

**DISCORD, DISPOSSESSION AND DAIRY:
WATER GOVERNANCE AND SOCIAL CHANGE IN CANTERBURY, NEW ZEALAND**

A Thesis
Presented to the Faculty of the Graduate School
of Cornell University
in Partial Fulfillment of the Requirements for the Degree of
Master of Science

by
Theresa Lily Pendergrast
May 2015

© 2015 Theresa Lily Pendergrast

Abstract

This thesis builds upon an ethnographic case study of North Canterbury, New Zealand and engages with theories of *political ecology* and *food regimes* to analyze social relations within a changing agricultural landscape. Tensions over environmental management have been growing in Cantabrian communities as water-intensive dairy farming spreads across the region. The ethnographic findings suggest Canterbury is undergoing a complex process of agricultural and bureaucratic transformation that is centralizing power, deflating local economic resilience, exacerbating class differences and diminishing democratic participation in resource management. Environmental management typically views environmental politics and contention over resource use as social issues outside ecological dynamics. However I argue that community disputes over resources should be seen as being environmental concerns as well. This thesis argues for understanding the processes of community development and environmental change as constituting each other and maintains that such re-framing is necessary to broaden possibilities for conflict resolution.

Biographical Sketch

Theresa L. Pendergrast is an MS/PhD student in the Department of Development Sociology at Cornell University. She received her B.A. in Anthropology from the University of North Carolina at Chapel Hill.

Acknowledgements

This case study would not have been possible without the many individuals who contributed their voices to this project. I'm grateful for the citizens of Canterbury who gave me their time and allowed me to enter their homes, farms and workspaces. Farmers, farmworkers, governmental employees, nonprofit advocacy group members, scholars, politicians, Māori *iwi* council spokespeople, religious leaders, activists, and small-town residents gave me the privilege of listening to their varied perspectives on sensitive issues. Out of respect for privacy and wishes for anonymity, I will not name these individuals here. Instead I simply acknowledge that almost every ethnographer, regardless of how seasoned they are as a social scientist, relies on assistance from communities. I am thankful for the introductions, the personal contacts, the transportation help, my housing and food, and of course the countless cups of tea.

I am fortunate to be honing my scholarship and research skills through the MS/PhD program in the Department of Development Sociology at Cornell University. I am indebted to professors Phil McMichael and Wendy Wolford for encouraging me through their words and through their respective scholarship to come to this program. My advisor, Dr. Phil McMichael, and Dr. Rachel Bezner Kerr were instrumental in helping me refine my questions and proposal as the project grew. Their insights and critiques were invaluable during the writing process. I could not imagine a more outstanding advising committee for my graduate work than that which they provide. Dr. McMichael's theories have been key to my understanding the complex processes transforming my research site, and I hold Dr. Bezner Kerr's participatory, community-based research work as exemplary of the kind of scholarship I strive to produce.

These committee members along with my graduate student colleagues in the department provide an incredibly rich intellectual environment from which I draw great inspiration. Many of my colleagues in Development Sociology gave me feedback as this research progressed. The Food Studies Collective at Cornell was an excellent space for scholarly exchange and for drafting proposals in 2014.

I thank Youjin Chung, Holly Buck, Eleanor Andrews and Justine Lindemann in particular for their encouragement throughout this process. I am most grateful to be able to count these women as both colleagues and friends.

I owe my introduction to critical development studies to the anthropologist Arturo Escobar. I thank him for being my teacher, past and present. Phil McMichael has taken up the role of being my academic mentor with wisdom, guidance, and much needed humor. Finally, I dedicate this thesis with immense gratitude to my New Zealand-based family.

TABLE OF CONTENTS

<i>Biographical Sketch</i>	iii
<i>Acknowledgments</i>	iv
Chapter One: Introduction	
<i>I. From dryland to dairying: study rationale and landscape background</i>	1
<i>II. Transition and emerging water conflict</i>	11
<i>II. Dismantling ECan</i>	13
Chapter Two: Political Ecologies of Water in Canterbury	
<i>I. The commodification of nature: making the “resourceness” within the Hurunui District</i>	16
<i>II. The language of new landscapes</i>	20
<i>III. From somewhere and from nowhere: situating New Zealand in the discourse on global food networks</i>	22
Chapter Three: New Zealand agrarian change through the food regimes framework	
<i>I. New Zealand in a world-historical, Food Regimes framework</i>	24
<i>II. Changing good governance with changing natures</i>	30
<i>III. Ecological reformulations of Food Regimes</i>	33
Chapter Four: Case study of North Canterbury, New Zealand	
<i>I. Methods</i>	34
<i>II. Water schemes, corporate intervention and changes to local democracy</i>	35
<i>III. Perceptions of environment and public health</i>	46
<i>IV. Indigeneity and development</i>	50
<i>V. Heterogeneity in the farming community</i>	53
<i>VI. Labor and the trickle-down question</i>	56
<i>VII. Prospects for resistance</i>	58
Chapter Five: Discussion and ways forward	61
<i>References</i>	71

The regional economy is increasingly dependent on a reliable supply of water, driven by land use intensification and a variable climate...Successful water resource management requires Environment Canterbury to work in partnership with communities. This involves working collaboratively with land occupiers, territorial authorities, Government agencies and community groups to develop solutions to issues.

Environment Canterbury Regional Council, “Key issues for our activities under the Canterbury Water Management Strategy” accessed 2014

What we're seeing is a deliberate and pre-meditated attack on democracy by powerful elite...We've got our own version of a Western disease here and that happens to be focused on dairy farming.

Mark Edmond¹, engineer and anti-dam activist, 2013 interview

I can want all this [conflict] to go away but the central government voice is that water is coming. So we will make a plan to survive, and just focus on the effects of new infrastructure.

Tim Winslow, sheep farmer, 2013 interview

Chapter One: Introduction.

I. From dryland to dairying: study rationale and landscape background

In the age of climate change, water is playing an increasingly visible role within contested landscapes and struggles over resource management across the globe. Scholars like Bakker (2007, 2004, 2003) and Swyngedouw (2007) have argued that water is a critical resource “testing ground” of what has been called *accumulation by dispossession* while policies of conversion involving privatization, commodification and commercialization relating to water are increasingly debated (see also Harvey 2003, 2011). As the above quote from the Environment Canterbury Regional Council signifies, the region of Canterbury, New Zealand is among these sites grappling with such challenges to water resource management. These struggles involve questions of what constitutes a healthy environment as well as productive, socially just, and economically sustainable human-ecosystem relationships.

This government council statement optimistically suggests collaboration between multiple stakeholders and describes Canterbury as an area that needs more infrastructure development to guarantee water access and survive economically. The statement by the council implies a technological

¹ This and each name in this paper are pseudonyms.

and governmental resistance to water scarcity. Stances that are critical of water development projects, as represented by Mark Edmond, an environmental engineer and anti-dam activist, contrast this logic of resource management and mitigation of environmental difficulties. His view is one of many in Canterbury that interprets the regional shifts in water and land management as crafted disproportionately by the powerful to the detriment of marginalized rural residents. The final quotation provides a third position within the frame of contested water governance; here a sheep farmer conveys a sense of development happening *on* local residents instead of via community self-determination. Winslow's words in the quotation above exude acquiescence to top-down decision-making, and his are hardly reminiscent of local stakeholder-agency partnership language. These contrasting takes on resource allocation and management provide a sketch of the complex interplay between such groups--- regional government authorities, land owners/farmers, and community interest alliances---that reside within Canterbury's natural and socio-cultural landscape as the region undergoes dramatic changes in its agriculture sector.

