matter of having particular genetic variations" (224). Thus, "a culturally defined group is transformed into a genetically defined one"

(Greely 224). Moreover, as Kimberley TallBear notes, while genetic ancestry companies often issue disclaimers which state that race does not have a genetic basis, their testing practices “promot[e] popular racial categories as at least partly genetically determined” (TallBear 241). This contradiction can be readily observed on the African Ancestry website. The “frequently asked questions” section of the site responds to the query “Can DNA analysis identify my racial or ethnic identity?” with a categorical assertion that “there is no test for racial identification,” adding that “Race is a social construct, not genetically determined. Similarly, ethnicity is more cultural than biological.” And yet the promotional video featured on the site’s welcome page suggests that race and ethnicity *are* indeed genetically determined, and insists that “one simple test” will enable potential customers to “find out what country, and possibly even what *ethnic group*” they descend from. Furthermore, the video asserts that possessing this type of knowledge will enable users to “define a sense of cultural identity for [themselves] and [their] kids,” “determine the roots of the family tree at this year’s reunion,” and “leave behind a legacy” for future generations. In short, contrary to the company’s official statements that race and ethnicity are *not* biologically determined, the promotional materials featured on the African Ancestry website model a form of “biosociality” (Rabinow) that is based primarily on the assumption of a shared ethnic heritage – one that can be scientifically verified all the way down to the molecular level.

In addition to raising questions about the geneticization of racialized and diasporic identities, Miranda’s rendering of Nu Wa as a queer mitochondrial Eve also calls to mind the recent proliferation of bioscientific projects that aim to legitimize queer gender and sexual orientations either by documenting their prevalence in the “natural” world or by isolating their biogenetic causes. Such projects range from the growing number of ethological studies that

construct queer sex acts amongst non-human animals as “evidence of the naturalness of homosexuality,” to Simon LeVay’s (1993) controversial work on the “gay brain,” to more recent genomic investigations that aim to isolate the so-called “gay gene” (Bell 138). As ecocritic David Bell observes in his article “Queernaturecultures,” while “there is no denying the potency [that] this appeal” might hold for activists who seek to establish equal rights for sexual minorities, the impulse to draw on scientific discourses to establish the “naturalness” of queer behavior is fundamentally inconsistent with the anti-essentialist goals of queer theory and politics (139). Stacy Alaimo concurs, arguing that, instead of seeking to establish queer behavior as “natural,” ongoing efforts to document the incidence of “queer” phenomena in nature should aim to “trace a proliferation of astonishing differences that [might make] nonsense of [any kind of] biological essentialism” (“‘Queer’ Animals” 55). Miranda’s construction of Nu Wa as a queer mitochondrial Eve dramatizes this essentialist impulse to legitimize queerness through appeals to science and “nature.” Moreover, despite seeming consistent with a queer critique of heteronormativity, this imagery raises the spectre of a long tradition of conservative evolutionary discourses that frame heterosexual, reproductive sex as the driving force behind evolution while constructing queer, nonreproductive sex as “necessarily irrelevant, secondary, or degenerate in relation to reproductive sex” (Mortimer-Sandilands and Erickson 12). Indeed, Miranda’s efforts to refigure the Nu Wa and Fu Xi myth in terms that will render queer sex reproductive (but only in the most narrow sense of the word) inadvertently reinforce the notion that sexuality and sexual knowledge can only be deemed productive if it leads to the creation of biological offspring. In this sense, her imaginings remain tied to the same logic “repro-centrism” that has long been mobilized to pathologize queer sexualities as sterile and unnatural (Mortimer-Sandilands 12).

Although *Salt Fish Girl* acknowledges the powerful emotional resonance of biosocial frameworks that aim to establish a concrete biological basis for both diasporic and queer mappings of belonging, it ultimately unravels these models by showing how closely linked they are to the notions of racial “purity” and “natural kinds” that have long been deployed to marginalize racialized and queer communities alike. It is not surprising, then, that Miranda’s yearning for a direct mitochondrial link to her Chinese ancestry is accompanied by a deep-seated discomfort with things that are of ambiguous or mixed origin. Miranda’s fear of the “unnatural” surfaces when, upon learning that Evie’s genome contains “point zero three percent *Cyprinus carpio*, freshwater carp,” she admits, “[s]he creeped me out. I may not be the most natural creature that ever walked the face of the earth, but there was something sordid about her origins” (158). Ironically, Miranda’s abjection of Evie’s “sordid” origins not only prevents her from recognizing the affinities she shares with her and the rest of the Sonias (Miranda’s serpent-like reaction to Evie’s declaration that she is a patented life form – she “recoil[s]” away in disgust – ironically betrays the dubiousness of her *own* status as human), but takes on more ominous overtones as the novel demonstrates how such acts of abjection can very easily translate into a violation or outright denial of the basic civil rights of those who have been labeled as “unnatural.” This link is made quite clear when Evie is arrested under suspicion of “economic sabotage”: once the police identify her as a Sonia clone, they immediately inform her that she has “no rights at all” (248). But it is Evie’s sisters, the Sonias, who face the ultimate consequences of this legal denial of personhood. Lacking “a legal existence to begin with, they [cannot] be reported missing,” so their disappearance and brutal murder go unacknowledged (250). Miranda is horrified to learn about the Sonias’ fate, but, still clinging to normative conceptions of kinship and “pure” origins, she admits that this news was “less severe” for her than it was for Evie

because, as she puts it, the Sonias “were not *my* family” (249, emphasis mine). Miranda’s inability to feel a true sense of solidarity with the Sonias because they are not part of her biological family exposes the limits of the models of biosociality she has been clinging to thus far, recalling Donna Haraway’s insistence that, instead of bonding through “ties of blood recast in the coin of genes and information,” a queer anti-imperial politics should strive to create “models of solidarity and human unity and difference rooted in friendship, work, intractable collective pain, inescapable mortality, and persistent hope” (“Biological Kinship” 258).

Indeed, as Sharlee Reimer points out in her posthumanist reading of *Salt Fish Girl*, Lai disrupts the impulse to “locate community exclusively in shared origins” in order to advance an alternative model of community reminiscent of the “politics of affinity” that Haraway called for in her seminal “Manifesto for Cyborgs” (5). Phung echoes Reimer’s assessment, arguing that Lai “revamps biogenetic discourse” by “trad[ing] the problems of biological essentialism for a diasporic notion of historical inheritance,” one that emphasizes that “if subsequent generations inherit anything from their diasporic ancestors, it is the affective force of past historical traumas and oppressions, [as well as] the compulsion to turn back and remain haunted by the subjective work of postmemory” (5). As my discussion thus far has shown, I fully agree with the assessment that Lai troubles biological kinship categories in order to advance a model of community building that is based on shared experiences and political affinities. However, I am troubled by the suggestion that Lai enacts this shift by framing these shared affinities exclusively in cultural and historical terms, as this line of argument reinforces a division between nature and culture that stands at odds not only with the cyborg politics that Reimer appeals to in her analysis, but also with the decidedly posthumanist and materialist project that Lai is clearly undertaking in *Salt Fish Girl*. Lai herself has explicitly rejected this kind of compartmentalization of nature and

culture, insisting that “Nu Wa is a hybrid goddess – half snake and half woman,” and that *Salt Fish Girl* is “not just dealing with travel and dislocation as social practices,” but “with the hybridity and impurity *of the body itself*” (5, emphasis mine). Clearly, then, more than simply replacing the biological with the cultural, Lai is interested in disrupting normative conceptions of biological embodiment and inheritance in order to develop models of biosociality that might be more consistent with a queer anti-imperial politics.

In her most recent work, which examines the embodied relationships whereby “companion species” co-constitute one another, Haraway tests out the possibilities for using the resources and tropes of genomic science to theorize biosociality in terms *other* than those provided by essentialist biogenetic discourses. She posits that, instead of linear stories of biogenetic inheritance and clear distinctions between the human and the nonhuman and nature and culture, the “DNA of every cell” in the human body is “etched” with messy, non-linear stories of the co-constitutive, impure, and complex relationships through which biological bodies come into being (“Reconfiguring Kinship” 298, 302). *Salt Fish Girl* engages with genomic discourse in order to rethink the biological body along the same lines proposed by Haraway. Indeed, instead of challenging biogenetic discourses from the *outside in* by establishing an opposition between deterministic notions of biology and non-deterministic notions of cultural memory, *Salt Fish Girl* challenges such discourses from the *inside out*, drawing on genomic-inspired tropes to highlight the open-endedness of the genetic and molecular processes through which biological bodies come into being. In the sections that follow, I will unpack these tropes by placing them in the context of contemporary scientific and cultural theories that understand the role of genes in the development of biological bodies in far more complex and nuanced terms

than those posited by normative biogenetic discourses and by the reductive forms of genomic discourse that biocapitalism has propagated.

Ontogenesis, Evolution, and the Virtual Potential of the Biological Body

Many critics have noted that biocapitalism is predicated on a highly reductive understanding of the role of genes in the development of living organisms. In *Biopiracy* (1997), her seminal critique of the biotechnology industry, Vandana Shiva argues that genetic engineering is predicated on a reductionist paradigm that considers genes “in isolation of the organism as a whole” (27). Similarly, Sunder Rajan observes that the biotechnology industry has propagated a “genomic fetishism” that constructs genomic knowledge as “definitive and ultimate” instead of “fragmentary [and] contested” while simultaneously constructing genes *themselves* as “somehow standing in for... entire organisms, populations, and species” (*Biocapital* 145). He further explains that this reductive logic has encouraged a simplification of “complex, situated, and multifactorial” processes of gene expression into “simple phenomen[a] of cause and effect” (*Biocapital* 147). But even as he criticizes the genetic determinism that permeates the biotechnology industry, Sunder Rajan acknowledges that the genomic sciences are not deterministic in and of themselves (*Biocapital* 144). Indeed, a very different picture of genomic knowledge begins to emerge if we consider the way in which systems-oriented disciplines like evolutionary biology draw on genetic research to highlight the contingency and non-linearity of ontogenesis, or the process whereby living organisms develop their observable traits.

The concept of genetic determinism has become part of the popular imagination thanks, in large part, to the 1976 publication of Richard Dawkins’ controversial book *The Selfish Gene*, which advanced the bold thesis that evolutionary adaptations arise primarily for the benefit of the

genetic materials, or “germ-line replicators,” contained in living organisms, and not for the benefit of the organisms themselves, as most biologists believed at that time. Dawkins’s efforts to re-think evolution from a “gene’s-eye point of view” was interpreted by many as an argument for gene determinism, and he was accused of reinforcing the notion that the ontogenetic development of living organisms is genetically predetermined. In *The Extended Phenotype*, his 1982 sequel to *The Selfish Gene*, Dawkins contends that such criticisms stemmed largely from a misunderstanding of the difference between *gene selectionism*, or the process through which genetic materials are selected and replicated across evolutionary time, and *gene expression*, or the process whereby genetic materials interact with the environment to shape the phenotypic character of *individual* organisms. He explains that,

however inexorable and undeviating the genes may be as they march down the generations, the nature of their phenotypic effects on the bodies they flow through is by no means inexorable and undeviating. If I am homozygous for a gene G, nothing save mutation can prevent my passing G on to all my children. So much is inexorable. But whether or not I, or my children, show the phenotypic effect normally associated with possession of G may depend very much on how we are brought up, what diet or education we experience, and what other genes we happen to possess.... I think a confusion between evolution and development is, then, partly responsible for the myth of genetic determinism. (14)

In other words, Dawkins insists that the process of ontogenesis involves an ongoing push and pull between the *continuity* provided by replication of genes across the generations and the unpredictable potential produced by the interaction between these inherited genes and the wider environment, which includes not only other genes in the genome, but also a variety of

environmental factors ranging from socialization, to climate, to chemical exposure, to the co-evolutionary relationships we share with other species. Thus, according to Dawkins, far from being genetically “programmed,” phenotypes are the products of very long and winding lines of causality – lines that frequently extend *outside* the individual bodies in which genes “exert their immediate... influence” (209). In *The Extended Phenotype*, Dawkins illustrates this phenomenon by examining a number of parasitic and symbiotic relationships in which the phenotypic development of individual organisms is heavily influenced by their interactions with other closely related organisms.⁴⁸ To name one example, drawing on research indicating that parasitized snails have thicker shells than their unparasitized counterparts, Dawkins argues that the thickened shell of a parasitized snail might be viewed not merely as a “boring byproduct” of infestation, but as an “evolved adaptation” of the parasite that has taken up residence within the snail’s body (214, 210). Viewed in this light, the thickened shell of the host organism could be understood as an “extended” phenotypic expression of the parasite’s genotype.

Current work in the field of genomics suggests that we do not need to look beyond the confines of the individual organism to find examples of the “long, ramified, and indirect” chains of causality that characterize gene expression (Dawkins 198). Indeed, contemporary genomics suggests that, even at the minute scale of individual DNA molecules, the lines of causality between genes and phenotypes are far more complex than Dawkins and other scientists of his generation had anticipated. The central dogma of molecular biology – the notion that DNA codes for RNA which then codes for protein – is increasingly being called into question by recent studies which show that DNA fragments can splice and recombine in ways that geneticists had never previously recognized. As John Dupré explains, “some of the things that happen between the transcription of DNA and the formation of a final protein product” indicate that “the

relationship between stretches of DNA and protein products is already many/many,” and that “coding sequences in the genome are therefore better seen as resources that are used in diverse ways in a variety of molecular processes” than as “some kind of representation of even a molecular outcome, let alone a phenotypic one” (43). As Dupré stresses, then, contrary to popular representations of DNA as a blueprint of life, genetic factors cannot provide “complete causal explanation[s]” for the phenotypic character of living organisms (48).

The recognition that, far from supporting essentialist understandings of biology, genomics emphasizes the non-linearity of biological development could have important implications for the cultural critique of human embodiment. New materialist philosophers like Brian Massumi and Elizabeth Grosz have been calling attention to this potential for quite some time, and have attempted to theorize human embodiment in terms that do not just emphasize the various ways in which bodies are socially regulated, but also acknowledge the body’s ability to exceed such inscriptions through its open-ended interactions with the environment. Taking a cue from both evolutionary biology and systems theory, in *Parables for the Virtual*, Massumi posits that phenotypic qualities like race, gender, and sexual orientation are not ontological, a priori categories, but emergent properties of nonlinear processes of becoming whereby biological bodies assume one among many potential individuations (Massumi 8, 13).⁴⁹ Echoing evolutionary biology’s conceptualization of ontogenesis as a process that is contingent on the interaction between genes and the wider environment, Massumi emphasizes that biological becomings are fundamentally *relational*, as they hinge on the body’s capacity to “sense and be affected” by other materialities that surround it (225).⁵⁰ He therefore argues that thinking about embodied experience demands the creation of an “expanded notion of causality,” one that acknowledges the potential for “qualitative change” that emerges when multiple bodies or

material agents come into contact with one another (225). He concludes that, being endowed with this “material reserve of unpredictable potential,” all bodies remain open to “an otherwise than [they are] in any here and now” (5). According to Massumi, then, cultural critiques interested in mapping the material conditions necessary for social change should draw our attention to those moments of bifurcation in which this virtual potential suddenly “leaks into the actual” (43), inducing new variations in biological and cultural life.

In her extensive writings on the relationship between biological self-organization and political resistance, Elizabeth Grosz takes up many of the same questions that Massumi raises in *Parables for the Virtual*. However, Grosz not only situates her discussion more concretely in the context of ongoing scientific investigations into the evolutionary and ontogenetic processes that shape living organisms, but she also interrogates the relevance of such investigations for feminist, queer, and anti-racist political movements. Grosz’s materialist project hinges on a re-reading of Darwinian evolutionary theory, particularly Darwin’s ideas concerning the biological body’s immersion in the “forward movement of [evolutionary] time” and the possibilities for “becoming-other” that arise from this interplay between material and temporal processes (*Nick of Time* 4, 20). She argues that, contrary to conservative renditions of evolutionary theory that draw on Darwin’s teachings to justify various kinds of essentialisms (including the construction of racialized and queer subjects as “unnatural” and/or “degenerate”), Darwinian evolutionary theory characterizes biological descent not as the “transmission of invariable or clearly defined characteristics over... time,” but as an open-ended process that involves the production of “endless variation” and is governed by “the accidental, the random, [and] the unexpected” (*Nick of Time* 7). As Grosz explains, Darwin’s writings emphasize this indeterminacy both at the level of the species and at the level of the individual organism. At the level of species, they teach us

that even though past species “prefigure and provide the raw material for present and future species,” they “*in no way contain or limit*” their evolutionary development (*Nick of Time* 8, my emphasis). Meanwhile, at the level of the individual organism, they teach us that while the genetic materials we inherit from our ancestors may link us to the past, they also act as triggers for a process of “divergent development that brings with it endless variation and endless difference” (*Becoming Undone* 3). Thus, according to Grosz, far from providing a foundation for biological essentialism, Darwin’s writings on evolution emphasize the potential for change and diversity that inheres through living organisms. Grosz insists that queer and anti-racist political movements must acknowledge and engage with this potential if they wish to “change existing forms of biopower, domination, and exploitation” (*Nick of Time* 2).

Writing specifically about the implications of evolutionary theory for queer critiques of genealogy and reproduction, Grosz argues that the sexual bifurcation between male and female bodies is significant in evolutionary thought *only* insofar as it supplies a mechanism for inducing new variations in life. In Grosz’s reading, then, Darwin’s evolutionary framework does *not* privilege heterosexual reproduction as the basis of evolution, nor does it “essentialize the characteristics of the masculine and the feminine in terms of a reproductive telos of sperm and ova,” as feminist critics of Darwinism have frequently argued (*Nick of Time* 67). On the contrary, it characterizes sexual difference as an unpredictable force that “generates an endless variety on either side of its bifurcation” – including, for instance, the “intersexes that lie between bifurcated categories” (*Nick of Time* 67). And given evolution’s relentless movement towards the ongoing diversification of life forms, this tendency towards sexual differentiation can only be “complexified, elaborated, [and] developed further” with the march of time (*Nick of Time* 67). According to Grosz, then, within Darwinian theory, sexuality remains an “open invention” – an

irreducible phenomenon that cannot be tied to a specific cause, be it “physiological, genetic, neurological, or sociological” (*Becoming Undone* 73). For Grosz, it is this *indeterminacy* that renders evolutionary biology – and the genomic knowledge that is associated with this field of inquiry – valuable from a queer and anti-racist standpoint. In this sense, her reappraisal of Darwinian evolutionary theory teaches us that the value of genomic knowledge lies not in its ability to isolate the origins of particular forms of racial and sexual difference, as ongoing research into the so-called “gay gene” and other popular discourses around genetics would have it, but in its capacity for shedding light on the potential for difference and change that is immanent in all biological bodies.

The closing chapters of *Salt Fish Girl* redefine diasporic and queer biosociality in terms that echo Massumi and Grosz’s insistence on the indeterminacy of the evolutionary and ontogenetic processes that mediate the development of living organisms. This remobilization of genomic knowledge is enacted through the conspicuous proliferation of reproductive scenarios that marks the end of the novel. The first of these scenarios appears in the passage in which Nu Wa’s and Miranda’s first-person narratives finally merge to reveal the means by which the snake goddess was able to reincarnate as Miranda in the contemporary present. The passage begins with Nu Wa recounting how, having drowned in her previous life, she woke up to find herself drifting at the bottom of the South China Sea. She then relates how, spotting a durian tree in full flower at the water’s edge, she swam to shore, crawled into one of the tree’s “barely opened” buds, and waited for it to develop into a fully-grown durian fruit (208). As her voice merges with that of the unborn Miranda, Nu Wa describes how she wrapped her coils around one of the durian fruit’s seeds and squeezed it “until something inside the seed seemed to stir” (209). It was at this moment that Miranda’s parents stumbled upon the durian tree and picked one of its fruits

– presumably the one carrying Nu Wa’s freshly fertilized seed (209). But while this reconstruction of events seems to establish a direct causal link between Nu Wa’s “fertilization” of the durian tree and Miranda’s subsequent birth, the lines of causality connecting these two phenomena begin to multiply and refract as Lai draws attention to the plethora of material agencies that mediated Nu Wa’s encounter with the durian tree. Indeed, although Nu Wa casts her fertilization of the durian fruit as a “supernatural” act of individual “tenacity” (209), her description of the encounter inadvertently reveals that the durian tree was *anything* but passive in the exchange. Evoking the notorious ability of plant species to produce biochemical compounds that will attract other creatures, seducing them to act as pollinators and seed dispersers, Lai emphasizes that Nu Wa’s impulse to fertilize the durian fruit was triggered as much by the tree’s irresistibly “strange and marvelous odour” (208) as it was by Nu Wa’s own tenacious will to live.⁵¹ This symbiosis is not entirely lost on Nu Wa, who tacitly acknowledges the durian tree’s agency when she states that, as she wrapped herself around the durian fruit, she could feel the fruit embracing her back, its “strange acids [working] at [her] flesh in a way that discomfited [her]” (209). This sense of co-constitution between multiple material agencies is exacerbated by the subsequent revelation that the durian tree in question was likely cross-pollinated by a crop of genetically modified plants that had been developed a century earlier as a reproductive treatment for women. As Evie explains to Miranda,

they were implanting human genes into fruit as fertility therapy for women who could not conceive. And of course the pollen blew every which way and could not be contained. And fertilized the fruit of trees bred for other purposes – trees bred to withstand cold climates, trees bred to produce fruit that would strengthen the blood. Perhaps some mutations were also involved. What we learned is that the

fruit of certain trees could make women pregnant without any need for
insemination. (258)

Nu Wa's acknowledgement of the durian tree's material agency, coupled with Evie's declarations regarding the hybrid nature of the tree and the unpredictable role of random mutation in phenotypic development, works to unsettle the linear myth of creation that Miranda constructs for herself when she imagines Nu Wa as a mitochondrial Eve spreading her lineage through a single-handed act of mitosis. In place of this fantasy of endogamous conception, Lai constructs a messy scene of dynamic co-constitution between the snake goddess, the durian tree, the multiple GMO crops that ostensibly cross-fertilized the tree, and Miranda's parents.

Lai's use of genomic metaphors to construct a non-essentialist model of biological descent culminates with the closing scene of the novel, in which Miranda and Evie both assume serpentine forms and slither into a hot spring to welcome the birth of Miranda's daughter. Like the earlier passage in which Nu Wa describes her encounter with the durian tree, Miranda's account of her bodily transformation and subsequent labour is rife with images of co-constitution between multiple material agencies, both human and non-human. While the durian tree is not physically present during the scene, its influence remains palpable throughout, for Lai reminds us that, just like her mother before her, Miranda conceived her child shortly after eating a durian fruit. However, once again, the exact nature of the fruit's role in Miranda's conception remains unclear. By highlighting the impossibility of untangling the host of material agencies that were involved in both the baby's *and* Miranda's own conception, Lai suggests that the desire to isolate one's precise genetic origins might be entirely misplaced, as it connects knowledge to a pre-established object rather than discovery and inquiry, and thus deters us from recognizing the complex evolutionary and ontogenetic processes that shape all living organisms, as well as the

potential for change that inheres through those processes. Ultimately, Lai redirects this thirst for genetic knowledge towards more fruitful ends by casting Miranda and Evie's transcorporeal exchange in the hot spring as a *productive* – as opposed to narrowly *reproductive* – encounter, one that encapsulates what Grosz describes as the multiple “possibilities of becoming, and becoming-other” that arise from the body's immersion in dynamic biological processes (*Becoming Undone* 20). Thus, as their tails weave into a serpentine formation reminiscent of DNA's double helix structure, Miranda realizes that she and Evie are products *both* of the genetic materials they have inherited from their Chinese ancestors and the new variations triggered by the interaction between these materials and other genes present in the human genome, as well as the wider environment. In Miranda's words, “once we stepped out of mud, now we step out of moist earth, out of DNA both new and old, an imprint of what has gone before, but also a variation. By our difference we mark how ancient the alphabet of our bodies. By our strangeness we write our bodies into the future” (269). In short, Miranda recognizes that enfolded into the very material substance of their bodies is a history of both continuity and change. This final scene suggests that looking at diasporic and queer identity through the lens of genetic science need not result in gene determinism if we understand gene expression in the context of an evolutionary history marked by the constant push and pull between the continuity provided by gene inheritance and the virtual potential created by the dynamic interaction between genes and the environment. Evie's character stands as a powerful testament to this virtual potential: made with the same biogenetic materials as her fellow workers, she displays an “unlimited capacity for resistance” that defies her genetic inscription as a docile labourer (216).

Returning to some of the questions I posed at the beginning of this chapter regarding Lai's management of speculative temporality, I want to suggest that Lai's remobilization of

genomic discourse has profound consequences for our understanding of the relationship between the “promissory futures” projected by biocapitalism and the versions of futurity available to the speculative imagination. More specifically, Lai’s novel demonstrates how re-framing diasporic and queer relatedness through the lens of non-linear biology might enable writers of speculative fiction to identify more hopeful possibilities outside of the “promissory futures” projected by biocapitalism. Indeed, if, on one hand, *Salt Fish Girl* projects a dystopic future in which the bodies of women, animals, and plants have become patentable commodities, on the other, it exploits the cross-pollination between speculative fiction and the more fantastical aspects of science fiction in order to situate this dystopic future within a compressed evolutionary time scale that emphasizes the dynamic transcorporeal and evolutionary processes through which bodies become. Merging references to evolutionary biology with a folk myth that traces the origins of the human to an amphibious ancestor, Lai playfully echoes evolutionary biology’s suggestion that thinking about gene inheritance in an evolutionary context involves recognizing that “organisms are not limited for their evolution to genes that belong to the gene pool of their species,” and that “it [is] plausible that in the time-scale of evolution the whole of the gene pool of the biosphere is available to all organisms” (Dawkins 161). By situating her narrative in an evolutionary time scale characterized by what Haraway would describe as the “multidirectional gene flow” across species (298), Lai is able to imagine the potential consequences of introducing genetically modified organisms into the environment (particularly the risks posed by the cross-pollination between GMO and non-GMO crops) while simultaneously emphasizing the more open-ended possibilities that remain archived within biological bodies *despite* these environmental pressures. Thus, in contrast to more deterministic works of speculative fiction like Atwood’s *Oryx and Crake*, *Salt Fish Girl* constructs a temporality that – to borrow from Grosz –

figures futurity not as a pre-determined outcome, but as an “open-ended but relentless force” that “undoes all stability and identity while also retaining a fidelity to historical forces” (Grosz, *Becoming Undone* 3).

Reproductive Justice, Environmental Justice, and Biosocial Activism

Despite offering a powerful alternative to essentialist biogenetic discourses, new materialist frameworks like the ones constructed by Massumi and Grosz have often been criticized for their perceived lack of political engagement, and particularly for their lack of attention to environmental issues that have a direct bearing on the interaction between genes and the environment. For instance, ecocritic Stacy Alaimo argues that even though Grosz “projects a Darwinian philosophy that is rich with both a recognition of materiality and a sense of wonder,” her unreserved endorsement of a Darwinian ontology “which mourns no particular extinction and which waits, with surprise, to see what takes the place of the extinct” lies at odds with more environmentally minded materialist frameworks which are more seriously invested in questions of sustainability (11). Lai’s novel seizes on this oversight in new materialist philosophy, and works to redress it by situating its critique of normative biogenetic and reproductive discourses in the context of ongoing environmental debates around the genetic modification and corporate patenting of seeds. Perhaps influenced by Vandana Shiva’s extensive ecofeminist writings on the relationship between seed biopiracy and the socioeconomic marginalization of women in the Global South, Lai invokes the possibility of using this pressing biocultural issue as a platform for forging biosocial coalitions between racialized communities, sexual minorities, and other constituencies affected by the various forms of gene reductionism that biocapitalism has brought in its wake. These coalitional possibilities follow from the recognition that, as queer ecocritic

Noël Sturgeon has recently argued, models of reproduction and biological relatedness have profound environmental consequences, which means that anti-racist and queer efforts to disrupt normative biogenetic discourses must also interrogate how issues of reproductive justice intersect with issues of *environmental* justice. In Sturgeon's words,

... how we reproduce – whether we are reproducing people, families, cultures, societies, and/or the planet – is politicized in several layered and contradictory ways.... And embedded in contemporary appeals to the natural status of reproduction are deep attachments to political positions with serious economic and environmental consequences: to dominance of the Global North over the Global South, to sexism, to heterosexism, and to unfettered exploitation of environmental resources by corporations and social elites. (104)

One of the key arenas in which the intersection between reproductive and environmental justice can be readily observed is the global struggle for seed sovereignty. As Shiva has long argued, one of the most problematic aspects of seed biopiracy lies in the fact that, aside from eliding the intellectual and material contributions that “Third World” farmers have made to the “conservation, breeding, domestication, and development” of the world's seed varieties, this phenomenon is gradually transforming the seed from “a means of production through regeneration” to a “non-regenerative” commodity that must be purchased anew with every planting season (Shiva, *Biopiracy* 51, 50). Biotechnological efforts to restrict the regenerative capacity of seeds reached new heights towards end of the 1990s with the patenting of the so-called “Terminator” transgene – a technology that causes plants to produce sterile seeds.⁵² According to Shiva, in addition to compromising the food security of rural communities across the Global South, this strategy constitutes a direct encroachment on the biological resources of

women in particular, since, in many rural communities, they are the ones who typically carry out the work of seed selection and conservation through their “food and grain storage” activities (xvi). In this sense, efforts to stifle the regenerative capacity of seeds through “Terminator” and other similar technologies have placed serious – sometimes devastating – limitations on the biological and (re)productive resources of women in the Global South.