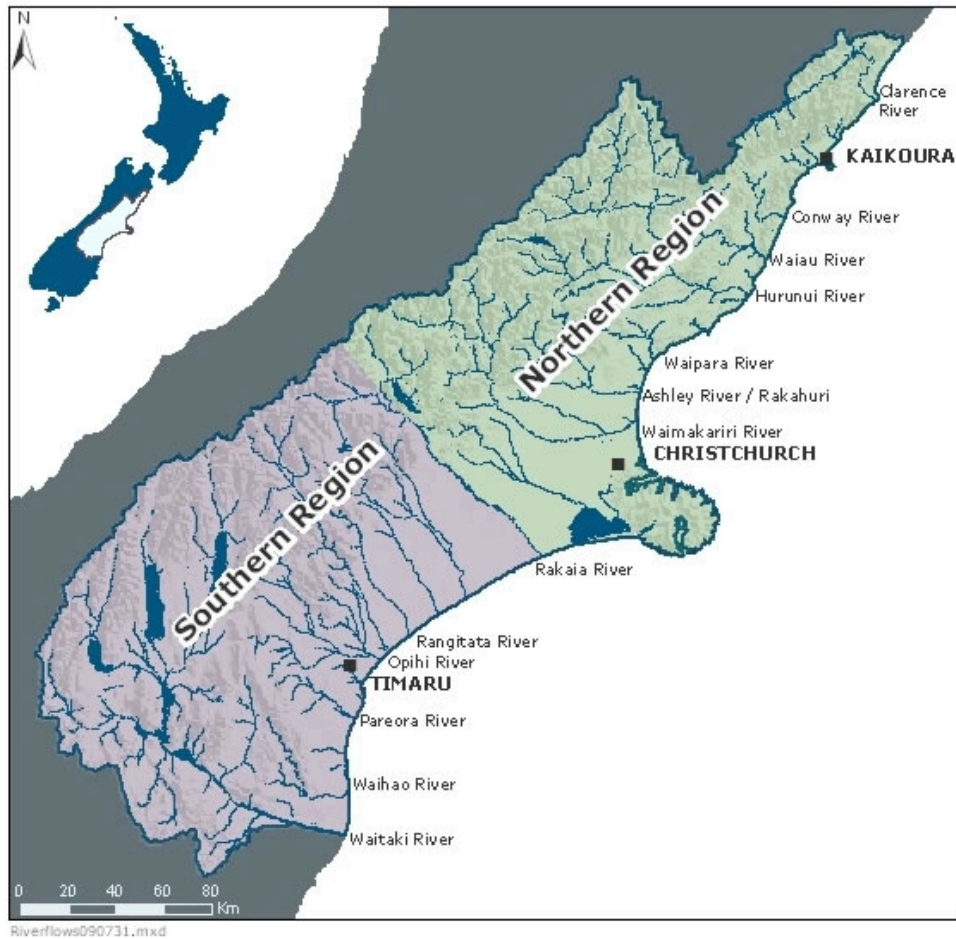


Figure 1: Map of Canterbury’s northern and southern regions and river systems (Source: ecan.gov.nz)

This research began with the recognition of a new social conflict in a rural locale with which I have long been familiar. I have been connected to a particular portion of Canterbury, New Zealand, for years. This region is the Hurunui District (see above map), so named for one of the many “braided” rivers lining the semi-arid plains in the shadow of the Southern Alps mountain range. Over the past decade of visits to this area, the waterways of Canterbury and the Hurunui River in particular have become increasingly impacted by high levels of effluent waste, primarily as a result of intensifying dairy farming in the region. Canterbury, located in the South Island of New Zealand, is a sparsely populated region with extensive river systems and “dry-land” hills predominantly used in the past for wool, lamb, beef and grain production. Though New Zealand is internationally known as a dairy

producer, milk production was historically a minor player in the Cantabrian agriculture economy and was far more common in North Island, New Zealand. Yet in the last ten years, the semi-arid but relatively affordable arable hectares of Canterbury have become attractive for conversion into dairy production. Dairy now accounts for nearly a third of the nation's exports and New Zealand's reliance on its dairy industry continues to increase. The New Zealand central government has promoted the development of Canterbury into another regional source of dairy commodity products through policies and interventions which seek to push forward irrigation for dairying in particular. This government stance aligns national strategies for economic and agricultural development with world's largest exporter of dairy products, New Zealand-based milk giant Fonterra.

Canterbury-based agricultural communities have historically relied on some degree of on-farm water storage and forms of groundwater irrigation; while the area has large reserves of groundwater (Statistics NZ 2013 dataset, accessed 2014) and several major waterways, annual precipitation is quite low (ibid). However, the conversion effort of Canterbury land and the increase in number of dairy farms in the region especially over the last decade has created a far greater strain on waterways. The semi-arid Canterbury region does not naturally produce the calorically dense grasses needed for sustaining pastured dairy cows, and therefore directing water use towards damming, irrigation and effluent management becomes more commonplace. Canterbury's waters are impacted by both irrigation as a method of input to farms and dairy effluent² (inorganic and organic waste) as an agricultural output into streams and ecosystems. The dominant model of dairying practiced in Canterbury (and throughout the country) creates input and output stress involving water that is significantly greater than the other industries of wool, beef, and lamb. Dairy farms themselves have also intensified in their production and in their size³ (Environment Canterbury Dairy Report 2012-2013

² According to the 2012-2013 Environment Canterbury Regional Council, 90 percent of effluent comes directly from herds on pasture in the form of organic waste, with the remaining 10 percent originating from inorganic chemicals used to clean facilities used for milking.

³ In Canterbury there has been a 271% increase in herd sizes ranging from 1000-2000 head in the period between 2005 and 2013 (Environment Canterbury Regional Council Dairy Report 2012-2013 Season). Dairy herd sizes between 600 and

Season⁴). Local, regional and national development initiatives have been put in place to use Cantabrian river systems to facilitate the agricultural transition to dairy. These initiatives are, as expected, fiscal in nature, but I argue they are also socially impacting and are serving to restructure relations in the region.

As dairy-supporting infrastructure development stretches through Canterbury, local communities are contesting new methods of resource distribution and water governance along with the socio-cultural meanings (i.e. what constitutes “best use”) of water as a commodity. Dairy intensification in Canterbury is a type of landscape conversion effort that involves more than merely replacing one type of agricultural production model with another. Redirecting rivers to create a fertile farmland for dairying does more than just significantly alter a major natural resource for the region. I argue river system development also changes social relations within the agricultural communities. In addition to more water input and effluent management, the model of dairy farming popular in rural New Zealand requires much more capital investment for farmers and a greater labor force on farms⁵. Class and power dynamics have been brought forward since the preferred production model and development initiatives require farmers to make major financial and resource-related decisions that affect the future of their way of life and the dynamics within their communities. When new environmental concerns arise as a result of changing agricultural production, populations are faced with difficult questions about how to manage these aspects of transition. The central⁶ New Zealand government, the dairy corporation Fonterra, and agriculture-industry lobby organizations like Federated Farmers of New Zealand Incorporated have maintained a position that government interventions of development towards dairy intensification are measures of good governance. These entities argue through their respective policies and positions that dairy farming is part of a healthy economic future

1000 have gone up by 133% (ibid).

⁴ <http://ecan.govt.nz/publications/Plans/canterbury-dairy-report-2012-13.pdf>

⁵ Such an increase in labor needs may suggest greater employment opportunities. Much of the dairy worker hiring preference currently is for migrant laborers (primarily from the Philippines). Later in this paper I will explain how a reliance on immigrant labor has emerged and how this has heightened social tensions and community fracturing.

⁶ New Zealand’s two major political parties are Labour and National, therefore for the sake of clarity I will describe the national government as “central” in order to not have the suggestion of centrality of governance confused with the National Party governance.

for all, including Canterbury where such production is relatively new. The extent of these interventions includes changes to local democratic structures in order to streamline development projects.

The water politics of Canterbury have been increasingly discussed in national media as the water resource use in Canterbury becomes more contentious within and across rural communities. The dominant issues are the degraded integrity of waterways and how the decision-making process of water allocation to private individuals, businesses, and development projects should proceed. Much of the debate relates to questions about what amount of environmental degradation is acceptable for economic growth and what type of regional-national governance is most appropriate for managing water. Two salient narratives have emerged in this debate and most media coverage and discussion in the political arena can be reduced to following either of these dual storylines. The first explanation of tensions in a changing agrarian landscape pits the farmer-producer against the “greenies”, i.e. those environmentalists ostensibly oblivious to economic realities of the rural farm world that feeds them. The second divides the urban residents (of Christchurch, Canterbury, the region's largest city) from the rural populous, suggesting that city dwellers simply do not understand what farmers must do in order to keep the economic backbone of New Zealand strong. Thus the frame of the debate about water often suggests misunderstandings between two imagined ways of life, that of the farmer-producer and of the urbanite-environmentalist. My experiences living, working, and researching in this part of the world reveal that the struggles over water in Canterbury involve a far more complex array of shifting inter- and intra-community power dynamics than these aforementioned narratives suggest. The water contention has been, I argue, creating divides *within* communities, not just between rural populations and urban zones or between those identifying with environmentalist causes and those supposedly market-oriented agriculturalists.