In *Salt Fish Girl*, Lai pushes this bioimperialist dynamic to its logical conclusion, projecting a future in which not just seeds, but women *themselves* have been transformed from self-organizing living systems into mere industrial inputs. The Sonias fight this bioimperialism partly through discursive means, rigging the production lines in Pallas’s shoe factories in order to flood the city with a line of “special edition cross-trainer[s]” inscribed with stories, poems, and illustrations that call attention to the relations of production involved in manufacturing Pallas footwear (249). However, as Miranda eventually discovers, the Sonias’ subversion runs much deeper than this sneaker sabotage campaign. In fact, we might argue that, with its somewhat outdated resemblance to the “culture jamming” stunts that characterized the anti-globalization activism of the 1980s and 90s, this strategy ironically works to underscore the insufficiency of cultural modes of resistance in addressing biocultural problems that have their basis on the manipulation of living processes.⁵³ Recognizing the need for forms of resistance that challenge the biological, and not just sociopolitical, dimensions of bioimperialism, the Sonias turn the cross-pollination between GMO and non-GMO plants to their advantage, harvesting the fruits of the GMO-fertilized durian tree and using them as a fertility aid in order to reclaim control over their own reproduction. As Miranda states when she learns the truth about the Sonias’ garden, “in that moment I understood the secret of the trees, the clever Sonias, the depth of their subversion. They were building a free society of their own from the ground up” (256). The

Sonias' agricultural practices are charged with coalitional resonances, evoking the seed-banking campaigns launched by grass roots movements like the Navdanya network in India and the Zapatista "Mother Seeds in Resistance" project in Mexico, both of which have articulated their goals in terms of the need to recognize that the global struggles for social, (re)productive, and environmental justice are all interrelated.⁵⁴ By tracing these connections between the biocultural concerns of diasporic and queer communities in North America and those of the seed sovereignty movements which have taken root in the Global South, Lai points to the possibility of constructing a model of diasporic biosociality that not only forges coalitions between racial and sexual minorities, but also opens up anti-racist and queer political movements to more environmentally minded ways of relating to the material world.

Despite outlining some promising avenues for transforming diasporic biosociality into a more coalitional, environmentally minded, and activist-oriented practice, the Sonias' agroecological strategies are not without their problems. Indeed, it could be argued that, by constructing an agroecological ethos that revolves around biological reproduction, the Sonias' activism roots anti-imperial resistance in a "reproductive futurism" (to borrow a phrase from queer theorist Lee Edelman) that sits rather uneasily with the queer project of carving out spaces for living *outside* of the heteronormative circuits of kinship and reproduction.⁵⁵ Indeed, with its welcoming air of familial belonging and its garden dedicated to growing vegetables to "support and strengthen [their] fetuses" (258), the Sonias' home evokes a familiarly conservative brand of domesticity, one that seems little removed from the hegemonizing investments that characterize many mainstream versions of environmental discourse.⁵⁶ At the same time, when considered in the context of the global struggle for seed sovereignty, the Sonias' repro-centrism highlights the necessity of fostering biocultural practices that might enable Indigenous and "third world"

farmers to preserve the regenerative capacity of their seed supply. Ultimately, this unresolved tension between the novel's queer and environmental projects serves to highlight the difficulties of enacting the coalitional possibilities that arise from the intersection between issues of social, reproductive, and environmental justice. Perhaps Lai aimed to emphasize that even though the goals of queer, anti-racist, and green projects may not always line up completely, these movements can still derive important lessons from one another. Ultimately, through its fraught attempts to carve out a coalitional, as opposed to essentialist model of diasporic biosociality, *Salt Fish Girl* teaches us that, just as environmental justice movements must learn to let go of normative ideas about nature and the family, anti-racist and queer movements need to open up their projects to more environmentally minded concerns – an exercise that necessarily demands a more nuanced engagement with the life sciences, including non-deterministic versions of genetic science.

Chapter 4

“[B]uilding a raft named respect”: Tracing Relational Possibilities Between Diasporic, Indigenous, and Scientific Knowledges in Rita Wong’s Eco-Cosmopolitan Poetics

In a critical essay titled “seeds, streams, see/pages,” Rita Wong declares: “a poetics begins with my body – a walking, breathing, dreaming bag of water – holding an instrument, out of which another fluid, ink, releases” (21). Her statement aligns her creative project with the principles of “projective” verse, a poetic form that challenges conventional syntax by returning to a direct experience of the physical body and allowing the breath, and not traditional meter, to dictate the shape and cadence of the poetic line.⁵⁷ In her 2007 poetry collection *forage*, Wong extends and complicates this call for a poetics that is grounded in the speaker’s own embodiment by emphasizing that paying attention to the body, and to the breath that flows from it, involves acknowledging the other materialities and speaking subjects who share in the air that we breathe. Thus, in the poem “parent(h)et(h)ical breath,” the speaker envisions the planet as a “pulmonary commons” that is “cluttered” both by environmental pollutants and by competing historical utterances that serve as “obdurate rem(a)inders” of the centuries of colonial violence she has inherited as an inhabitant of the territory now known as British Columbia (55). Ultimately, the speaker realizes that she cannot participate in this “pulmonary commons” in an ethical manner without acknowledging the voices and political claims of the Indigenous peoples whose land she inhabits. This revelation is reinforced by the handwritten marginalia which frames the poem, and which cites Roy Kiyooka’s affirmation of the ethical debt that Japanese Canadians and other diasporic Canadian communities owe to First Nations: “If History can be said to ‘mean’ anything for the likes-of-us,” the quote reads, “it must surely mean that those who in everyway preceded us... have a claim upon those of us who were so recently dispossessed” (55).

By emphasizing that our breath links us both to the air currents that circulate around the globe and to localized struggles to decolonize Indigenous territories, Wong highlights the need to construct an environmental politics that combines an attention to global and local concerns. But even though previous criticism has examined how *forage* draws on global perspectives to challenge essentialist constructions of place and identity, very little has been said about the way in which the collection combines this global awareness with a localized attention to Indigenous struggles for decolonization and Indigenous epistemologies. This chapter addresses this critical gap by examining how Wong uses the intersection between global and local environmental risks to stage a productive encounter between diasporic, Indigenous, and scientific knowledge production. Drawing on current ecocritical frameworks that emphasize the need to cultivate an “eco-cosmopolitan” (Heise) ethics that attends to the dynamic interrelation between the local and the global, I argue that *forage* constructs diasporic subjectivity as a fertile site for cultivating the perceptual changes that are necessary in order to construct a more ethical imagination of the global. At the same time, however, Wong stresses that in order to participate ethically in this reconfiguration of knowledge, diasporas need to confront a question that has long remained a lacuna in their thinking: how diasporic subjects, in their ambivalent condition as racialized settlers, have contributed to the ongoing colonization of Indigenous territories. Seizing on Wong’s assertion, in her critical writings about the politics and poetics of water conservation, that one way for diasporic and Indigenous communities “to move forward together... is to cooperatively focus” on shared environmental concerns such as the health of the collective water supply (“Restitution” 85), I argue that *forage* mobilizes the problem of seed biopiracy as another key “matter of concern” that can help build coalitions across communities and social movements. I demonstrate that, far from adopting an anti-science stance, Wong’s treatment of the GMO seed

debate establishes a dialogue between Indigenous epistemologies that emphasize the dynamic interrelation between land, people, and natural resources and scientific theories that emphasize the self-organizing potential of living systems. By enacting this dialogue, *forage* invokes the possibility of establishing a more ethical relationship between diasporic, Indigenous, and scientific knowledges.

Forging More Ethical Forms of Globalism: Eco-Cosmopolitanism and Wong's Collage Aesthetic

The need to establish a more nuanced understanding of the relationship between the local and the global has been a subject of heated debate in recent environmental criticism. From Aldo Leopold's suggestion that environmental action must spring from an "intense consciousness of land" (qtd. in Heise 35), to Gary Snyder's insistence on the need to challenge the modern loss of "ecological knowledge and community solidarity" by recuperating the experience of a "genuine home region" (40), to Kirkpatrick Sale's assertion that people can only be compelled to care about environmental risks that they can observe in their own communities (qtd. in Heise 34), environmental discourses have long advocated a return to the local as an antidote to the deterritorializing effects of globalization. However, as Ursula Heise points out, this "sense of place" rhetoric conflicts with the goals of environmental justice in several ways. First, it treats the local as a given category, eliding the competing interests that often fracture local communities from within and thus make it difficult for them to agree on what constitutes the most ecological course of action (46). Second, it fails to acknowledge that many environmental risks cannot be addressed through local action alone, since they originate from sources that are "geographically, politically, and socially distant" from the communities they affect (Heise 53). Third, it fails to account for the ways in which global processes "transform the experience of

place even... for those individuals and communities that stay put,” making a “complete detachment from [global] networks” difficult, if not impossible, to achieve (52, 54). In light of these challenges, Heise argues that, instead of advocating a return to the local, environmentalists need develop conceptual frameworks that can enable them to engage with struggles that are *both* local and global in scale, and that form networks of shared environmental risk between actors that may appear to be separated by vast spatial and temporal distances. More specifically, she argues that environmentalists need to cultivate an “eco-cosmopolitan” awareness of “how a wide variety of both natural and cultural places and processes are connected and shape each other around the world, and how human impact affects and changes this connectedness” (21). Heise contends that this need for more “eco-cosmopolitan” ways of thinking has sparked an important shift in the aesthetic forms used by environmental literature and art. She notes that, instead of depicting environmental crises from a narrow place-based perspective, or through hegemonizing visions of the global such as the “Blue Planet” imagery that dominated environmental discourse in the years following the publication of the first full-view photo of the Earth, many environmental writers and artists have begun to rely on modes of representation that combine allegories of global interdependence with a collage aesthetic in which the parts remain independent from the whole in order to create a vision of the global that accommodates “both a sense of the planet’s many types of connectedness and of cultural heterogeneity as well as ecological dynamism” (22, 64). Heise argues that, by constructing the global as a “collage in which all the parts are connected but also lead lives of their own,” this eco-cosmopolitan aesthetic can help forge cross-cultural connections between different social movements while simultaneously calling attention to the cultural and material specificities that shape their respective struggles (64).

Pertinent to this chapter's focus on indigeneity, Heise insists that, far from breaking with "Indigenous traditions" or "local knowledge," eco-cosmopolitanism should bring Indigenous perspectives into a productive dialogue with "a more nuanced understanding of how both local cultural and ecological systems are imbricated in global ones" (59). Yet despite making this declaration, Heise never actually addresses the role of Indigenous knowledge in enacting the more conscientious forms of globalism that eco-cosmopolitanism requires. In a critical essay entitled "Connected Disconnection and Localized Globalism in Pacific Multilingual Literature," American ecopoet Juliana Spahr offers a more concrete framework for thinking about global phenomena while still remaining attentive to Indigenous understandings of the local. Like Heise, Spahr argues that contemporary social movements need to construct a model of globalism that "highlight[s] the relatedness that is the unavoidable result of colonialism and economic globalism" while also emphasizing the "relational difficulties, such as [the] cultural and linguistic difference[s]," that separate distinct local communities (98). Crucially, however, Spahr rejects those models of globalism that rely on a "simplistic celebration of hybridity" or idealize "diasporic transience" in order to create a sense of connection across cultures (77,86). She argues that such models fail to acknowledge the interests of local communities whose relationship to place is "rooted in anticolonial sovereign struggles" (83). Spahr finds a useful alternative to these reductive forms of global awareness in the "localized globalism" that characterizes the Indigenous literatures of the Pacific Islands. Drawing on examples from several Hawaiian and Maori writers, she argues that Pacific literature "acknowledges connection as inevitable," but draws on various "multilingual gestures" to "insis[t] that connection [must] not overwrite complicated histories or violate certain limits" (78). She notes, for instance, that Pacific writers often place English and Pacific languages side by side in order to "emphasize the struggles

between distinctive cultural traditions and values” (79). According to Spahr, instead of producing a sense of “hybridity and syncretism,” these multilingual gestures underscore the need for a “multilingual dialogue” that is grounded in respect for “localized sovereignty” (90). Although Spahr’s article focuses on a different local context than the one that informs *forage*, her discussion of the multilingual gestures used by Pacific writers offers a useful framework for thinking about the interactions between English, Cantonese, and Indigenous languages which take place in *forage*.

In *forage*, Wong constructs the relationship between the global and the local in terms that resonate both with Heise’s notion of “eco-cosmopolitanism” and with Spahr’s insights about the role of multilingual play in producing literary representations of the global that do not overwrite the tension between distinct cultural contexts. Throughout the collection, Wong uses a combination of allegory, collage, and multilingual gestures to establish a dynamic relationship between the local and the global. In so doing, she enacts the conceptual shifts that are necessary for grappling with environmental risks that traverse multiple geographical boundaries and form unexpected links between actors that are dislocated by vast geographical and cultural differences, from “First World” activists concerned about the ethical implications of their consumer patterns, to the “Third World” workers who bear the economic and toxic burden of those patterns, to Indigenous communities engaged in place-based struggles for decolonization. Like many of the literary and artistic works that Heise describes in *Sense of Place and Sense of Planet*, *forage* produces this eco-cosmopolitan vision by combining various allegories of global connectedness with a collage aesthetic that highlights the heterogeneous social and environmental contexts that make up the global.

As other critics have already noted, one of the key metaphors that Wong relies upon in order to produce the sense of a global environment is that of the “value chains” that are involved in the production of the commodities we interact with on a daily basis. This conceit makes its first appearance in the appropriately titled opening poem “value chains,” which documents the speaker’s attempts to understand her own place in a landscape shaped by corporate capitalism and environmental degradation. The speaker begins her task by examining the “internal frontier” of her own “consumer patterns” (11). As she begins to trace these patterns, however, she is struck by a question that extends her line of investigation far beyond her own habits and immediate surroundings: “what is the context for ‘you people are hard workers’?” she asks, alluding, perhaps, to the common stereotyping of “Third World” populations and racialized immigrants as sources of low-cost labour (11). The poem does not directly answer this question, but readers can assume that, in the Canadian context, the background for such a statement would include phenomena like the outsourcing of Canadian manufacturing to sweat shops in the Global South and the contracting of seasonal migrant workers on Canadian farms. Thus, the poem underscores that tracing our patterns of consumption necessarily involves acknowledging our entanglement in value chains that are dispersed across multiple locations. This recognition prompts the speaker to pose a question that in many ways stands as a central organizing concern for the collection as a whole: “how to turn english from a low-context language into a high-context language” (11)? Or, put differently, how can contemporary social and environmental justice movements rethink their relationship to language so that they may be able to think across different geographical contexts and speak about interrelated questions of production and consumption, labour and migration, and environmental risk and human embodiment all in the same breath?

While “value chains” offers a sweeping view of the globalized processes that shape the contemporary world while also foregrounding the difficulties of finding an adequate language to describe these processes, other poems in the collection induce a sense of global awareness by tracing the transnational life cycles of specific consumer products, examining not only the raw materials and manufacturing processes that were involved in their making, but also their subsequent effects on the bodies of the workers and consumers with whom they come into contact as they circulate around the globe. As Matthew Zantigh notes, by tracing the trajectories of these products, Wong prompts us to “consider how the material objects of everyday life emerge from networks that connect disparate places and people together, ... link[ing] North American consumer practices to manufacturing centers like China and Brazil and to resource extraction networks including palladium mines in Russia and Africa but also to the plastics industry, which itself depends on the oil industry” (624). For instance, in the poem “sort by day, burn by night,” which interrogates the flow of North American e-waste to poorly regulated disposal sites in China, Wong follows the trajectory of a personal laptop from its beginnings as a “compilation of lead, aluminum, iron,/ plastics, orchestrated mercury, arsenic, [and] antimony” to its final disposal in the Chinese village of Guiyu, where local residents will go on to “‘liberate [its] recyclable materials’ into canals and rivers,/ turning them into [an] acid sludge” that will fill the local water supply with carcinogenic chemicals (*forage* 46). Meanwhile, in the poems “the girl who ate rice everyday,” “nervous organism,” “canola queasy,” and “chaos feary,” all of which comment on the global debate over the spread of GMO crops, Wong examines how the seemingly innocuous choices we make at the supermarket and the dinner table implicate us in a global agri-food system that is gradually appropriating the resources of farming communities around the world, from the Canadian farmers whose canola fields are being overtaken by

“yellow genetically stacked prairie crops,” to the Indigenous and “Third World” farmers who are struggling to protect their landraces from “trans over genic harassment” by multinational seed corporations (*forage* 36, 37).

Some of the most compelling metaphors of connectedness that appear in *forage* stem from Wong’s attempts to envision the relational networks that are formed by the air and water currents that circulate around the globe, forging trans-corporeal links not only between seemingly diverse ecosystems, but also between the communities who inhabit them. In some poems, such as the aforementioned “parent(h)et(h)ical breath,” Wong figures the planet as a “pulmonary commons” in which a multitude of individuals and communities “meet one another in the commotion of nouns, gerunds, subordinate clauses,” and “urban smog” that fill the air (*forage* 53). In other poems, she imagines the planet as a water-based commons in which all living organisms are interconnected through the water that flows in and out of their bodies. Throughout the collection, Wong shows how this most elemental of shared resources literally transforms our bodies into “vessels” for minerals, environmental pollutants, and various other substances that “may have previously circulated in dinosaurs millions of years ago, or jostled around with fish in lakes and rivers, or been processed by [their] local sewage treatment plant” (*forage* 54; “Watersheds” par 7). In her 2005 poetry collection *thisconnectionof everyonewithlungs*, which also uses the trope of pulmonary exchange to explore the interconnection between diverse bodies, communities, and ecosystems, Juliana Spahr makes the poignant observation that our bodily immersion in these pulmonary networks is both “lovely” and “doomed,” since it connects us not just to other people and living organisms, but also to a multitude of environmental pollutants that circulate in the air supply, transforming our lungs into living repositories for “sulfur and sulfuric acid and/ titanium and nickel and minute silicon

particles from pulverized/ glass and concrete” (9-10). Similarly, in *forage*, the recognition that human beings are quite literally enmeshed in the planet’s “pulmonary” and water-based commons gives rise to a host of anxieties about the shared environmental risks that may result from such entanglements. For instance, in “sort by day, burn by night,” the speaker is haunted by the recognition that the metals contained in her discarded electronics will one day take up residence in the lungs of the e-waste workers of Guiyu village:

where do metals come from?
 where do they return?
 bony bodies inhale carcinogenic toner dust,
 burn copper-laden wires,
 peer at old cathay, cathode ray tubes.
 what if you don’t live in guiyu village?
 what if your pentium got dumped in guiyu village?
 your garbage, someone else’s cancer? (46-47)

Similarly, in the poem “fluorine,” the speaker meditates on the fact that many of the waste materials she has discarded in the course of her life as a consumer – “arsenic in calculators, mercury in felt hats” – have been “transported across oceans” or left to wither in “sad rural neglect” in remote locations (14). Despite feeling uneasy about her own role in generating this waste, the speaker finds momentary comfort in the thought that she will not have to bear its toxic burden herself, for “others/ [will] fall into [her] hazardous waste piles as [she] sleep[s]” (14). However, the poem emphasizes that even if they are discarded in faraway locations, these waste products will inevitably leach into the groundwater, eventually finding their way back to the speaker’s own location through the water supply so that “generations later [she]/ will brush her

teeth with nuclear intensity” (14). The speaker shifts from a tone of subtle complacency to one of anxious uncertainty as she realizes that the seemingly “mundane” act of brushing her teeth on a “cold crisp morning” constitutes an environmental risk scenario in and of itself, since it links her to the vast network of toxic pollutants that permeate the water supply (14).

Another key trope of connectedness that Wong relies upon in order to foster a sense of the global in *forage* is that of the protest song. Throughout the collection, she darts back and forth between metaphors and conceits that emphasize people’s trans-corporeal entanglement in globalized networks of environmental risk and protest songs and rally chants that evoke the transnational forms of solidarity that might arise from such entanglements. This shift from the apprehension of the individual’s immersion in risk scenarios that are global in scope to the recognition that such risks might provide a basis for solidarity between diverse constituencies is dramatized in the poem “green trust.” If, in “fluorine,” Wong mobilizes the trope of the watershed in order to highlight the material persistence and global mobility of the toxic chemicals that circulate in the water supply, in “green trust,” she uses the same motif to highlight the coalitional possibilities that might emerge if we recognize that our vulnerability to various forms of water-based pollution links us to other people, places, and even species in profoundly meaningful ways. The poem begins in an elegiac mode, with the speaker lamenting the current state of the world’s water-based ecology: “aquifers decline and/ benzene creeps into the water supply. why learn the word/ benzene? so as not to choke on oil and gas, hoping for wind/ and wave and sun and tide to climb, remember moon’s wax” (52). Her despair turns into hope, however, as she studies her surroundings and begins to notice signs of ecological resilience all around her: “I looked hard for my nutshell, cracked just enough to admit/ a stubborn moon. ants crept and crawled for mercy and/ sustenance. geckoes fed on the ants” (52). As the poem draws

to a close, the speaker determines that just as these minute creatures cling stubbornly to life, she too must meet the environmental risks that surround her with a spirit of resilience. Thus, what begins as an elegy for the “drying water table” ends as a rally cry for water rights activism, with the speaker affirming her conviction that the threat of water contamination will bring about “the biggest [shift] yet”: “the union of the living, from mosquito to manatee to mom” (52). With its romantic imagery and simple poetic diction, this concluding call for transpecies solidarity might be registered as a mere throwback to the utopian visions of connectedness which were inspired by the Gaia hypothesis and other new age philosophies of the 1960s and 70s.⁵⁸ However, the emphasis on the circulation of toxic substances which permeates the rest of the poem underscores that, more than a utopian celebration of the inherent connectedness of all living organisms, these final lines are better understood as a call for action rooted in the recognition that, as Alaimo puts it, the global circulation of environmental pollutants can “provoke an ethics that is not circumscribed by the human but is instead accountable to a material world that is never merely an external place but always the very substance of ourselves and others” (158). This call for translocal forms of solidarity is reaffirmed in “for Lee Kyung Hae,” an elegy dedicated to the Korean farmer and activist who martyred himself during the 2003 WTO protests in Cancun.⁵⁹ Here, the speaker articulates the hope that Hae’s sacrifice will inspire demonstrations of “camaraderie” between “Navdanya, Wild Rice Moon, [and] Hou T’u” (63). By positing this connection between the Navdanya seed-preservation network in India; the “Wild Rice Moon” network formed by Ojibwe and Anishinaabeg activists in North America; and the deity known as the “Spirit of the Earth” in Chinese mythology,⁶⁰ the poem raises the hope that the policies enforced by global governing bodies like the WTO will spawn a *different* kind of globalism – one rooted in a translocal solidarity between the diverse communities that are

currently fighting to prevent their agricultural and biological resources from being appropriated by seed corporations. The possibility of forming networks of solidarity across different movements is once again reiterated in “powell street,” a full-fledged rally chant that begins as a celebration of Asian-Canadian pride, but then swells to encompass various manifestations of LGBTQ pride – not just the “glossy commercial brand” associated with mainstream gay culture, but “a Burnaby correctional centre prisoner pride, a mom/ and dad marching in PFLAG pride, an everyday in high school/ pride,” and a “creating our own rituals because we need to pride” (72). Thus, the poem ends by celebrating the diverse manifestations of queerness and unexpected networks of solidarity that might arise from these groups’ shared struggle to “constantly invent what we desire” (72). Ultimately, Wong’s effort to infuse her poetics with multiple calls for cross-cultural and cross-movement solidarity reflects her commitment to the notion that an ecopoetics must remain attuned to the practical demands of social and environmental activism, and must therefore make room for tropes and patterns of expression that might resonate with many different audiences and constituencies.⁶¹ In this sense, poems like “green trust,” “for Lee Kyung Hae,” and “powell street” reflect Wong’s awareness that, as ecocritics Laura-Gray Street and Ann Fisher-Wirth have stated, ecopoetry is at its most productive when it challenges readers to slide between “contemplation, activism, and self-reflexivity” (n.pag.), which means that it must incorporate formal strategies that encourage a diverse range of aesthetic and political responses.

Despite being inspired by some very concrete practical concerns, the expressions of global solidarity that appear in these poems could seem trite – if not downright saccharine – were they not accompanied by an ongoing emphasis on the “cultural heterogeneity and ecological dynamism” that the global encompasses (Heise 64), as well as an ongoing attention to the

cognitive labour involved in grappling with these multiple contexts. Wong emphasizes this heterogeneity through the use of a collage aesthetic that highlights the multiplicity of ecological, cultural, and linguistic contexts that inform the social and environmental concerns she articulates in *forage*. This aesthetic orientation is anticipated in the photograph that appears on the cover of the collection, and which features a landfill littered with discarded motherboards. The collage effect created by this image echoes the artifactual quality of text itself, which brings together a staggering variety of “found” materials and media formats, including excerpts from popular science books like Vandana Shiva’s *Biopiracy* and Mae-Wan Ho’s *Genetic Engineering: Dream or Nightmare?*; multiple web pages and web resources, including web-based videos and search results from the US patent database; visual media such as photographs and concrete poems; and a multitude of handwritten marginalia that document the poet’s extra-textual efforts to understand the legal and scientific background of the multiple environmental risks she explores throughout the collection. The list of references that appears at the end of the text exacerbates the cognitive overload created by this accretion of textual and visual materials by emphasizing that understanding the global and local “matters of concern” addressed by the collection will demand ongoing research on the part of the reader.

In yet another layer of mediation, Wong draws on interactive new media elements to emphasize the contingent and constantly changing nature of these “matters of concern.” For instance, in the prose poem “the girl who ate rice almost every day,” she dramatizes the heterogeneous political, scientific and ecological factors involved in the global debate around the spread of genetically modified seeds by structuring the poem in a way that implicates the reader in the cognitive struggle to understand these contexts. The poem is divided into two parallel columns: the column to the left dramatizes popular anxieties around the potential health effects

and environmental implications of genetically modified organisms by constructing a short speculative tale about a girl who realizes that the stalls in her local supermarket are filled with transgenic foods that harbour “dangerous allergies and surprising properties,” and eventually decides to reclaim control over her own food supply by growing her own wild rice in the sewers of her city (19). The column to the right complicates this tale of anti-GMO resistance by demonstrating that keeping abreast of the global GMO debate demands an engagement with legal and scientific discourses that will vary according to the specific crop under discussion and the specific cultural and ecological contexts in which that crop is typically grown. Wong immerses readers in this shifting socioecological landscape by asking them to log on to the US patent database to conduct a series of patent searches. She then lists the exact number of patents readers can expect to find for each one of the suggested search terms (4 for rice, 21 for corn, 2 for tomato, and so on), only to add that “these numbers are current as of January 2007” and are likely to have increased “by the time [readers] access the database” themselves – a caveat which works to emphasize that each one of the patents listed in the column is but a single node in a data set that will continue to expand over time (16). In a gesture that further emphasizes the situated and contingent nature of each node in this collective, Wong fills the rest of the column with a series of patent information abstracts, some of which include not only technical information regarding the specific genetic traits and crop breeding methods covered by the patent, but also culturally specific information regarding the patent’s practical applications. For instance, the information abstract for “*US Patent 5,663,484: Basmati rice lines and grains*” notes that the rice breeding methods covered by the patent are designed to yield grains that “*can be cooked to the firmness of traditional basmati rice preparations*,” a statement that not only evokes the cultural practices that inform basmati rice breeding, but, when taken in the context of the poem as a

whole, also stands as an ironic commentary on the pirating of traditional knowledge by multinational seed corporations (18). Through this juxtaposition of interactive elements that force the reader to think about the situated cultural and ecological processes that mediate the global GMO debate, “the girl who ate rice everyday” evokes some of the epistemological shifts that contemporary environmentalists need to enact in order to cultivate a more nuanced understanding of the dynamic relationship between the global and local concerns.