This thesis is an attempt to understand a changing rural landscape and the multiple narratives of natures, resource use, and appropriate environmental management at work in Southland New Zealand. In this paper I outline the current ecological questions and related political affairs that have embroiled

the region in conflict over water governance. I engage with political ecology-informed discourse and narrative analysis relating to the social construction of nature, giving attention particularly to the language involved in environmental development. Social construction in my usage describes the process by which a particular concept, worldview, or framework gets its meaning within a socio-cultural context. *Social construction* as a sociological theory places importance on culture, practice and language in this process of becoming. Understanding concepts like *environment*, *violence*, *citizenship*, etc as constructed and not *given* or natural helps social scientists explain why these concepts can have such differing definitions across time, space and place. The analyses in this paper are built upon the observation that the concept of “environment” and other related conceptions of water, governance, justice, ecological health and economic strength vary in meaning to different populations in Canterbury. Using social construction to make sense of contrasting definitions also highlights the unevenness of the construction. I argue through the theory of social construction that certain understandings of what a “healthy” or “productive” environment looks like come to dominate via unequal power relations. Social construction shows that there is not one “true” environment out there to be described, but rather a heterogeneous array of environmental concepts that can clash, with some usurping others towards the effect of making one concept seem most logical and natural. The ability of a concept to appear not socially constructed but natural and normal relies on discourse in a socio-cultural context. Therefore I use *discourse analysis* to further excavate the processes shaping environmental understandings.

Discourse analysis refers to conceptual work that unearths the ways language reinforces and/or creates particular power relations. In this sense *discourse* is not a strictly linguistic term but also a concept that aids in identifying the ways language influences social behavior and practice. My engagement with discourse analysis is informed primarily by the work of Michel Foucault with additional considerations of Antonio Gramsci’s conceptions of cultural hegemony. Foucault’s writing on discourse delineates ways to identify how certain forms of knowledge come to dominate. He argues

for understanding “regimes of practices” that reinforce intersections where the “planned and the taken-for-granted meet and interconnect” (2000: 225). The analysis of such practices, rhetoric, and dominant language makes the conditions that allow institutions, governance, and management strategies logical and acceptable in a particular moment more clear (ibid).

Antonio Gramsci’s theoretical contributions add to my understanding of the importance of discourse analysis. Gramsci sought to explain processes by which civil society and the state produce consent, and his work identifies social constructions as a key part of the creation of *cultural hegemony*, the power that helps manufacture this societal consent (Stoddard 2007: 193; see also Hall 1992, Gramsci 1971). This particular type of hegemony to Gramsci involves the interplay of beliefs, values and norms that serve to justify dominant socio-economic forms and class structures. Thus his work on cultural hegemony arguably relates to discourse analysis; discourse helps form norms that by consequence reproduce hegemonic modes of socio-economic thought, practice, and relations. Both Foucault and Gramsci contribute significantly to my understanding of the functions of language, ideology, and social construction in the creation of power and powerlessness.

More recent scholars engaging with discourse analysis have applied this method of investigation to the interdisciplinary field of critical development studies. As James Ferguson’s (1990) work on the “anti-politics machine” shows, discourse analysis involves dissecting the language at work to legitimize development projects. Languages of development, Ferguson argues, shape actions of both development agency workers and populations targeted by “development.” Discourse analysis of development initiatives locates the ways language can narrow meaning and encourage privileging some values (i.e. free market system promotion) over others.

Discourse involves clusters of more minor narratives. Narrative analysis, as I employ it, is an examination into the specific ways knowledge is shared, defined, and represented. This analysis asks in part: *What are the main storylines at work in a social arena? What concepts (of, for example, nature, gender, or class) are included and what is excluded within these stories?* I use narrative analysis as

part of the larger project of dissecting the discourse surrounding water conflict in Canterbury.

Using discourse analysis and a narrative-focused approach de-naturalizes dairy and agriculture generally, drawing a focus to the ways in which farm practices and farm products can come to be thought of as inevitable, logical, rational, and normal for a particular landscape. This theoretical approach aids in getting beneath the assumptions prevalent in New Zealand's growing dairy economy and reveals some of the power at work with the Cantabrian dairy expansion. I will discuss scholarship on the global food production and consumption context within which the story of contested waterways in New Zealand fits, using the frameworks of *food regimes* (FR) to understand the shifting power relations within New Zealand and the dairy commodity chain at large. My aim is to situate the issues surrounding water use and dairy production in New Zealand within a critical development perspective to identify the new realities and new questions New Zealanders face in making sense of their agrarian futures.

The case study I present in this thesis provides an example of how Cantabrians are grappling with the debates over water quality, dairy intensification, local democracy and environmental management. The following research questions emerge as the waterways of Canterbury encounter the challenges of increasing inputs and extraction, and as communities become embattled over varying definitions of water rights: Are intensifying agriculture practices reconfiguring concepts of environments and appropriate land/water use? How do some forms of agricultural production become legitimized and naturalized? Are there types of social relations upon which this naturalization depends? What kinds of economic and social possibilities for rural residents shift within these changing landscapes? What are the historical processes that inform New Zealand's current ecological and socio-political transformation and the current "water wars"? How does the discursive framing of the water conflict influence how different stakeholders mediate, regulate, and imagine solutions to eco-social issues? What are the possible strands of counter-narratives beneath dominant discursive claims, and what to these reveal?

I defend the following arguments in the ensuing paragraphs: 1. Focusing on power relations helps illuminate how environmental development projects can benefit some and marginalize others. Development projects involving natural resources often rely on narratives that legitimize interventions. The concepts of nature utilized within these development narratives are socially constructed, and are thus not natural and not trans-historical. Natural and social ecologies should be politicized to understand how the process of building environmental concepts and ecological management involves economic, social and political forces. The theoretical body of work that does this politicization thoroughly is *political ecology*, which integrates the work of political economy with the social scientific understandings of ecology (Peet and Watts: 1996). 2. Historicizing agrarian transformations in New Zealand invokes the geo-politics relations that have influenced policy and the state's relationship to the dynamics within society. Understanding periods of "regimes" of global food production and consumption help explain from where certain logics of development interventions arise. I argue global shifts in power relations, both historical and current, are aiding in defining what is possible for rural Cantabrians. 3. Dairy intensification is part of a broader free-market oriented project of capitalist accumulation in New Zealand. This process is centralizing power, deflating local resilience and diversity of agriculture futures, exacerbating class differences and diminishing the public's ability to participate in democratic resource management. 4. Nature is being integrated into the strategy of capitalist accumulation through constraining what *good* and *appropriate* land use can be.

The conducted case study shows the embodied, localized result of global shifts in power relations in international food relations. Part of the intellectual merit of this project lies in New Zealand as a settler colony, a product of British expansion and now a unique site of resource struggle in an age of free market capitalism. The nation is conceivably outside the North/South divide presented by a significant body of literature on food relations, formed as an agricultural export platform in the Antipodes. New Zealand provides an interesting case study as an agrarian outpost of the global industrial food regime. As such, in the 21st century the NZ dairy industry is emblematic of world-

economic transformations underway as corporate interests consolidate power using global trade paradigms and landscape transformation to reposition NZ in the international market.

II. Transition and emerging water conflict

In order to understand the landscape of agriculture in Canterbury, one has to grasp the power of the dairy industry and its strong ties to the current government. The largest player in the present-day farming landscape of New Zealand, in Canterbury and at large, is corporate milk giant Fonterra. Formed out of a merger of dairy cooperatives in 2001, Fonterra has grown to be a multinational company responsible for 30% of the global exports of dairy and is by far New Zealand's largest corporation. Fonterra processes approximately 95% of all fluid milk produced in New Zealand (Statistics NZ yearbook 2008, 2013). In 2003, Fonterra signed the Dairying and Clean Streams Accord, along with the Ministry of the Environment, the Ministry of Agriculture and Forestry, and local environmental councils. The accord specified performance targets such as decreased effluent discharge, nutrient input/output management, and the building of infrastructure to prevent cattle crossings and protect wetlands. In the decade since the signing, many entities monitoring water quality, including representatives from the ministries and especially organizations like Fish and Game New Zealand, have criticized Fonterra for not meeting these goals. However the dominant narrative throughout Canterbury remains that what is productive on the global marketplace is good for all of New Zealand, and the farmer versus greenie frame tends to quash environmental concerns.

The story of burgeoning environmental crises due to agricultural intensification is certainly not unique to New Zealand. All over the world there are examples of ecologies in critical states due to increased pressures for production, agricultural or otherwise. In many of these sites locals grapple with the newfound risks and threats to previously reliable and safe resources (Martinez-Alier 2002). Pro-dairy expansion narratives in New Zealand are prone to presenting the either/or duality: you can choose privileging the environment *or* the economy. Such dualism, as Moore (2011) suggests, externalizes the environment from the economy, rendering it outside as a consideration rather than intrinsic to or bound

up in the economy. The narratives suggest that environmental issues are an ugly but necessary blight to be endlessly mitigated. Perhaps such issues, as these dominant explanations suggest, are inevitable, even *natural* as a consequence of economic improvement. The response of environmental stress inevitability is one oft put forth by corporations along with the investors in the dairy industry, together arguing that they provide the economic backbone for a nation which has always been an export-oriented land of extreme climates, remotely placed in the Pacific Ocean, thousands of kilometers away from the more connected global marketplaces.