Wong reiterates her call for a more sophisticated understanding of the cultural dynamisms that form part of the global by using a series of multilingual gestures to underscore the “relational differences” (to borrow a phrase from Spahr) that separate the diverse communities and social movements with which she engages throughout *forage*. Most of the poems in the collection are spoken from the perspective of a second generation Chinese-Canadian subject who has a tenuous relationship with both of the languages that informed her upbringing. This tension gives rise to a series of meditations on the politics of language acquisition and cross-cultural translation, as in the poem “trip,” which meditates on the speaker’s upbringing as a “red black bean sesame soup baby” who came “howling into this world” and learned to “run[] the/ cash register with quiet aplomb” as she came of age (15). The opening lines of the poem are filled with a sense of bravado, with the speaker declaring that the “first English word [she learned to speak was] no. No” (15). This initial declaration of agency is complicated, however, by her subsequent recognition that the same language she has used to voice her resistance has also facilitated the oppression of many others, for “the leap/ of faith into english [is] an ocean in which many have drowned” (15). This subtle reference to the colonial burden carried by the English language is reinforced by title of the poem, which can be taken as a reference not only to the geographical dispersals that inform the speaker’s family history, but

also to the controversial TRIPs agreement, an international trade mechanism that the World Trade Organization introduced in the mid-1990s to safeguard the intellectual property rights of multinational corporations. The TRIPs agreement became a key topic of concern for environmental activists in the 1990s because it provided international patent protection for “new varieties of plants” and other biological materials (“TRIPs Agreement” n.pag.). As Vandana Shiva and many others have argued, by allowing for the patenting of biological materials, the TRIPs Agreement set the stage for the “spread of monocultures and the destruction of [crop] diversity” at a global scale (Shiva 89). By punning on the word “trip,” then, Wong draws an implicit parallel between the spread of crop monocultures and the spread of linguistic monocultures (or what Shiva refers to as “monocultures of the mind”), thereby asking us to think about the linguistic erasures that globalization has brought in its wake. Some of the poems in the collection enact these erasures by incorporating hand-written Chinese characters either at the foot or on the margins of the English text. For instance, the poem “language (in)habits,” which reflects on the “urbanization[s] of the mouth” that take place when “round peasant dialect vowels relocate/ off the fields [and] into city streets,” is punctuated by two Chinese inscriptions whose meaning remains inaccessible to non-Chinese speaking readers (34). On one level, this juxtaposition of English text and Chinese inscription works to “silence” the utterances contained in the Chinese text, since it prevents the average English-speaking reader from being able to interpret it. However, by deferring the possibility of interpreting the Chinese inscriptions, this multilingual gesture also works to highlight what Spahr, in a different context, describes as the need “for multilingual dialogue in multilingual situations rather than hybridity and syncretism” (“Multilingual” 90). Indeed, by placing English and Chinese in close proximity to one another while also underscoring the impossibility of achieving a smooth translation between the two

languages (by reminding us that the “low-context” “compartment[s]” provided by the English vocabulary cannot easily accommodate the “high-context” content of Chinese characters, for instance [11]), Wong stresses that addressing the social and environmental problems depicted in *forage* demands a multilingual dialogue that remains attentive to the tensions and power differentials between different cultural constituencies.

This call for multilingual work takes on added urgency in the poem “forage, fumage,” which complicates the speaker’s relationship to language even further by questioning her role in the appropriation and re-naming of the Indigenous territories that make up the expanse of land known as North America:

from the georgia strait to the florida strait, it sounds so
americanned

From the whulge to osceola, kissimmee, caloosahatchee, my tongue
hovers over salishan, seminole words, hesitant and penitent. (30)

The speaker attempts to redress this “americanization” by invoking the Indigenous names of the territories that make up the Florida Strait, but she “hovers” over the words, not only because she has difficulty pronouncing them but also because her “hesitant” attempts to do so confront her with her own status as an uninvited settler on Indigenous territory. Confronted with the need to decolonize her own tongue, the speaker asks: “how does one say *give back* in seminole? in salishan?” (30). Wong stresses that this work of decolonization must be achieved through multilingual dialogue, as opposed to syncretism and translation, by framing the poem with a series of Indigenous place names (Kanata, Saskatchewan, Kebec, Manitoba) followed by their English translations, only to demonstrate that such translations are inadequate because they fail to capture the *relational* spirit of the names in question (30). Indeed, the poem stresses that, more

than simply designating a specific land base, Indigenous place names encapsulate an understanding of nationhood and territoriality that, as Cherokee scholar Daniel Heath Justice explains, encompasses a “web of kinship rights and responsibilities that link the people, the land and the cosmos together in an ongoing and dynamic system of mutually affecting relationships” (152). The speaker therefore recognizes that, in order to fully understand the meaning of these names, she must learn to think of them not as proper nouns with a static English translation, but as verbs that call the listener/reader forth into a mutually affecting relationship with the land. Put differently, the speaker must cultivate a “multilingual fluency” (to invoke a term that Wong has used in her critical writings on diaspora-Indigenous relations) that will enable her to “verb the kanata, verb the ottawa, verb the saskatchewan, the manitoba, [and] quebec” and thus identify more ethical ways of interacting with these lands and the communities to whom they rightfully belong (“Restitution” 87; *forage* 30). I will explore the implications of this multilingual work in more depth later on. For now, I will simply suggest that the multilingual gestures used throughout *forage*, and especially in this poem, emphasize the need to develop forms of global awareness that remain attentive both to local struggles for Indigenous sovereignty, and to the cultural dynamisms and differential power relations that are encompassed within the global.

Re-Thinking the Role of Diasporic Subjects in Environmental and De-colonial Struggles

As I noted earlier, in her discussion of the “localized globalism” practiced by Pacific writers, Spahr takes issue with those forms of globalism that uncritically celebrate “diasporic transience” as a privileged site of syncretism and cultural hybridity (86). While I recognize that the impulse to idealize cultural hybridity is indeed a danger that diaspora writers and critics need to remain attentive to, I want to complicate Spahr’s suggestion that diasporic knowledge

production is synonymous with an uncritical form of cosmopolitanism and is therefore necessarily at odds with the causes of decolonization and localized globalism. Wong's text is particularly illuminating on this point, since it fosters a much more nuanced understanding of the role of diasporic subjects in constructing an eco-cosmopolitan ethics that remains committed to localized struggles for decolonization. Far from framing diasporic subjectivity as an idealized site of cultural hybridity, *forage* figures this subjective terrain as a site of bodily affects and sensations that work to disrupt the speaker's habitual perception of the world, forcing her to think more self-reflexively both about her relationship to other material agencies at work in the environment, and about the ethical duties she owes to First Nations. In so doing, *forage* explores how the embodied experiences that accompany diasporic subjectivity might be seized as opportunities to enact the perceptual changes that are necessary in order to construct more ethical forms of globalism.

In her discussion of the formal strategies employed by eco-cosmopolitan literary works, Heise notes that narrative perspective has crucial implications for the way in which these texts "approac[h] the relationship between local place and global space" (112). I want to extrapolate this insight onto a poetic context by considering how the framing of the lyrical "I" in *forage* inflects the text's construction of the perceptual changes that are needed in order to cultivate a more nuanced imagination of the global. As Christine Kim has noted, the "psychic and social space of [Wong's] speaker is shaped... by postmemory, [or] what Marianne Hirsch defines as 'the relationship of children of survivors of cultural or collective trauma to the experiences of their parents, experiences that they 'remember' only as the narratives and images with which they grew up, but are so powerful, so monumental, as to constitute memories in their own right'" ("Resuscitations" 171). The speaker's status as a subject of postmemory becomes evident

towards the end of the opening poem, when she declares that “sometimes [she] opens her mouth and [her] mother’s silences come/ tumbling out of [her]” – an admission which suggests that her perspective has been crucially shaped by the trauma of previous generations (11). Noting the “interplay” between postmemorial affect and environmental risk in *forage*, Kim argues that Wong stages an intersection between these forces to comment on the ways in which they both “exert significant effects [on embodied experience] but still manage to evade detection by our collective social consciousness” (“Resuscitations” 171). I want to push this line of thinking further by demonstrating that, more than simply pointing out the parallel effects of post-memory and environmental risk, Wong uses this parallel to suggest ways in which the subjective experience of postmemory might be redirected towards environmental and decolonial ends.

As I noted in my introduction and in previous chapters, Hirsch theorizes postmemory as an embodied condition that “approximates memory in its affective force and its psychic effects,” but differs from regular recall in that it “it has lost its direct link to the past” (31, 33). In other words, Hirsch understands postmemory as a condition that entails affects and sensations that defy causal explanation, and can thus generate a profound sense of bodily unease in those who experience it. Hirsch’s description of the embodied effects of postmemory presents a curious parallel to Alaimo’s description of the phenomenological effects of trans-corporeality, which also involve a sense of bodily unease – although, in the trans-corporeal context described by Alaimo, this unease arises from subjects’ recognition of their own bodily immersion in vast networks of “interconnected material agencies that erode even our most sophisticated modes of understanding” (*Bodily* 18). Seizing on these resonances, in *forage*, Wong constructs an ongoing parallel between the postmemories that the speaker has inherited from past generations and the chemical body burden she has accumulated as a result of her bodily immersion in a “risky”

material environment. However, more than simply thematizing this parallel, Wong mobilizes it in order to highlight Chinese-Canadians' relationship to longstanding forms of environmental racism and colonial encroachment and consequent need to work in solidarity with contemporary environmental and decolonial struggles. This conceptual shift is vividly enacted in two poems that look back at the racialized working conditions faced by Chinese immigrants to North America in the 19th and early 20th centuries: "after "Laundry Song" by Wen I'to," which deals with the history of Chinese-American hand laundries, and "after "The Stars" by Ping Hsin," which deals with the history of Chinese-Canadian railway labour. In both poems, the postmemory of the historical traumas endured by early Chinese settlers becomes a literal "body burden" as the speaker considers the wider material effects of their labour. The first poem, "after "Laundry Song" by Wen I'to," is modeled after an early 20th century ballad in which the Chinese poet Wen I'to lamented the marginalization experienced by early Chinese immigrants to the United States. In particular, I'to's poem decried the way in which American society stigmatized Chinese workers while simultaneously relying on them to clean "all the filthy things" in the nation: "You say the laundry business is so base./ Only Chinamen are willing to stoop so low?/ ... [But] do you want to do it? Do you?" rails the original (qtd. in Hsu 148). Wong's poem builds upon Ito's critique of the hardships experienced by early Chinese settlers by underscoring that the Chinese hand laundries that became ubiquitous in North America during the late 19th and early 20th centuries functioned not only as sites of racialization in which Chinese immigrants performed work that was deemed both too demeaning and too feminine for other men,⁶² but also as a sites of toxic exposure in which the laundrymen's own bodies were left awash in "endocrine disrupters" and "sudsy chemicals" that could "sulk in your blood for a decade" (22). By highlighting the toxic burdens endured by Chinese-Canadian laundrymen, Wong links the history

of the Asian Canadian diaspora to more contemporary forms of environmental racism such as the aforementioned shipping of North American e-waste to places like Guiyu village and the exploitation of and pollution of Indigenous land and water resources. By invoking these connections, the poem emphasizes that contemporary Asian Canadian diasporas have an ethical duty not only to memorialize the “soapworn hands [and] toxic coughs” of early Chinese-Canadian immigrants, but also to help “recompose clean lines/ in body burden times” (22).

In “after “The Stars” by Ping Hsing,” Wong once again highlights the parallels between the intergenerational transmission of postmemorial affects and the bioaccumulation of toxic substances, this time by considering the complicated history of Chinese railway labour in Canada. The poem begins with an invocation to honour the losses endured by the early Chinese settlers who played a crucial role in building the railway system that unified Canada as a country, only to face the imposition of the *Chinese Immigration Act* as soon as the railway was completed in 1855:

adorn the railroad tracks
with fragile offerings:
incense, oranges, hemp hell money
fashion blades of grass into brooms
to sweep the ancestral hearth
fold apologies and rice paper prayers
into small organic boats
to send downstream... (57)

Echoing Cho’s sense that “diasporas emerge through losses which have already happened but which also define the future” (“Turn” 17), these opening lines construct the memory of Chinese

railway labour as a formative influence for the contemporary Chinese Canadian diaspora. The speaker's methodical cataloguing of the offerings with which she intends to honour her ancestors suggests that she has enacted (or at least imagined) this ritual many times before, and thus reaffirms her status as a postmemorial subject who has inherited both the legacies of a traumatic past, and an ethical duty to commemorate this past in order to help redress the grievances of previous generations. However, in the lines that follow, Wong goes on to suggest that redressing the losses endured by Chinese railway workers will require acknowledging the far-reaching historical and environmental consequences of their labour. Through subsequent references to "fire carriages [that] ripped through/ sweetgrass, sage, canyons, crags/ wreck[ing] Indigenous homelands" and tearing "coal out of mines," Wong re-frames the construction of the railway as an early phase in an ongoing history of land development and resource extraction that has led not only to the displacement Indigenous peoples from their territories, but also to the spread of toxic chemicals that, in the speaker's own words, are slowly "magnifying their way up the food chain/ into my mother's thyroid/ my neighbour's prostate" (57). Wong's emphasis on the need to acknowledge these interconnections takes on added urgency when we consider that *forage* was published a year after the Canadian government issued its official apology to the Chinese-Canadian diaspora for the Chinese Head Tax "and subsequent exclusion of Chinese immigrants from 1923 to 1947" ("Apology" n.pag.). By tracing the colonial and environmental legacies of Chinese railway labour, "after "The Stars" by Ping Hsin" emphasizes that the work of restitution is far from finished, and that Chinese-Canadians' commitment to memory must extend beyond the work of head tax redressal to include decolonial and environmental forms of activism. In this sense, the poem demonstrates how, despite its deeply destabilizing effects, the subjective experience of postmemory can prompt a more nuanced engagement with the many ways in

which the “past goes on living through us” (to cite the quote from Roy Kiyooka that Wong uses as the title for one of her poems), not just through the intergenerational transmission of “postmemorial” habits, longings, and sensations, but also in the form of environmental risks and historical debts that demand recognition and political action in the present moment.