In addition to shifts in discourse about agricultural and economic opportunity, unprecedented interventions in governance have taken place to dramatically alter the shape of Canterbury's socio-political climate as it relates to environmental management. By highlighting a key moment of social transformation within this context of dairy conversion in Canterbury, I hope to analyze broad dynamics of a complex landscape and highlight the consequences of what I regard as a significant event for the political, socio-cultural, and economic reality of Canterbury. My point of departure is an event in 2010 in which a local environmental council was reviewed and deemed ineffective by the national government (see the Creech Report, 2010). The council members were replaced by government-appointedees and non-local democratic management of water grew through the argument of bolstered efficiency. This event points to how some narratives of the land might become privileged over other knowledge(s) and interpretations of water, place and identity.

In addition to the environmental science being conducted to analyze dairy farming effects on water, research in order to better understand the material and social realities shifting in Canterbury is strongly needed. Acknowledging the interchange between nature and culture and the process of social construction elucidates how environments and land can hold multiple and contentious meanings to various stakeholders. Developing a more nuanced conception of environments and the connected discourses surrounding these conceptions is part of better understanding community conflict over resources.

I turn now to a moment in 2010 when the narrative of the importance, inevitability, and naturalness of dairy resulted in the remaking of state-local relations of resource governance.

III. Dismantling ECan

The Environment Canterbury Regional Council, henceforth ECan, is the governing body which is tasked with management for air, water and land systems in Canterbury. The council is responsible for decision-making regarding water resource consents applications, the allocation of which has been increasingly contentious as farmland undergoes change and demands for water rise. Until 2010, ECan was made up of locally⁷ elected councilors representing eight different constituencies. From 2004 to 2009, ECan's processing of water consent applications substantially slowed. Part of the reason for this backlog was a surge of requests to review consents including provisions for groundwater retrieval and damming of major rivers. In October of 2009, the central government, in an initiative headed by the Minister of the Environment, determined the need for a systematic evaluation of the efficacy of the ECan administration. ECan had been criticized for the delay in processing resource consent forms; the majority of the complaints filed came from Federated Farmers, a farmer lobbying organization with strong supportive ties to Fonterra. The result of the council review was the declaration that ECan could not properly do its job. Consequently the fourteen elected councilors were fired and the central government announced the temporary replacement of these councilors by government-appointed commissioners.

The overhaul set legal precedent via Parliament and sparked debate as well as protests in Canterbury's political hub of Christchurch. Three years after the firing of the elected ECan councilors, the government appointees, who were purportedly only temporary substitutes, co-authored a Parliamentary amendment to keep the newfound commission in place until 2016. Their stated rationale was primarily that the commissioner-run ECan had been far more *efficient* in processing water consent forms. This rationale remains controversial. The majority of water impacting consent applications that

⁷ Here "local" means that councilors would be residents of the Canterbury region voted for by Cantabrian citizens.

favor dairy intensification has been approved.

The moment of moving from locally elected councilors to central government-appointed commissioners marked an important turning point for Canterbury and the region's agricultural, political, and community development. The overhaul signified the direction the pro-dairy and pro-free market oriented central government was taking and the measures the administrative bodies felt they could use to push through local institutions of resource governance. This governmental promotion of streamlining dairy's expansion also displays a particular interpretation of how the environment of Canterbury is best utilized and how its citizens can/should participate in resource management. The actions of the central government of New Zealand illustrate a conception of an environment as a limitless resource that serves primarily for the national economic needs. Such a conception ensures the production of new dairy frontiers by making Canterbury's environmental specifics malleable through technological and scientific advancement. Dairy becomes natural not only for the nation seeking to export it but also for the countries seeking to consume it through importation. The majority of dairy for export in New Zealand is in the form of milk powder, often to be reconstituted as fluid milk or for infant formula. Numbers on exact import tonnage annually vary substantially, but it is clear that importation to South and Southeast Asia is a critical part of New Zealand's dairy production model. The growing thirst for fluid milk and other dairy commodities in nations like China in part fuels the belief among pro-dairy councils and dairy farmers in New Zealand that their export base will only increase. River systems and water consequently become support mechanisms to produce this crucial necessity. Water is thus a *resource* in the paradigm of dairy facilitation and landscapes are made convertible towards the prime export commodity.

This case study details this process by which rivers become resources for dairy. The dairy intensification in Canterbury depends on a particular conceptualization of nature and the ability to institutionalize such a conception through specific power relations. This study additionally explains how human-environmental relations and social structures in communities are reshaped to facilitate

resource extraction and water commodification. In the following sections I will draw upon scholarship related to political ecology, the sociology of development, and theories on power regimes in the agriculture-food network. In so doing I draw attention to power-knowledge systems at work enforcing a limited concept of environment, one that enables the growth of dairy and makes ecological degradation and community health stresses manageable collateral.

Chapter 2: Political Ecologies of Water in Canterbury

I. The Commodification of Nature: Making the “Resourceness” within the Hurunui District

How do natural processes, or ecological relations, acquire the status of an economic resource? How does nature get translated into a commodity, with its economic value overshadowing or marginalizing alternative values, interpretations, and meanings? In the story of resource conflict in Canterbury, there are normative issues at work relating to water in particular. My analysis of this landscape in transition acknowledges that any side to an environmental debate inevitably constructs a clear notion of the environment at hand. Both those in favor of using the rivers for intensification of the dairy sector and those working to limit the irrigation and effluent dumping are making claims about the best use for waterways. Measures like the ECan overhaul are part of social, cultural and natural transformations in Canterbury that are producing discourses on water that narrow meaning and agrarian possibilities. Engaging with scholarship on political ecology, which politicizes such transformations of natural space, brings to the fore the power relations inherent to the ways good governance of water is conceptualized in Canterbury.

Political ecology has emerged in the last decades as a reconfiguration of political economy to include considerations of environmental issues like resource conflict, environmental consciousness, environmental social movements, resource conservation and management (Peet and Watts 1996, Robbins 2012). Scholars working to theory-build within the conceptual frame of political ecology argued that previous work of articulating ecological complexity fell short of fully explaining dilemmas of those dependent on continued use of natural resources (Evans 2002: 8). Political ecology sought to free scholarship from attachment to a conservationist ethic that simplified human-environment interactions. New formulations pushed to make space for understanding multiform ways human relations to the environment are shaped by power and constructed social norms (Tsing 2005: 173). Important questions resounding throughout political ecology scholarship include considerations of how specific environmental conditions are produced and how nature might be manufactured to be a strategy

component for accumulation (Peet et al 2011: 29, Smith 2007). Locating the *political* within political ecology, as Paulson, Gezon, Watts (2003) describe, involves grasping how nature is formed and re-formed as a construction along an array of political and social rationalities, perceptions and interests. Seeing the interplay between economic, social, political and environmental factors can illustrate with more nuance the ways inequalities relating to resource use can be produced.

Attention to the social construction of nature and how concepts of environment come to dominate is central to political ecology-inspired theoretical work. By examining discourse surrounding ecological concerns, assumptions about nature are unearthed. As previously suggested, discourse analysis is a discussion ultimately of power (Hannigan, 1995: 53). Discourse analysis specifically related to environmental managements explains how stakeholders might be “disciplined” indirectly and encouraged to engage with their land in particular ways. Force need not come explicitly from the powerful, but rather force can take the form of shaping social realities such as agrarian livelihoods and futures. Power at work in dominant discourse serves to constrict the imagined realm of the possible (see Gibson-Graham 2006). Cultural hegemony, as Gramsci describes, effectively obscures the dominance of some stakeholders in environmental management by legitimizing their interventions. Hegemonic ideas of good environmental practice and management reproduce certain power relations but making these social dynamics appear sensible. Political ecology theorists Peet et al (2011) take on a Gramscian theory of cultural hegemony to explain how consumption can come to be seen as necessity and to legitimize, among things, capitalist markets and capitalist states. Likewise, I argue, certain forms of production (ie dairy) can become necessary in not only the eyes of the state but also to rural farmers and citizens who reproduce its necessity as the realm of alternate productive realities is narrowed.

This scholarship on political ecology, power, hegemony and the project of environmental discourse analysis is imperative to making sense of Canterbury's landscape in transition. These conceptual tools are key to moving beyond the popular and simplified explanations of “greenie” versus “farmer” I have mentioned which have the potential to divert attention away from possible underlying

unequal dynamics of power. In addition, revealing the way we talk about water as not naturally given but socially (and unevenly) constructed shows how environmental discourse can make certain types of resource use more legitimate than others, and certain forms of environmental governance equally legitimized.

The current politicalized discussion of resources in Canterbury revolves around questions regarding who owns water and who can claim the right to determine its distribution, how much water is needed for a healthy river to still exist, and how to minimize the effects of nitrates and bacterial contamination as dairy effluent spreads. Such discourse underscores the social construction of water as a divisible property. The ability of a complex network of fluid ecological systems to be divided and privatized is a phenomenon of the modern capitalist state, histories of imperialism, colonialism and enclosures movements. Additionally, the conception of milk production as appropriate and necessary in a land which inherently does not support grasses suitable for dairy herd grazing is also representing a process of nature's *becoming*, thus redefining what nature should be (i.e. lubricating a commodity market). There is also a powerful re-making of economic possibility for rural locality citizens by transforming the meaning and function of landscape for dairying.

Deepening the analysis of practice and politics formulating distinct, politicized ideas of an environment, I turn to thoughts on *social* natures. Emphasizing the social construction of environmental knowledge, terminology and governance creates a foundation for understanding how emergent power structures in Canterbury can craft effective narratives for promoting intensified dairying. Noel Castree suggests that conceptualizing nature as external is a phenomenon in itself; nature comes to be seen as “inherently nonsocial and nonhuman, as captured in the term ‘the environment’” (2001: 6). Today the Hurunui river district system is, like many river systems around the world, most commonly evaluated in terms of the level of flow (total water volume), nitrate accumulation, algal growth, and clarity (silt content) when monitored for ecosystem health. These ways of viewing a river system assume the waterway is *that thing* which is *out there*. Such language lends to

the ability to chunk water into manageable or privatize-able portions; however this existence becomes more complicated by the fact that rivers change their flow, contribute to a water cycle, and further enter bodies of humans and animals in various forms. This society-nature separation is at work with pro-dairy development governance that sees environmental stress or damage as able to be mitigated. Other interpretations that integrate the social into nature are actively lost with perpetuations of society-environment divides in dominant development discourse.

The process of commodification is tightly linked to narratives of wealth, development and science. In addition to problematizing what terms like the environment mean, political ecology draws on postmodernist arguments to examine related assumptions regarding development itself as a legitimate process of improvement. Unsettling scarcity and resource poverty is a key contribution from the political ecology literature. Lakshman Yapa argues, for example, that “poverty is not the result of lack of development, poor technology, or scarce resources, but a normal manifestation of the very process of economic development that is supposed to cure it; development causes modern poverty through ‘socially constructed scarcity’”(1996:69). Building upon this claim that scarcity might too be social constructed, Mehta (2005) and Luks (2010) explain disconnects between governance of resources and social inequities. Politicizing scarcity as wrapped up in the power relations highlights how resource contestation is not a debate on whether environments change but on rather how society manages and deals with such change (Luks 2010: 99). Speaking specifically on water, Mehta (2005:4) redefines crisis to note distributional issues that are linked to unequal relations and control. These authors do not deny that resources like water are finite. However they show narratives on scarcity functioning to obscure power relations while simultaneously necessitating development inventions to mitigate “crisis.”

At present, the environmental externalities of the New Zealand dairy industry are created via significant and powerful assumptions of what good production looks like. The majority of the dairy exported from New Zealand is in the form of milk power to be reconstituted. Once milk becomes not a

luxury but a necessity, groups like Fonterra can be seen as helping to “feed the world,” a mantra of legitimization which has been regurgitated many times over by trans-national corporations seeking new markets (see Patel 2012). This is the constructed nature of milk in New Zealand; the commodity becomes critical to human development abroad and economic development in Canterbury and elsewhere.

Environmental costs and social damages accrued from production are more easily accepted when the claim of necessity is consumed on both ends of the production-consumption spectrum.

Gilbert Rist, in his sweeping history of development ideologies, tells us:

Whereas an economy based upon local resources makes people immediately sensitive to any deterioration in their environment, and in most cases eager to preserve it, the market makes it possible to take resources...from one region, to consume them in another region, and to dispose of the waste in yet another...Everything undertaken in the name of expanding international trade allows production to be dissociated from consumption and consumption from disposal [2006:186].

Those importing dairy products from New Zealand are also consuming the “clean, green” image that the country exports along with its commodities. The vast kilometers of physical and social space between producer and buyer can erase the social and environmental costs resulting from dairy production. As intensification continues, ecological and socio-cultural costs rise but the distance between these issues and consumer awareness largely remains.

II. The language of new landscapes

How we talk about a problem creates the scope and limit of our imagined solutions. The authors under the pen name JK Gibson-Graham (2006), in their discussion of the politics of economic possibility, illustrate the ways frames of thinking and representation can restrict innovation in responding to crises. This argumentation can be drawn from theories of post-structuralism. A poststructuralist theoretical approach---especially when combined with political ecology---is helpful to understanding the phenomena of changing environments. Arturo Escobar, in his theorizing “towards a post-structural political ecology” notes that:

The poststructural analysis of discourse is not only a linguistic theory; it is social theory, a theory of the production of social reality which includes the analysis of representations as social facts inseparable from what is commonly thought of as “material reality.” Poststructuralism focused on the *role of language in the construction of social reality*; it treats language not as a reflection of “reality” but as constitutive of it [2002: 46, emphasis added].

Theories of political ecology have begun opening up the categories of the environment itself and have “[explored] multiform representations”; environmental knowledge in this theorizing has been examined to expose why and how certain perspectives predominate and circulate (Watts and Peet 1996: 19). Taking these points further, a poststructuralist political ecology emphasizes “deconstructing environmental narratives and/or examining power relations and resource struggles” (Jones and Carswell 2004: 205). Destabilizing the dominant narratives has the potential to recover alternative discourses for environmental management and unsettle hegemonic metrics and standards for ecological management (ibid: 205-206). Through poststructural political ecology, the effects that detachment from environments has on the citizens reliant on a natural feature become more visible. Relatedly one can understand *why* this detachment occurs via processes like development and through the power of language.

If the natural world is seen as constantly being unmade and remade, the inevitability of certain environmental narratives is stripped away. It is no longer predictable that the river systems should deal with ecosystem stress like high level of nitrates or fecal coliform. It is no longer understandably worrisome that water networks might be *underused*, for usability itself is taken as an additional construct. Arturo Escobar (2004) continues:

Central...is the assumption that 'nature' exists out there, beyond our constructions. Nature, however, is neither unconstructed nor unconnected. Nature's constructions are affected by history, economics, technology, science and myths of all kinds as part of the 'traffic between nature and culture' [226].

It seems likely that the culture of dairy as needed, wanted, and the entry into financial security is all part of a myth-making.

III. From somewhere and from nowhere: situating New Zealand in the discourse on global food networks

As I conclude an explanation of my engagement with political ecology theory, I draw attention to the need to historicize relations and find theoretical support for understanding New Zealand in a global context. Studying place-based environmental discourse, as political ecology encourages, discloses particular social and power dynamics within the sited and particular. There are also particularities related to New Zealand as a settler colony that lend to certain discourses emerging over others. Therefore understanding New Zealand's production as a nation-state in relation to others is as critical as seeing the unique socio-environmental relationships in place. New Zealand is not wholly an anomaly as a former settler colony conditioned for single-commodity export markets. However, studying New Zealand as a participant within greater food systems reveals some of the nation's distinctive and sometimes contradictory aims as an agricultural outpost. Geographers R. Le Heron and N. Lewis describe the strangeness of the island in the vast Pacific in terms of its food production:

In New Zealand we are perhaps more aware of this complexity because we live the oxymoron at the heart of both economic and cultural identity: that is, we produce food that is simultaneously from somewhere and from nowhere. This involves high-end place branded food in large volumes for affluent consumers, whose 'food from somewhere' values must be articulated, in New Zealand's case, via 'food from nowhere' production. Fonterra, New Zealand's largest exporter, is a clear example of how this dilemma plays out. Fonterra aims to sell within 'food from somewhere' circuits (e.g. UK, Japan) but simultaneously aims to avoid attracting attention to New Zealand's 'far away' somewhere-ness, or, conversely, lack of place-based differentiation in the case of some invisible ingredients like milk powder [2009:348].

The paradoxes of New Zealand reach beyond labeling and export identity. The country is arguably infrastructure rich when compared to nations in the Global South, and yet the nation is as vulnerable as other majority world countries in its dependency on and susceptibility to global trade changes given a striking lack of direct-to-farmer subsidies. Delving into these paradoxes of New Zealand today requires broader theoretical analysis of world-systems.