Wong reinforces this sense of ethical possibility by seizing the many moments of linguistic disorientation that result from the speaker’s embodiment as a postmemorial subject as opportunities to explore potential avenues for the decolonization of language and knowledge. As I noted at the beginning of this chapter, Wong explicitly aligns *forage* with the principles of projective verse, a poetic form that was pioneered by the American poet Charles Olson, and which seeks to capture a direct experience of the physical body by “getting rid of the lyrical interference of the individual as ego” and allowing the breath to dictate the shape and cadence of the poetic line (Olson, n.pag.). But while Wong is clearly influenced by this tradition, she joins other West Coast poets like Daphne Marlatt and Sharon Thesen in questioning how various forms of difference – sexual difference in the case of Marlatt and respiratory illness in the case of Thesen – might affect the “conjoined movement” between breath and poetic line.⁶³ In *forage*, the cadence of the poetic line hinges on the speaker’s embodiment as a postmemorial subject whose tongue, throat, and diaphragm have been indelibly shaped by the sounds and cadences of English, yet also bear discomfiting traces of her ancestors’ “fractured... entry into [this] language” (27). This tension not only provides fodder for an ongoing meditation on the many ways in which “the habitual placement of the tongue changes the mouth” (58), but also gives rise to multiple moments of phonetic disorientation in which the speaker’s utterances get disrupted or momentarily suspended by an inadvertent slip of the tongue or an echo from a language other than the one she is speaking at any given moment. In the poem “reconnaissance,” the speaker

points to these contingencies by recalling an instance in which, “intent upon the (laryngeal) elevator,” she “missed the roof [of her mouth]. the best place/ for the tongue to rest” (59). The poems “rise/riven/rice” and “lore/loose/lode” stage a phonetic and visual enactment of this problem by rehearsing a series of sounds that, as Kim notes, “are often difficult for Asian mouths to pronounce” (“Resuscitations” 172). The first poem plays with the letter “r,” beginning and ending with a series of soft “r” sounds that force the reader’s tongue to slow down as it moves along the roof of the mouth in order to articulate each line in the poem (10). The second poem produces a similar effect, but this time with the letter “l” (67). In both poems, each sound in the series occupies a single line, and the lines are staggered in a curved arrangement that mimics the trajectory the tongue must follow in order to read the complete series. By arresting the reader’s attention, both aurally and visually, on each one of these points of articulation, the poems induce a careful meditation of the contingent nature of speech production, reminding us that for non-native English speakers (or native speakers whose speech might be inflected by the echoes of non-English languages), each one of these points presents an opportunity for slippage. However, instead of wallowing in the ambivalence created by these phonetic tensions, *forage* asks how they might be mobilized for productive ends. For instance, in “reconnaissance,” Wong suggests that, by disrupting and deferring the moment of articulation, experiences such as “miss[ing] the roof” of one’s mouth can provide an unexpected opportunity to “make more space” for the words of others (59). “lungs become lunges” when we seize such opportunities, Wong assures us (59). The closing lines of the poem evoke the possibility of turning this lung-expanding exercise towards decolonial ends by referencing the land disputes of “ipperwash, gustafsen lake, oka, burnt church, port radium, nitassan, [and] lubicon” and affirming that Asian-Canadian diasporas need to acknowledge their obligation to “return[] to the scene of the crime, which [they] never

left” (59). Through this crucial rhetorical shift, “reconnaissance” suggests that the phonetic slippages experienced by diasporic and non-native speakers can serve as opportunities to cultivate new forms of literacy, particularly literacies that might enable them to address their own complicity in the ongoing colonization of Indigenous territories.

Ultimately, by parlaying these moments of phonetic disruption into calls for decolonial solidarity work, *forage* demonstrates how the postmemorial affects and sensations experienced by diasporic subjects can help cultivate a more nuanced imagination of the social and ecological heterogeneities that constitute the global. This is not to suggest that *forage* constructs diasporic postmemory as a site of privileged insight, or as a phenomenon that is necessarily conducive to environmental or decolonial ways of thinking. Wong’s repeated emphasis on the complicated history of Chinese-Canadian and First Nations relations, and on the speaker’s own culpability as a consumer and a racialized settler, complicate such a reading. Instead, the collection constructs diasporic postmemory as a phenomenon that mobilizes complex feelings of embodied and linguistic unease and, in so doing, can function as a “disorientation device” in Sarah Ahmed’s sense of the term – that is, as a mechanism that, in disrupting our habitual ways of seeing and interacting with the world, can inadvertently open up new modes of interrelation (172). Echoing Ahmed’s sense that “the forms of politics that proceed from disorientation” can vary “depending on how [disoriented individuals] seek to (re)ground themselves” (158), Wong suggests that the moments of disorientation that accompany diasporic postmemory can open up more ethical ways of inhabiting the world if postmemorial subjects recognize the need to reground themselves in a respectful dialogue with Indigenous ways of knowing.

“No One Knows what an Environment Can Do”: Mobilizing the Global GMO Seed Debate to Foster an Ethical Dialogue Between Diasporic, Indigenous, and Scientific Knowledge

Even as it emphasizes the value of diasporic knowledge production in constructing more ethical forms of globalism, *forage* stresses that diasporic subjects have a long overdue obligation to re-think the ways in which they might be implicated in the ongoing colonization of Indigenous territories. This stance marks an important departure from Wong’s earlier collection *monkeypuzzle*, which explores a “violence [that is] too familiar to the diasporic/ & the indigenous” without considering the power differentials that complicate this shared history (67). Complicating her earlier emphasis on a shared positionality between the diasporic and the Indigenous, in *forage*, Wong invites a sustained reflection of the power differentials that inform the relationship between diasporic and Indigenous communities, thereby anticipating the recent explosion of critical and literary calls for the decolonization of diasporic knowledge production. In their influential essay “Decolonizing Anti-Racism,” Bonita Lawrence and Enakshi Dua have argued that, more than just acknowledging the “differential terms” on which diasporic and Indigenous communities “share the same land base,” this decolonization must entail a radical rethinking of the relationship between land, language, and ontology (242). Citing Jeannette Armstrong’s assertion that “the land change[s] the language because there is a special knowledge in each different place,” they note that “[i]t is not just the imprint of ancient and contemporary Indigenous presence that these lands carry. Focusing on the land also reveals important gaps between western and traditional knowledges that shape how we see the relationship to land” (242-43). They thus conclude that, in order to relate more ethically to Indigenous communities, diasporic subjects need to take seriously the deep connection between “land, memory and history” that informs Indigenous epistemologies (234).

In his article “Traditional Knowledge and Humanities: A Perspective by a Blackfoot,” Leroy Little Bear provides a more detailed exploration of the way in which Indigenous epistemologies conceive of the relationship between language, people, and territories. He explains that, while Western languages are “noun oriented” and thus reflect an ontology that is ordered around the human subject, Indigenous languages are “process and action oriented,” reflecting an ontology in which everything is animate and “places, plants, and animals” exist in dynamic interrelation (518, 542). Little Bear ends his article by taking issue with the way in which the “coming to know” of Indigenous epistemologies has been undervalued by the court system, by academia, and by settler society at large, cautioning that “[i]f Aboriginal paradigms are not taken into consideration, policy, research, and the ‘humanities’ will simply miss the mark” (526). In a critical article responding to the concerns raised by Little Bear, Wong proposes that one way of promoting the paradigm shifts that are necessary for building more ethical relations with Indigenous communities is to “pay attention to language and ecology, [to] the relationship between living organisms and the wider environment” (529). Taking up this question specifically from the perspective of diasporic and Indigenous relations, in her contribution to the *Cultivating Canada* anthology (which Lawrence and Dua’s article also appeared in), Wong posits that “one way for diasporic and Indigenous communities to move forward together... is to cooperatively focus” on environmental concerns such as the “health of the water that gives us all life” (“Restitution” 85). Pertinent to my project’s interest in building a constructive engagement with scientific knowledge, Wong has suggested that, aside from fostering a more ethical relationship between diasporic and Indigenous communities, this water-based approach can also provide a platform for redressing some of the epistemic erasures that Western science has traditionally promoted. Bringing the science of hydrology into a conversation with the water-based teachings

“documented and generously shared” by “Indigenous knowledge keepers,” Wong argues that a water-based approach can help us realize that we are “connected to flora and fauna, micro and macro, in all sorts of ways that Western science is only beginning to articulate, but which has often already been told in Indigenous stories” (“Restitution” 86).

This openness to creating new relationships between diasporic, Indigenous, and scientific ways of knowing is also embodied in the formal play that takes place in *forage*. Throughout the collection, Wong establishes a dialogue between Indigenous epistemologies that emphasize the dynamic interrelation between land, people, and natural resources and scientific concepts of entropy and self-organization to create a relational poetics that emphasizes the dynamic and open-ended interaction between living systems, and the consequent need to “summon precautionary principles” (*forage* 57) when dealing with the environment. This effort to create a dialogue between Indigenous and scientific epistemologies is reflected in the poem’s depiction of the dynamic interconnections that watersheds enable. Wong has noted that her interest in water is inspired not only by the “knowledges that have been documented and generously shared” by Indigenous writers and scholars, but also by “the Musqueam language, [where] verbs change form depending on where the speaker is standing in relation to water,” thereby “foster[ing] an intimate attention to water as part of one’s everyday consciousness” (“Restitution” 86). In *forage*, Wong achieves a similar effect by deploying a series of images and formal effects that emphasize water’s material agency, its ability to make and unmake us from the inside out and thus unsettle our position as bounded subjects: “the water rippled until i could no longer see myself in the pond,” the speaker says at one point in tacit acknowledgement of this material agency (58). In re-thinking identity and embodiment in terms of her relationship to water, Wong makes repeated references to scientific data regarding the bioaccumulation and global circulation

of water pollution, emphasizing the value of scientific knowledge in fostering more ethical forms of relating both to the environment, and to other communities.

This willingness to establish a dialogue between Indigenous and scientific knowledges is also reflected in the poem's treatment of the global GMO debate. In the companion poems "canola queasy" and "chaos feary," Wong draws on Indigenous ontology and scientific concepts of entropy and self-organization to unsettle the claim that genetic engineering produces crops that can behave in controllable and predictable ways. In "canola queasy," an ironic commentary on the *Monsanto v. Schmeiser* ruling, the speaker warns that the ability to shoot plant DNA with "cell-arranging blasts" does not provide any assurances that the resulting crops will behave in a predictable fashion. Punning on the similar-sounding words "mess" and "mass," the speaker raises the possibility that Monsanto's "protein mass[es]" will turn into "protean mess[es]" as they interact with the wider environment (36). In "chaos feary," Wong imagines what these entropic "messes" might look like by splicing a series of composite terms – monopoly, allopoietic, autopoietic – into fragments and then concatenating those fragments in a way that will allow for the spontaneous emergence of different meanings depending on how the lines are read. By enacting the potential for self-organization that arises when transgenic seeds are released into the environment, this wordplay acts as an ironic reminder that these seeds are subject to the same entropic processes of dispersal and gene flow as their "natural" counterparts. In this sense, this strategy also works to emphasize the idea that GMOs are not passive objects, but material agencies that have the capacity to act on the world, as reflected when the fragments begin to self-organize into lines such as "me poietic auto me diverse" and "me catastrophe political and/ eugenic organ as an ism" (37). Ultimately, by emphasizing this self-organizing capacity, Wong casts the proliferation of GMO seeds as a "matter of concern" that illustrates the

importance of establishing a dialogue between diasporic, Indigenous, and scientific ways of knowing.

Conclusion

This dissertation was born out of the conviction that grappling with the challenges posed by contemporary forms of colonialism and by contemporary environmental crises demands that we re-think the relationship between politics and ecology, and between humanist and scientific ways of knowing. As I have argued throughout each one of my chapters, and as the title of my project indicates, establishing these kinds of dialogues is not an easy process: it involves engaging with forms of knowledge production that might stretch and, in some cases, even disrupt the conceptual frameworks within which we normally operate. In this sense, answering Latour's call to think in terms of "political ecologies" can involve a great deal of cognitive and affective labour. A brief personal anecdote might help bring these tensions into sharper focus. At the Conference on Ecopoetics which took place at UC Berkeley in February of 2013, I presented a joint paper on the role of microbial ecology in the work of American ecopoet Juliana Spahr in collaboration with Karen Andrade, a Ph.D. candidate in environmental microbiology at Berkeley's Department of Environmental Sciences, Policy, and Management. Karen and I had been talking about the relationship between our respective fields of study for quite some time and had identified some key areas of overlap in our research interests; thus, writing a paper together seemed like a natural progression in this ongoing dialogue. While this collaboration reinforced our shared belief that addressing current environmental problems demands a more open exchange between the sciences and the humanities, the early stages of the writing process gave rise to some unexpected challenges. For me, one of the most disconcerting moments during our brainstorming sessions occurred when Karen asked me to explain what I meant by the word "materiality." I explained that I understand this concept to encompass both the self-organizing capacity of living systems, and the capacity of non-living objects to produce effects on people,

situations, and environments. However, even as I formulated my explanation, I had to concede that Karen was very right to seize on this particular term, for the concept of materiality can be a slippery one indeed. How does the liveliness or material agency that new materialist philosophers like Elizabeth Grosz, Brian Massumi, and Jane Bennett write about actually become manifest in everyday situations, and how might this concept help address our shared concerns about concrete social and environmental problems like environmental pollution, the ongoing colonial exploitation of Indigenous territories and natural resources, the spread of genetically modified seeds, and the uneven distribution of environmental risks?

As Mootoo's *Cereus Blooms at Night* teaches us, the concepts of "materiality" and "material agency" can enable us to grapple with corporeal and environmental phenomena that cannot be accounted for by critical frameworks that focus solely around tracing the various disciplinary methods through which bodies and environments are "gendered, sexed, nationalized, globalized, rendered disposable, or otherwise composed" (Bennett 1). But even though new materialism holds that an "aesthetic-affective openness" to materiality can help cultivate more ethical ways of relating to the world (Bennett x), it hasn't always been successful in elucidating how this shift from aesthetic appreciation to political action might actually be enacted. In fact, as I noted in my discussion of Lai's *Salt Fish Girl*, new materialist philosophies have sometimes been criticized for their tendency to get lost in the aesthetic contemplation of the "liveliness" of matter while eliding environmental and sociopolitical questions that may have a direct bearing on the way in which this "liveliness" is expressed. This dissertation understands itself as part of an ongoing critical effort to construct a more concrete and action-oriented account of the relationship between bodies, environments, and politics. It contends that diasporic Canadian writing has a unique and important contribution to make to this project not only because of its

sustained interest in questions of kinship, memory, and geographic dispersal (all of which involve thinking about the biological body and its interactions with the wider environment), but also because it addresses these questions in a way that fosters a constructive as well as iconoclastic engagement with scientific knowledge (to borrow the terminology used by Latour in his article “Why Has Critique Run out of Steam?”). I have argued that, in contrast to critiques that treat scientific knowledge production only as an instrument of biopower, the work of Shani Mootoo, Madeleine Thien, Larissa Lai, and Rita Wong prompts us to rethink the ways in which queer, feminist, anti-racist, and environmental struggles might constructively interface with the life sciences to challenge emergent forms of biological essentialism and biopolitical control.