Nancy Peluso and Michael Watts (2001) describe the "violence" of resources and

environments becoming fuel for capitalist expansion. Such drastic opening of ecological features to exploitation for new markets and expansion is no doubt happening in New Zealand. Given that capitalist expansion in New Zealand is reliant on external forces of trade and relationships with other nation-states, it is desirable to consider the global networks of agri-food relations. In the following chapter I will engage with food regimes scholarship. World historical perspectives like food regime analysis situate the nation-state in global processes of accumulation. This situating is necessary in order to thoroughly comprehend the transformations currently taking place in rural New Zealand.

Chapter 3: Engaging Food Regimes

I. New Zealand in a world-historical, Food Regimes framework

We gather from political ecology that nature can not only be constructed and reformulated but also deeply politically entrenched. Seeing such construction as a process informed by dimensions of power helps explain the dramatically different interpretations of Canterbury's landscape and who may benefit from these varying perspectives. The structures that reinforce particular constructs of nature (i.e. water as fuel for dairying, Canterbury as wasteland which is underused) are as important as the languages they employ. I engage with world-systems theories that stem from political economy and analyze how regimes of political and economic values shape sociocultural conditions and practices. Politicizing interpretations related to the environment requires a conceptual apparatus to make sense of the transformations in a global context. Thus a world-historical perspective on global food production which accounts for, among other things, New Zealand's formation as a settler colony of Britain, is critical to seeing New Zealand's role in the global food economy and how certain environmental discourses and practices come to be. The world-historical perspective I draw upon is the theoretical frame of the *food regime*.

To Harriet Friedmann, a food regime is a 'rule-governed structure of production and consumption of food on a world scale' (1993:30). First formulated by Philip McMichael and Friedmann in 1989, Food Regimes is a conceptual tool that aids in understanding structures of transformative relations in the global agri-food network. Food Regimes (henceforth FR) as a theoretical frame historicizes power relations, delineates the making and remaking of states, and furthers comprehension of consequences of accumulation and dispossession. David Harvey's theories on capital in the 21st century have advanced the concept of *accumulation by dispossession*. Harvey argues capital accumulation is increasingly reliant on strategies of displacing populations and absorbing public land into private markets (see 2003). Harvey's accumulation by dispossession serves as a re-working of Marx's concept of primitive accumulation and forwards understanding capitalist expansion in an age of

corporate influence. New accumulation strategies can involve facilitating the centralization of power and wealth via the nonconsensual ousting of public from management of common resources. FR theorization brings agri-food networks into the analysis of processes of accumulation by dispossession. Food production and consumption, commodity chains, and agri-food relations, FR posits, can be lenses through which to understand strategies and shifts in global capital relations.

The emergence of the framework in the late 1980s was born out of a new movement in rural sociology that attempted to look outward from a focus on point-of-production sites alone (Dixon and Campell 2009: 262). Agri-food studies as a direction for new rural sociology trends emphasized instead linkages in commodity chains and larger networks, and Friedmann and McMichael's work of melding political economy with world systems theory sought to historicize and politicize larger patterns of accumulation (ibid: 263). Initial FR work introduced the organization of global food networks into two main, globe-shaping epochs. Friedman and McMichael state that the first major global organizer of labor relations and nation-states via commodity production was a British-centered imperial food regime. In this first regime, production from colonies and sites settled by imperialism fed into Britain's "workshop" of the world. The dismantling of this Britain-based regime led to the emergence of a second, US-centered regime construction, reorganizing power relations, governance, labor, and commodity chains. In the second regime, food surpluses, food aid, and technocratic diplomacy flowed from the US outward, flipping around previous dynamics of the former food regime. Friedmann and McMichael's scholarship diverges when making post-second regime analysis; McMichael's more recent work has theorized a third, corporate power-influence regime. In this paper I take up McMichael's argument that agri-food network relations are currently influenced by this third regime in which states have come to serve markets (McMichael 2013).

Pushback from Goodman and Watts (1994, 1997) criticized the conceptual frame of food regimes as both inadequate as an intellectual tool and unfairly homogenizing to the heterogeneous narratives of localities (McMichael 2013: 12). The concern over "top-down" theories that ignore

particularities emerged from scholars wary of simplistic world-systems theory-building that risked denying local autonomy. However, reverting to an over-dependence on “abstract localism” without connecting to a global context neglects scholarship that might illuminate important connections (McMichael 2013: 12, see McMichael and Araghi 2006). Social movements of today---certainly transnational resistances like La Via Campesina but also place-based groups like the Zapatistas---make their cries resound beyond one site of local struggle to draw attention to global and interrelated conditions of dispossession. Solidarity movements which act to draw linkages between, among other things, the historical forces of disempowerment can move social change forward in ways mere place-based struggles may be limited in doing. Thus the very scholars who study development, social change, and agrarian transition must balance theory-building work to make space for both the stories of the locally embedded and the histories of processes of changing global relations. Put otherwise, world-systems-informed theories need not be smothering of the particular, place-based articulation; conversely, the postmodernist attention to the local need not be mired in a fixation on anomaly and difference.

Taking this comparison with new social movements further, it is possible via FR frameworks to help scholars and practitioners to imagine new ways of systemic structuring. As Dixon and Campbell describe, food regimes in fact can be conceived as “an essential ally in helping to move agricultural and food politics beyond a narrative of capitalist-induced doom” (2009: 264). The resurgence of interest in engaging with a FR approach is likely linked to the attempt to grapple with the globe post-2008 food crises. Re-engagements with FR have yielded reformulations and considerations of a food regime *project* (McMichael 2013). This project, McMichael argues, would seek to not just identify moments of accumulation and transition but use FR analysis to understand significant contradictions and relationship both in-site and across space (2013:84). New formulations consider the consequences of the aforementioned corporate-based regime with organizing entities being transnational trade groups in addition to private enterprises.

Why use food regimes for understanding the changing agrarian landscapes of Canterbury? I argue that each of the three epochs that FR scholarship delineates is essential to historicizing and therefore contextualizing current agrarian change in rural Canterbury, helping us to see trajectories and to ultimately open imagination of possible ways forward from conflict. Delving deeper into each of these core tenants of each epoch explains the relevance to present-day struggles in Canterbury.

A thread unifying each regime is the effect of the “exercise of power” which, among other consequences, can in instances “pacify labor, appropriate food resources, create dependency, defray debt, undercut producers and externalize ecological costs” (McMichael 2013: 25-26). Friedman and McMichael (1989) identify the first food regime as centered on British imperialism, creating an empire of accumulation via the exploitation of settler colonies. McMichael (2013) argues this regime represented the first real integrated global market that, through the commodification of labor, money and food, reinforced an imperial power. Scholarship on particular colonial histories fleshes this argument out. For example, in Mike Davis' (2001) analysis, British colonialism's restructuring dismantled local-consumption oriented village grain markets in favor of export commodities. As Davis explains, India in the span of a century experienced famines in a frequency not previously recorded in multiple millennia. These “holocausts” of hunger, along with systematic under-reproduction of labor, class and de-colonialization movements, eventually collapsed this first food regime following the second world war.

Post-decolonialization, however, the effects of this first regime linger as imprints on societies. The first regime of Britain's “workshop of the world” was instrumental to establishing an ideology of export-driven markets, especially in the “exotic” sites that produced to feed nations far away. New Zealand's formation as a settler colony established a regulationist logic of export for the global marketplace. The export-oriented rationale for market development is pervasive in an age of free market capitalism; however, such logic is intense in New Zealand, I argue, due to the modern antipodean nation-state's formation being linked to its current identity. Friedmann (1999) states that

(food) practices change to respond to regional, national and international shifts in politics and economics. Yet since New Zealand's inception as a nation-state by white colonialist forces, the country has noticeably *not* shifted from single-commodity export thinking. Thus there remains a “we export to survive” logic that is rooted deeply in the settler state foundation rather than simply as a result of more recent free market pressures. The logic of survival via exportation of commodity goods helps explain the heavy reliance on commodities like milk powder. Recent waves of free-marketism and structural adjustments to economies often reduce diversified markets to focus on global exportation. New Zealand's own economic logic, while certainly influenced by free market thinking of recent decades, has more embedded linkages to colonialism.