As I noted in my introduction, this bioscientific turn in diasporic Canadian literature has been animated by two key factors: a need to account for the material and environmental risks that characterize life in the 21st century, and a growing recognition that many of the questions that have long preoccupied diasporic Canadian writing and the field of diaspora studies more generally – questions about heredity and relatedness, about the intergenerational transmission of memories and affects, and about diasporans’ relationship to colonial histories of environmental exploitation – involve thinking about biology and ecology and thus intersect with various arenas of bioscientific knowledge production. In order to situate these intersections within their specific historical and sociocultural contexts, I have examined Mootoo’s, Thien’s, Lai’s, and Wong’s work in relation to four specific and historically contingent sites of scientific knowledge production: the gendered and racial discourses produced by Linnaean botany in the 18th and 19th centuries; contemporary debates around the neurobiology of memory and emotion; contemporary discourses surrounding the genetic basis of diasporic identity; and contemporary debates surrounding the production of genetically modified organisms, particularly GMO seeds.

In chapter one, I examined Mootoo's *Cereus Blooms at Night* in relation to the gendered and racial discourses that were propagated by Linnaean botany in the 18th and 19th centuries and that played a central role in the colonization of the Caribbean. Departing from previous critiques that read the novel's queer politics through a Foucauldian framework that constructs gender and sexual difference as a "difference from" these established norms, I argued that, more than simply disrupting the racial and sexual hierarchies formulated by colonial science, Mootoo's novel advances a model of queer and diasporic relatedness that hinges on bodily forms of interrelation, and thus invites us to think in terms of different systems of knowing. I suggested that, by calling our attention to material processes and modes of interrelation, *Cereus Blooms at Night* opens the way for a constructive engagement with scientific knowledge, thus anticipating Thien's, Lai's, and Wong's efforts to interface with the sciences in order to foster a richer understanding of the memory processes associated with diasporic experience and to rethink diasporic relatedness in terms that might render diasporans more accountable to other communities and to the wider environment.

Chapter two examined Thien's *Certainty* and *Dogs at the Perimeter* in light of current scientific and cultural debates surrounding the neurobiology of memory and emotion. I argued that Thien mobilizes the neuroscientific trope of the "synaptic" constitution of the self in order to explore both the lasting material effects of diasporic trauma, and the nihilism and uncertainty produced by contemporary risk culture. Complicating recent scholarship which posits that Thien's fiction works to expose the limits of scientific epistemology, I argued that even as they question certain kinds of scientific paradigms, *Certainty* and *Dogs at the Perimeter* both suggest that grappling with the unknowns that accompany diasporic experience demands an engagement with multiple ways of knowing, as opposed to a single field of inquiry. I further argued that both

novels mobilize moments of intimate knowledge-sharing between friends, family members, and colleagues in order to advance a model of “empathic collaboration” that highlights the possibility of forging new connections between the sciences and the humanities while also acknowledging the cognitive and affective challenges posed by interdisciplinary dialogue.

In chapter three, I situated Lai’s *Salt Fish Girl* in relation to burgeoning popular and scientific debates surrounding the genetic basis of diasporic relatedness. Adapting Alondra Nelson’s work on the popularization of genetic genealogy within the African American diaspora, I argued that Lai’s novel dramatizes the search for a geneticized connection to the homeland, but ultimately demonstrates that the impulse to trace one’s DNA to a singular point of origin can reinscribe notions of racial purity and “natural kinds” which have long been used to marginalize racialized and queer subjects alike. I then argued that *Salt Fish Girl* models a more constructive way of engaging with genetic science by weaving a narrative of ancestry that attends to the genetic dimensions of diasporic relatedness, but challenges notions of a fixed biological essence by drawing attention to the evolutionary and environmental forces that affect gene expression. In the concluding section of my analysis, I suggested that this re-imagining of the genomic self works to advance a model of biosocial activism that evokes the possibility of forging coalitions between diasporic subjects and other constituencies affected by bioimperialism – most notably, the seed sovereignty movements that have flourished across the Global South in recent years in response to the spread of genetically modified seeds.

In chapter four, I examined how Wong’s *forage* mobilizes the global GMO seed debate in order to stage a productive encounter between diasporic, Indigenous, and scientific ways of knowing. Drawing on current ecocritical frameworks that emphasize the need to cultivate an ethics that attends to the dynamic interrelation between the local and the global, I suggested that

forage constructs diasporic subjectivity as a fertile site for cultivating the perceptual changes that are necessary in order to construct a more ethical imagination of the global. I then examined how Wong complicates her emphasis on the possibilities offered by diasporic subjectivity by exploring the ways in which diasporic communities have contributed to the ongoing colonization of Indigenous territories. Seizing on Wong's assertion, in her critical writings about the politics and poetics of water conservation, that one way for diasporic and Indigenous communities "to move forward together... is to cooperatively focus" on shared environmental concerns such as the health of the water supply ("Restitution" 85), I argued that *forage* constructs the spread of GMO seeds as another key "matter of concern" that can help build coalitions across communities and social movements. In closing, I demonstrated that, far from adopting an anti-science stance, Wong's treatment of the GMO seed debate establishes a dialogue between Indigenous epistemologies that emphasize the dynamic interrelation between land, people, and natural resources and scientific theories that emphasize the self-organizing potential of living systems. I argued that, by enacting this dialogue, *forage* invokes the possibility of establishing a more ethical relationship between diasporic, Indigenous, and scientific knowledges.

As I have been arguing throughout, more than simply thematizing the intersection between diasporic subjectivity and scientific discourse, the works discussed in this project powerfully enact the cognitive and affective challenges involved in constructing epistemologies that straddle the boundaries between politics and ecology, and between the sciences and the humanities. None of the texts I have dealt with provide a clear resolution to these challenges, but, taken as a group, they do reflect an increasing sense of reciprocity and dialogue between discourses and constituencies. Moving from the largely private act of postcolonial witnessing featured in *Cereus Blooms at Night*, to the intimate acts of knowledge-sharing featured in *Certainty* and *Dogs at the*

Perimeter, to the emergence of coalitional forms of biosociality in *Salt Fish Girl*, to the intersection between diasporic, Indigenous, and scientific knowledges in *forage*, my dissertation has offered a hopeful glimpse of the relational possibilities that can become available when we open ourselves to an encounter with different ways of knowing. By producing works that enable us to engage with these tensions (instead of just thematizing the intersection between scientific and humanist ways of knowing), Mootoo, Thien, Lai and Wong all offer important insights into the specific contributions that literature can make to the “renewal of empiricism” advocated by Latour, Haraway, and other science studies scholars. Indeed, these authors demonstrate that, just as the sciences can help expand our understanding of the embodied and material processes that accompany diasporic experience, so too can literature help enrich our understanding of empiricism by enabling us to engage with the discontinuities and affective excesses that frequently form the underside of scientific knowledge production, but cannot be accommodated by conventional scientific methodologies which are governed by calls for objectivity and experimental reproducibility. By providing a space where these tensions can be openly interrogated and negotiated, these works make a valuable contribution to ongoing efforts to construct an empiricism that might enable us to “add to reality” (to echo Latour once again) while acknowledging the ethical, cognitive, and affective challenges that this endeavor entails.

Notes

Introduction

¹ I am thinking here of Foucault's definition of biopower as a form of power that is "situated and exercised at the level of life" and all its biological processes, including birth, illness, reproduction, and "all the conditions that can cause these to vary" (137, 139).

² Atwood deliberately portrays Oryx in terms that emphasize her status as an object of the West's orientaling gaze. Not only is she forced to perform in pornographic videos made for Western consumers from a very young age, but Jimmy and Crake both become obsessed with her because she closely resembles a little girl they once saw on "HottTotts," a "global sex-trotting site" that "claimed to show real sex tourists, filmed while doing things they'd be put in jail for back in their home countries" (89). Jimmy betrays the orientalist underpinnings of his obsession with Oryx when he comments on the exoticism of her features, adding that "looking at her, you knew that a woman of such beauty, slowness, and one-time poverty must have led a difficult life, but that this life would not have consisted of scrubbing floors" (115).

³ More specifically, Sunder Rajan explains that biocapitalism involves the commercialization of biological artifacts such as patentable cell lines and bioengineered life forms and informational artifacts such as genetic databases which enable the "decoupling [of genetic information] from its material biological source" (*Biocapital* 17).

⁴ Commenting specifically on the growing problem of seed biopiracy, Shiva argues that, by producing seeds that lack the capacity to reproduce themselves, genetic engineering has turned the seed from a "means of production through regeneration" to a "nonregenerative commodity" that has to be purchased anew with every planting season (*Biopiracy* 50). As she and many others have noted, this phenomenon severely restricts farmers' ability to save and plant their own seeds and, in so doing, not only dispossesses them of the fruits of their intellectual and material labour, but also weakens their communities' food security.

⁵ Coined by "decolonial" theorist Boaventura de Sousa Santos, whose work I will discuss in more detail later on, the term "ecologies of knowledge" was introduced to Canadian literary studies by scholars like Daniel Coleman and Diana Brydon. See Daniel Coleman, "Toward an Indigenist Ecology of Knowledges for Canadian Literary Studies," *SCL/ELC* 37.2 (2012): 5-31; and Diana Brydon, "Mobile Localities Beyond Monocultures of the Mind," 24 June 2014 <<http://www.dianabrydon.com>>.

⁶ See, for example, Wong's essays "Watersheds" (2010) and "What Would Restitution and Regeneration Look Like from the Point of View of Water?" (2011), Lai's "Epistemologies of Respect: A Poetics of Asian/Indigenous Relation" (2014), and Lousley's "Ecocriticism in the Unregulated Zone" (2014).

⁷ See Pamela Banting's "The Ontology and Epistemology of Walking: Animality in Karsten Heuer's *Being Animal: Five Months on Foot with an Arctic Herd*"; Jodey Castricano's introduction to her edited collection *Animal Subjects: an Ethical Reader in a Posthuman World*; Catriona Sandilands' and Bruce Erickson's introduction to their edited collection *Queer Ecologies*; Travis Mason's *Ornithologies of Desire: Ecocritical Essays, Avian Poetics, and Don*

MacKay; and Adam Dickinson's "Poetics of the Semiosphere: Pataphysics, Biosemiotics, and Imaginary Solutions for Water."

⁸ One recent exception is Cheryl Lousley's article "Ecocriticism in the Unregulated Zone," which reads Larissa Lai's *Salt Fish Girl* through the lens of ecocritical and science studies approaches that trouble the nature/culture binary espoused by some forms of environmental criticism. Drawing on Latour's distinction between "matters of fact" and "matters of concern," or "between things we habitually take as given and those we find troublesome, risky, and uncertain," Lousley argues that, with their racialized and ostensibly "diseased" bodies, Lai's protagonists "are themselves matters of concern" that disrupt the boundary between the natural and the unnatural (148, 152-53). In my own reading of *Salt Fish Girl*, I consider how Evie and Miranda's figuration as risky "matters of concern" is informed by their status as diasporic subjects who are haunted by the somatic effects of postmemory.

⁹ Daniel Coleman. "Between Indigeneity and Diaspora." CACLALS Conference. May 25, 2014.

¹⁰ See Latour's *Laboratory Life: The Social Construction of Scientific Facts* and Haraway's *Primate Visions: Gender, Race and Nature in the World of Modern Science*.

¹¹ I will be discussing the epistemological assumptions and narrative conventions associated with "modest witnessing" in more detail in chapter one.

¹² *Certainty* is set against the historical backdrop of the Japanese occupation of North Borneo (present-day Malaysia) during WWII, while *Dogs at the Perimeter* looks back at the genocide that took place in Cambodia from 1975 to 1979 under the Khmer Rouge regime.

Chapter 1

¹³ "Cultivation, n." Def. 1a and 4a, *OED*.

¹⁴ Derived from the Sanskrit *mudrā*, which means "seal, stamp, signet-ring, token, [and] mode of holding the fingers in religious worship," the term refers to the "symbolic movement of the hand and fingers of the kind used in Hindu ceremonies and statuary" ("mudra, n." *OED*).

¹⁵ In their introduction to *Critical Perspectives on Indo-Caribbean Women's Literature*, Joy Mahabir and Mariam Pirbhai note that "the Indo-Caribbean woman has been consistently subject to stereotypes that render her an archetypal figure or relegate her to the margins of a male-centered narrative in her role as a secondary or minor character" (4). Drawing upon Aruna Srivastava's analysis of the representation of Indian women in Indo-Caribbean literature (see Srivastava's "Images of Indian Women in Indo-Caribbean Literature") they further note that "while male writers have tried to honestly depict the kinds of abuses prevalent in plantation communities, and within the larger context of colonialism, female characters are [often depicted as] the un-speaking, un-thinking objects of violence and dominance" (4).

¹⁶ In fact, Mala reveals to be perfectly capable of speaking for herself when the police irrupt into her home under the pretense that they were "worried about her safety" and she immediately retorts, "[y]ou never had any business with my safety before" (193).

¹⁷ I am thinking here of Ahmed's suggestion, in *Queer Phenomenology*, that sexual and gender orientations arise through the body's "tending toward objects that are reachable, that are available within the bodily horizon" (2).

¹⁸ According to the *OED*, the term "miasma" is derived from the Greek *miainein*, which means both "to stain, sully, defile" and "of uncertain origins" ("miasma, n." etymology).

¹⁹ A frequently cited example of this phenomenon is the self-organization that occurs when systems in far-from equilibrium states spontaneously produce a new structure, as in the case of famous Bénard instability, which “occurs when turbulent patterns of diffusion in a heated liquid spontaneously order into convection cells” (Massumi 111). For Bennett’s discussion of this phenomenon, see *Vibrant Matter* 7. For a detailed discussion of spontaneous self-organization in living systems, see Fritjof Capra, *The Web of Life: A New Scientific Understanding of Living Systems* (New York: Anchor Books, 1996).