The second food regime marked by US-based hegemony is critical to comprehend the dairy demand side of the Canterbury water struggle story. Currently China and other South and Southeast Asian countries are increasing their dairy imports, and New Zealand's milk powder market relies on this growing demand. A thorough examination of changing Asian diets and the phenomenon of growing dairy consumption in places like China is outside the purview of this paper. That stated, I assert that the second food regime becomes visible by acknowledging the Asian dietary shifts towards dairy, given fluid milk consumption and infant formula use have historically been low in the major Asian nations now importing milk powder. In the epoch of US-dominance of global food relations, more than mere commodities circulated; new dietary guidelines and Western-based ideas of nutrition were exported along with food aid. Jane Dixon's (2009) analysis of *nutritionalization* and Aya Hirata Kimura's (2013) focus on *nutritionism* present the political and socially transformative nature of certain nutritional logics. These scholars argue that new concepts of what constitutes good diets for populations can replace older knowledge(s) of food and health, often with major consequences to cultural heritage, agricultural relations and ecology⁸. Second food regime-era aid introduced foreign

⁸ See also Tony Weis' (2007) concern with the “meatification” and the environmental costs of the rising demand for meat consumption.

foodstuffs (like wheat, sugar and milk powder) with the latent assumption that these “savior” commodities were superior. The importation of food aid, while aimed at hunger and supplementing a local food supply, had in instances the indirect effect of rendering other traditional forms of food “backwards” or insufficient by supplanting them with “modern” foods. US-based food aid held Western diets as standard; over time the politics that generated food aid regimes faded but dominant concepts of better diets remained. Dixon (2009) argues that in many countries today eating animal protein (including that from dairy) is associated with affluent social status. Asia’s rising desire for more affordable dairy products and milk powder-based infant formula reflects decades of outside influences that equate these products with the good life of the modernized, Western citizen.

Food-aid programs worked alongside Green Revolution-era technologies during the second food regime epoch to introduce new food commodities along with new seeds and agriculture technologies. These initiatives in some circumstances replaced endemic varieties of crops with packages of hybridized seeds developed in the global North (Patel 2012). Scholarship from social science reflecting on the consequences of the food aid regime and Green Revolution technologies (ostensibly aimed at stemming hunger and malnutrition) has been critical of these transnational programs. The legacies of the Green Revolution, food aid, and other expansionist projects within the second regime flood carry on with the third food regime. As Kimura (2013) explains, the “feed the world” maxim was at work in the aid age of the mid 20th century and is now adopted by corporate entities pushing products like factory processed foods, genetically enhanced ingredients and patented varieties of grains. The contributions of the second food regime to New Zealand’s water crisis are primarily two-fold. First, contact between Asia and the West via food aid resulted in a growing dairy demand that continues today to encourage New Zealand’s production. Second, corporations like Fonterra are reconfiguring the “feed the word” mantra that once gave license to US-based food aid.

The third, corporate food regime makes Fonterra's relationship to the changing social relations with environmental management and use more intelligible. McMichael writes: “the paradox of the

corporate food regime is that the same time as it presents as the condition for food security, it immiserates populations through the exercise of monopoly power” (2013: 32). In terms of New Zealand, it is striking to note both the rhetoric of Fonterra practices as providing the best for the world along with its promotion of the expansion of an industry few could deny is contributing to a rush to secure water. Fonterra states as part of its mission that “Dairy sets the gold standard for nutrition and we see a growing global population wanting the best of what we can offer...we have a pure, natural product with unlimited potential; there are nutritional possibilities we've yet to explore (Fonterra website, accessed 2014). This seems the regime paradox in action for Canterbury in particular: corporate promotion of a fluid substance which is constructed as essential (milk) with the simultaneous realities of the (over)production which might deny local populations potable water.

II. Changing good governance with changing natures

Regimes of power in the agri-food network depend on normalizing the claims upon which they stand (McMichael 2013). Using political ecology in the previous chapter, I explained how concepts of nature and environmental management might shift as power-relations change. New narratives accompany such shifts. Ideas of nature, then, are much less natural than initially perceived. In addition to this assertion, FR theory and critical development studies have both brought to the fore how unnatural *markets* themselves are⁹.

In order to normalize new markets, new governance can emerge to legitimize commodity production and forms of management. James Ferguson writes:

...a 'development' project can effectively squash political challenges to the system not only through enhancing administrative power, but also by casting political questions of land resources, jobs or wages as technical 'problems' responsive to the technical 'development' intervention [1994: 180].

Development paradigms are certainly at work within Canterbury's agrarian shifts, in particular with the narrative of *necessary* intervention, both in terms of the intensification of dairy and regarding the

⁹ Karl Polanyi's chronicling of the “great transformation” alerts us to this as well (1957, see Patel 2013: 26).

overhaul of ECan. The current government interventions towards dairy development can be understood as being part of shifting relations with the state. Just as particular constructs of nature can reinforce specific human-nature relationships and environmental management, constructs of markets can encourage market-reinforcing roles of the state to take shape. Raj Patel (2013) considers the relationship between markets, governance by the state, as well as naturalized concepts of land. He notes that “land prices do not ‘naturally’ increase” but rather are “driven higher both by government subsidies for their owners, political assurances, and capital within land markets to acquire land, and by mechanisms – ranging from the courts to police – to enforce property laws” (Patel 2013: 26).

Questions of what constitutes public consultation and a healthy local democracy arise as the role of the state in Canterbury changes. The ethnographic study inspired by these questions in part seeks to evaluate just how much local community engagement in water politics is possible. Recalling the quotation from the Environment Canterbury Regional Council at the beginning of this thesis, regional and central government bodies profess a commitment to include provincial concerns and perspectives when drafting new measures of water management. However, just how much public consultation is actually occurring in the changed political landscape is unclear; research regarding realities on the ground is only just being conducted (see Thomas’ 2014 unpublished doctoral thesis).

Confusion and disagreement about needs, rights, and practice surrounds water governance and management. Maude Barlow and Tony Clarke explain that today's global discussions on water and water rights, like those presented in the World Water Forum in 2000, focus on questions of whether water is a right or a need by communities and whether the market, the state, the corporate or the governmental should be the primary manager of water allocation (2004: 117). One of the most pertinent disputes within global water management relates to questions on the role of the private sector in resource distribution (ibid: 117-118). Bakker's (2005, 2010) work on water governance takes care to distinguish the processes that privatization, commodification and commercialization represent. In her view, “privatization does not necessarily involve de-regulation, but is rather a process of selective re-

regulation...[a] change of ownership, or a handover of management from the public to the private sector” whereas “commercialization entails changes in resource management practices which introduce commercial principles, methods and objectives...privatization thus entails organizational change in distinction from commercialization which entails institutional change” (2005: 103). Whether the ECan overhaul and subsequent push for irrigation can be viewed as measures towards water privatization, commodification or of mere water commercialization, it is clear that Barlow is correct in saying that water trading for profit is a both a growing market and an increasing concern for those with diminishing access to water resources. Bakker (2010) too notes that often water management blueprints do not take into considerations the diverse needs of local citizens and as a result fail the people they set out to ostensibly serve.

Examining governance with a FR perspective sheds light on the role of the state. McMichael (2013) states that the era of third regime corporatism bore new forms of development governance that sought to standardize conditions as if all states were equal (53). Like Jim Scott (1998) has suggested, part of the state's effort of making society “legible” involves arranging populations by creating measurements and metrics as they please in order to have better interventions. Through shifts in good governance and state-citizen relations, both nature and rural residents are being disciplined as part of a new frontier for capitalist intensification. In the framework of political ecology, Watts and Peluso (2001) assert that Michel Foucault's (1982) landmark theoretical contribution of *governmentality* can be reworked to discuss disciplining nature. Escobar (2012) has additionally extended Foucault's thoughts on territory beyond regulation of bodies. What the concept of *governmentality* asserts is that state retention of power relies on individuals accepting themselves as subjects of the state (Foucault 1991). Pushing this theory of subjectivity to make sense of socio-ecological relations, Agrawal (2006) suggests the reworking of *governmentality* as *environmentality*, the latter describing processes of internalizing particular environmental narratives, condoned usages, ecological regulations, etc. Both *governmentality* and *environmentality* suggest that the acceptance of subjectivity to the state is how the

state is extended beyond institutional structures.

III. Ecological reformulations of Food Regimes

The recent reformulations of FR theory within the food regimes project provide room for considering ecological particularities. I argue one important ecological reformulation is one that melds the aims of political ecology and world-systems theories of networks. Political ecological claims on place and social-environmental co-construction can be joined with the food regime project foci to create a sharper theoretical analysis. Conceptualizing FR by noting different perspectives from the subaltern or “from below” aids in seeing the sited ecological and social costs of global processes. This is food regime work from the bottom-up and alleviates previous concerns (see Goodman and Watts 1994) about the potential for problematically deterministic theoretical frames. Case studies involve resource management questions are significantly elucidated by an environmentally focused political economy that considers both the macro-level systems and the particulars of each environment. The regional dimensions of food regimes can be seen within New Zealand's agrarian transitions. Canterbury's struggle represents an instance of expansion of the corporate food regime. The growing milk export economy relies on a connection to an offshore market, newly emerged ideas of dairy as good nutrition, and also a transformation of rural citizenship. The FR framework can show that economic, environmental, and subjectivity relations are all part of the same story. FR additionally reveals how the political and ecological dimensions of a particular place are fundamental to the exercise of power and the power of the state to transform both physical land and connected social fabric.