²⁰ My reading of the queer assemblage formed by the cereus and its pollinators draws some inspiration from Alaimo’s discussion of same-sex animal sex in “Eluding Capture: The Science, Nature, and Culture of ‘Queer’ Animals.” Challenging frameworks that draw on examples of same-sex animal sex to illustrate the ‘naturalness’ of queer behavior, Alaimo argues that ongoing efforts to document the occurrence of ‘queer’ phenomena in nature should focus not on expanding the categories of sexual behavior that might be classified as ‘natural,’ but on producing a more robust understanding of gender and sexuality as open-ended processes that emerge from the interaction between multiple material agencies. According to Alaimo, then, “[q]ueer animals may... foster an ontology in which pleasure and eroticism are neither the result of genetically determined biological drives nor tools in cultural machinations, but are creative forces simultaneously emergent within and affecting a multitude of naturecultures. Pleasure, in this sense, may be understood within Karen Bard’s notion of performativity as ‘materialist, naturalist, and posthumanist,’ that allows matter its due as an active participant in the world’s becoming, its ongoing ‘intra-activity’” (64).

Chapter 2

²¹ As Aihwa Ong notes in her discussion of the resettlement of Cambodian refugees in the United States in the aftermath of the Khmer Rouge genocide, “from the beginning, the encounters with American service agencies, church groups, and immigration officials produced a portrait of the refugees that viewed them as threats, both ideological and medical, to the American body politic where many would be settled. The goals of refugee recruitment, processing, and resettlement programs were to socialize refugees to a category of newcomers defined as both contagious to and dependent upon the civil society” (1244).

²² *Certainty* is set against the historical backdrop of the Japanese occupation of North Borneo (present-day Malaysia) during WWII, while *Dogs at the Perimeter* looks back at the genocide that took place in Cambodia from 1975 to 1979 under the Khmer Rouge regime.

²³ Troeung is drawing here on Marianne Hirsch’s conceptualization of postmemory as the “experience of those who grow up dominated by narratives that preceded their birth, whose own belated stories are evacuated by the stories of the previous generation and shaped by traumatic events that can be neither understood nor recreated” (*Family Frames* 22).

²⁴ <http://memorytheatre.tumblr.com/>

²⁵ For a detailed history of recent advances in neuroimaging, see Schoonover, Carl, ed. *Portraits of the Mind: Visualizing the Brain from Antiquity to the 21st Century* (New York: Abrams, 2011).

²⁶ As Kandel explains, this is why contemporary neuroscientists prefer to use the term “biology of mind,” as opposed to “biology of *the* mind,” which “connotes a place and implies a single brain location that carries out all mental operations” (xii).

²⁷ See *After Kinship* (New York: Cambridge UP, 2004).

²⁸ As Kandel explains, traditionally, “psychiatric illnesses were classified into two major groups – organic illnesses and functional illnesses – based on presumed differences in their origin” (336). Conditions that “entailed significant loss of nerve cells and brain tissue, such as Alzheimer’s disease... were classified as organic, or based in biology,” while “schizophrenia, the various forms of depression, and the anxiety states [that] produced no loss of nerve cells or other obvious changes in brain anatomy... were classified as functional, or not based in biology” (336).

²⁹ I am borrowing this terminology from LeDoux, who makes the argument that because the connectivity changes that take place in psychiatric disorders are “more subtle than those in neurological patients with overt brain lesions,” psychiatric disorders like post-traumatic stress syndrome “might be best thought of as malconnection rather than disconnection syndromes” (307).

³⁰ Kandel and LeDoux both suggest that the neuroscientific model of implicit vs. explicit memory provides a different way of thinking about the relationship between the conscious and unconscious aspects of the mind as Freud understood them. However, while Kandel sees the neuroscientific and Freudian models as complementary to one another, LeDoux is quick to differentiate between the two, stressing that, in the neuroscientific model, the amygdala is understood as an unconscious processor *only* in the sense that it operates without our being aware of it, and not because it is believed to hold information that was once conscious but had to be suppressed because it was too “anxiety-provoking,” as the Freudian model would suggest (See LeDoux, “Amygdala and the Unconscious”; for Kandel’s discussion of the affinities between psychoanalysis and the contemporary biology of mind, see *In Search of Memory* 370-75).

³¹ However, as Kandel notes towards the end of *In Search for Memory*, and as I will explain in more detail in the closing sections of this chapter, the reductionist approach is quickly being replaced by more systems-oriented forms of inquiry (see Kandel 423).

³² Kandel further explains that, in addition to having a gill-withdrawal reflex that is controlled by a relatively small number of neurons, *Aplysia* has some of the largest brain cells in the animal kingdom, “making it relatively easy to insert microelectrodes into them to record electrical activity” (147).

³³ Madeleine Thien, interview with Sheryl MacKay, *North by Northwest*, CBC Radio, 6 May. 2011. Web. 13 Dec.

³⁴ See *An Aesthetic Education in the Era of Globalization* (Cambridge, MA: Harvard UP, 2012).

³⁵ Interview with Sheryl MacKay.

Chapter 3

³⁶ See Simon LeVay, *The Sexual Brain* (Cambridge: MIT Press, 1994).

³⁷ These critiques build on earlier work by scholars like Lisa Lowe in Asian American literary criticism and Donald Goellnicht in Asian Canadian literary criticism, both of whom argue that Asian North American cultural practices cannot be viewed as arising from a single genealogy or point of origin, but must instead be understood as products of the intersection between the racialized, gendered, and economic forms of domination created by colonialism and, more recently, by globalization. Lowe and Goellnicht have both suggested that this intersectionality

offers rich possibilities for forging necessary coalitions between Asian North American subjects and other constituencies who have been “racialized, sexualized, or classed as *other*” (Lowe 57). See Lowe, *Immigrant Acts: On Asian American Cultural Politics* (1996), and Goellnicht, “A Long Labour: The Protracted Birth of Asian Canadian Literature” (2000).

³⁸ Placing Lai’s characterization of Miranda in the context of the long history of smell-based discrimination experienced by Chinese immigrants in Canada, Stephanie Oliver argues that *Salt Fish Girl* highlights the “diffuse material processes” through which smells are constituted in order to challenge both the racialized construction of smell as a source of immigrant shame and the “West’s epistemological desire to authenticate origins and construct rigid boundaries” (par. 2). Meanwhile, Malissa Phung argues that that Lai’s characters are able to construct queer feminist networks of belonging by reclaiming the “gustatory” and “olfactory” dimensions of their diasporic heritage (11).

³⁹ Most notably, the 1980 US Supreme Court ruling in the *Diamond v. Chakrabarty* case established the world’s first legal precedent for the patenting of biological life by allowing patent rights on a genetically engineered bacterium on the basis that it constituted a product of human innovation (Sunder Rajan, *Biocapital* 6; see also Shiva, *Biopiracy* 20).

⁴⁰ For a detailed account of the conflict between the Human Genome Project and Celera Genomics, see Paul Rabinow and Talia Dan-Cohen, *A Machine to Make a Future: Biotech Chronicles* (Princeton, NJ: Princeton UP, 2005).

⁴¹ A frequently cited example of this trend is the 2002 patenting of the drug BiDil, which was designed to treat heart failure specifically in African Americans (Kahn 134-35).

⁴² As Jonathan Marks notes, “geneticist Richard Lewontin gave a quantitative basis for dismantling the race-as-population” in the 1970s when he calculated that there is “about sixfold more within-group variation than between-group variation detectable in the human gene pool,” which “implied that the idea of race as discrete, geographically localizable groups was unsustainable” (24).

⁴³ See Giorgio Agamben, *State of Exception*, trans. Kevin Attell (Chicago: U of Chicago P, 2005).

⁴⁴ As Haraway explains, the patent claim was motivated by the finding that “[t]he Guaymi people carry a unique virus and its antibodies that might be important in leukemia research” (270).

⁴⁵ See, for instance, Kimberley TallBear’s “Native American.com: The Search for Native American Race and Tribe” (2008) and Nelson’s “BioScience: Genetic Genealogy and the Pursuit of African Ancestry” (2008) and “The Factness of Diaspora: The Social Sources of Genetic Genealogy” (2008).

⁴⁶ As Sommer explains, this model posits that “the mtDNA [mitochondrial DNA] of today’s world population can be traced back to one particular sequence that existed some 200,000 years ago. This sequence would have been found in the body of a woman inhabiting equatorial Africa at that time, among the first modern humans” (232).

⁴⁷ More specifically, Greely explains that “the number of one’s ancestral lines increases by a power of two for each generation. Each of our 4 grandparents represents 1 ancestral line, as do each of our 8 great-grandparents and, thus, 256 ancestral lines. Add another 50 to 60 tears and the subject has 10 generations of ancestors – with 1, 024 ancestral lines.... Of these 1, 024 lines, mtDNA provides information about exactly 1” (225).

⁴⁸ See Chapters 12 and 13 of *The Extended Phenotype*.

⁴⁹ It is important to note that Massumi does not deny the material reality of racial and sexual difference. Much to the contrary, he emphasizes that although racial and sexual differences are not biologically predetermined, once they emerge, they do “effectively back-form [their] reality,” feeding back into the ontogenetic processes that shape human embodiment (8).

⁵⁰ Massumi illustrates this indeterminacy by drawing on Ilya Prigogine and Isabel Stengers’ famous analysis of the Bénard instability, a physical phenomenon in which a heated liquid will spontaneously self-organize into a convection system when it is suddenly affected by the force of gravity, moving from a state of “chaotic disorder” to one of “turbulent order” (224).

⁵¹ As Michael Pollan Explains in *The Botany of Desire*, “from plants come chemical compounds that nourish and heal and poison and delight the senses, others that rouse and put to sleep and intoxicate, and a few with the astounding power to alter consciousness.... A great many of the chemicals plants make are designed, by natural selection, to compel other creatures to leave them alone.... But many other of the substances plants make have exactly the opposite effect, drawing other creatures to them by stirring and gratifying their desires (xix-xx).

⁵² As Pollan explains, although Monsanto abandoned the effort to commercialize “Terminator” technology following an “international barrage of criticism,” it is nevertheless still employing Genetic Use Restriction Technologies (GURTs) to hamper the self-regenerating capacity of seeds (*The Botany of Desire: A Plant’s Eye View of the World* [New York: Random House, 2002], 233). GURTs achieve this end by “mak[ing] it possible to turn genetic traits on and off by applying certain proprietary chemicals to genetically modified plants in the field” – a strategy that ensures that “even if the plant in question still produces viable seed, those seeds will produce worthless plants... unless the farmer buys the chemical activator” needed to grow them (ibid, 233-34).

⁵³ As Naomi Klein explains in *No Logo*, such stunts involved “hack[ing] into a corporation’s own method of communication to send a message starkly at odds with the one that was [originally] intended” (281).

⁵⁴ For more information on the Navdanya network, see the Navdanya website at navdanya.org. For a detailed exploration of the goals and material strategies mobilized by the Zapatista “Mother Seeds in Resistance” seed bank, see Tania Aguila-Way, “The Zapatista ‘Mother Seeds in Resistance’ Project: The Indigenous Community Seed Bank as a Living, Self-Organizing Archive,” *Social Text* 118(2014): 67-92.

⁵⁵ For more on the concept of “reproductive futurism,” see Lee Edelman, *No Future: Queer Theory and the Death Drive* (Durham: Duke UP, 2004).

⁵⁶ As Mortimer-Sandilands and Erickson contend, despite its longstanding critique of the “natural [as] a particularly normalizing discourse,” the environmental justice movement frequently naturalizes the “heterosexual reproductive nuclear famil[y]” as the only form of social organization that is environmentally sustainable (33).

Chapter 4

⁵⁷ I am thinking here of the principles outlined by Charles Olson in his influential essay “Projective Verse,” which has been cited as a foundational text by many contemporary Canadian and American ecopoets, including Daphne Marlatt, Evelyn Reilly, and Jonathan Skinner. See

Marlatt, "Difference (em)bracing" (191); Reilly, "Eco-Noise and the Flux of Lux" (257-258); and Skinner, "Thoughts on Things" (10-12).

⁵⁸ For a detailed history of these early visions of global connectedness, see Heise's introduction to *Sense of Place and Sense of Planet*.

⁵⁹ Kyung-Hae was a Korean beef farmer who lost his family-operated farm after the Korean government opened up the beef market to foreign imports in the mid-1980s. Following the collapse of his farm, he became an ardent farmers' rights and anti-globalization activist, staging numerous hunger strikes to draw attention to the devastation that WTO-mandated policies such as the liberalization of the Korean beef and rice markets had brought upon Korean farmers. During the 2003 WTO meetings in Cancun, Kyung-Hae stabbed himself in a final act of protest against the WTO's ongoing efforts to liberalize agricultural trade (see Watts, "Field of Tears," *The Guardian* 16 Sep. 2003).

⁶⁰ See Keith G. Stevens, *Chinese Mythological Gods* (New York: Oxford UP, 2001), 59.

⁶¹ In a recent CBC interview, Wong asserted that "the question of how language or poetic forms might respond to [environmental phenomena] fascinates [her], as a challenge," adding that "while there is obviously a difference between language/poetry that explores these questions, and tangible actions in the world... the two are also related and can feed one another" ("Canada Reads" n.pag.).

⁶² As Library and Archives Canada notes in its introduction to the history of Chinese-Canadian hand laundries and cafes, "White men left this job to the Chinese because it was viewed as women's work," while "Chinese immigrants started businesses such as laundries because they were forced out of many other professions by the increasing number of migrants who came from eastern Canada and Europe. Anti-Chinese organizers in British Columbia and California had argued that jobs in mining, logging, manufacturing, and other industries should be reserved for the white workers who were arriving in ever larger numbers on the railroads that the Chinese had helped build" (n.pag.).

⁶³ Although Marlatt counts Olson as one of her key influences, her critical essay "Difference (em)bracing" complicates her stance towards the principles of projective verse. She declares that even though she "trained [herself] in that poetic, the injunctions to get rid of the lyric ego... [and] to pay strict attention to the conjoined movement of body (breath) and mind in the movement of the line... it didn't occur to [her] then to wonder whether [her] somewhat battered female ego was anything like a man's, or whether [her] woman's body had different rhythms from his, or whether [her] female experience might not give [her] an alternate stance in the world" (191). In a recent interview conducted by Marlatt, Sharon Thesen also commented on the need to think more self-reflexively about the contingent nature of the relationship between the poet's breath and the poetic line. Commenting on her poem "The Consumptives at Tranquille Sanatorium, 1953," Thesen noted that the piece was inspired by the history of TB transmission from European colonizers to the Haida population and by her own familial and personal experiences with the disease, all of which led her to think about the ways in which respiratory illness might inflect the poetic utterance. To quote Thesen's own words, "the breath, the voice, the lungs—these were the modes of morbid transmission, and these are the physiological media of the speaker, the poet, the singer, the storyteller" (n.pag.).

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