Chapter 4: Findings and Discussion.

I. Methods.

The conducted research utilized an ethnographic case study design to measure social outcomes of the governance changes to water control and the rising role of dairy in shaping the human-environmental relations in Canterbury. I chose qualitative methods to address a series of research questions that sought to understand the local embodiments of global forces. These methods are appropriate as methodological complements to the theoretical discourse analysis; these methods provide the best empirical support for research questions related to reasons certain behavior, action, resistance (or quiescence) in communities persist or shift. I built this study on information gathered during previous informal research. Since November 2009 I have been visiting farming communities in rural Northern Canterbury. I chose to focus on communities in Canterbury that are reliant on the Hurunui river system, a region where water is hotly contested and which was a crucial site for Environment Canterbury's water consent regulations under review by the government in 2010.

I interviewed farm families historically in meat or wool productions that were directly affected by emerging demands to switch to dairy. I spoke with former members of Parliament on different sides of the ECan debate, with members of Fish & Game New Zealand---a main non-governmental interest group in the water debate---and I discussed land reform with members of the Department of Conservation (DOC). I interviewed organizers of protests against the Environment Canterbury overhaul as well as Canterbury-residing dairy farmers who were new to the region and strong proponents of irrigation projects. Two former members of Environment Canterbury Regional Council (who were dismissed in 2010 with the overhaul) were interviewed as well as the current Deputy Chair of the newly formed regional council. I spoke with itinerant workers, who were European-descent New Zealanders (also known in contrast with indigenous Maori as *pakeha*) along with Filipino immigrants stationed on dairy farms.

In all, the research sites lie within an approximately 100-kilometer radius. My main methods of

data collection were semi-structured and structured interviews and participant observation. I conducted twenty-one formal, recorded interviews over the period of five weeks and talked to dozens more in an informal, observational qualitative assessment. The following findings present a sketch of the responses to the research questions at hand. All names have been coded and changed to protect the identities of those who granted me the time to hear their various perspectives.

II. Water schemes, corporate intervention and changes to local democracy

The rush for water in Canterbury that emerged in the last decade has placed new pressures to develop local strategies for water management, both on the individual and community level. Local efforts of water management and/or watershed conservation have been rife with conflict and disagreement. Converted or newly opened dairy farms require greater annual water input from redirection streams, irrigation or micro-dams. Increasingly these types of farms have been applying to the regional council of Canterbury for consent of infrastructural development and higher water withdrawal. Collective efforts to dam or alter local river systems to create a more constant and reliable source of water have cropped up across Canterbury. These efforts have been, my research shows, most strongly pushed by those in dairy production or those in favor of dairy farming. However, many farmers, regardless of production focus, recognize dairy speculation's effect on land prices and feel their land's value will improve if schemes to irrigate more heavily go through. Schemes to improve access to water have been controversial given they grant uneven levels of access to different stakeholders. Thus the results of the water rush have been greater community debate over what fair water use per farm and per community looks like. Additionally, questions are growing over who should be paying for environmental costs from dairying. Two major points of controversy in Canterbury link issues of governance and local democracy with concerns of environmental shaping by human hands and the consequences of these actions. The 2010 ECan overhaul and the community clashes surrounding the Hurunui Water Project (HWP) proposal are two interconnected controversies that serve as a backdrop for much of the gathered evidence. Understanding how discord erupted from changes in

governance and the proposed dam and irrigation project requires a comparison of contrasting perspectives on water and community futures in Canterbury.

The pro-dairy, pro-dam farmers and project proponents I interviewed felt townships in North Canterbury were desperate for an injection of economic growth. According to Matt Dobson, sheep farmer and former chairman of the Hurunui Water Project, Cantabrian towns are dying, drying up and discouraging business investment. Citizens like Dobson who are expressively pro-dairy intensification maintain that Culverden, Canterbury, stands as a shining example of what other towns could become. Since it converted to dairy ten years ago, Culverden's population has increased, as has employment. New shops for supplying farm equipment have popped up and traffic has noticeably grown in the township. Culverden has changed the most of all the towns I have spent time in over the past five years. It is also the town that has most radically switched to dairy production over other ranching styles like sheep and cattle.

Plenty of voices contrast the optimistic view of dairy that Dobson and others present. Tim Horn, a conservation manager with the national advocacy group Forest and Bird, is among those the dominant discourse in media and government of “greenie” versus “farmer” would mark as in the conversationalist camp. Though he lives in Christchurch today, Horn spent decades in rural Canterbury in a township of roughly 750 people that was historically almost completely reliant on sheep farm based economies. Horn described town hall meetings nearly fifteen years prior when water use was beginning to become a contentious subject. Around the late 1990s and early 2000s, proposals to dam the Hurunui emerged as more and more water was being drawn upon for on-farm usage. Horn recalled local meetings in which sentiments regarding the dam were far from unanimous, and he felt farmers interested in promoting a switch to dairy had an overly dominant voice. In Horn's opinion, the only way to keep the Hurunui healthy was to keep it dam-free: “[The river] depends on free flow from the [Southern] alps, so a dam would choke the river up” (interview, Dec. 2013). Horn, along with others critical of the dairy industry, explained to me that there is no capital gains tax in New Zealand. Dairy to

him is “essentially an exercise in profiteering; adding water rights increases value” but the actual production of dairy itself per farm is barely keeping farmers afloat. In Horn's mind, “a few dozen people would benefit [from dairy conversation] and get capital gains from a river being taken away from the whole population” (interview, Dec. 2013).

The demographic shifts in Canterbury are part of the transition, too. Horn noted, “Farmers in the Hurunui district are excellent dry-land farmers but a lot of them are aging” and many older farmer believe they will have to sell or break up their farm anyway (interview, Dec. 2013). Most dry-land farmers, Horn claimed, do not have the financial capital needed to place dairy infrastructure and are therefore faced with tough decisions about how best to move forward in a way that would provide for their families. It appears most banks are reluctant to grant loans to smaller-scale dairy operations that are arguably more financially sustainable. The private banking incentives encourage debt and “going-big” (interviews, Dec. 2013). Horn has never farmed himself, but his friends and former neighbors have been sheep farmers and he articulated that their way of life was dying.

In 2009, Northern Cantabrians learned of a new water storage proposal and the formation of the Hurunui Water Project (HWP). The HWP was founded by a handful of shareholders: a local trust, a large farm station, a hydroelectric company, and the Ngai Tahu Property investment group. These groups put up capital to set in motion a plan to create more water storage facilities through damming Lake Sumner and a branch of the Hurunui River. The privately backed plan professed commitment to improving Canterbury for all farmers. The project framed Canterbury as underproductive and barren, arguing development was needed to “improve welfare” and make Canterbury a “lush and green productive area¹⁰.” This project vision utilizes the scarcity narrative, making Canterbury a depleted landscape that demands intervention of development. The HWP claimed it would ensure Cantabrians working in the difficult climate of dry-land farming a little more on-farm storage each year, and this was highly attractive to many across production sectors. Farmers interested in participating in the

¹⁰ See www.hurunuiwater.co.nz

project had to buy shares and keep investing as the initiative progressed. Estimates of costs of the overall project and basic share values rose over the years since the HWP's inception, driving up the price of participation.

The HWP sought and eventually received a grant from the Ministry of Agriculture and Forestry's Sustainable Farming Fund. Farmers explained to me that this grant required a certain number of landowners be behind the project. Interviewees suggested the project's leaders and those involved with the original shareholding groups pressured farmers to join in order to meet the prerequisite. The push for farmers to invest was described as everything from subtle peer pressure to outright threats from farmers who were adamant the project should go forward. The HWP now advertises itself as having 200 different landowners as backers.

Sheep farmer Robbie Edem bought shares in the Hurunui Water Project because "everybody else was doing so" and he and other farmers were "led to believe the water would not be part of a big dairy conversion but rather an effort to give meat and wool farmers a little more boost for their stock" (interview, Jan. 2014). The attraction for people like Edem was that he could finish fattening lambs on-farm instead of sending them elsewhere. An increase in on-farm water could boost caloric intake possibilities for stock on-site. While beef, according to Edem, has remained fairly steady in prices, the wool market has fluctuated dramatically over the years, and farmers in wool have struggled, especially with the emergence of polypropylene (derived from petroleum) as a prime competition for Merino wool as a fiber for clothing. According to Edem and other sheep farmers with whom I discussed the HWP, the promise of some additional water for all was initially met with positive response. Yet over time the project seemed less for community improvement and more for selective landowner accumulation of investment capital.

Dairy-land in Canterbury, by estimates of farmers and economists consulted, is roughly half the price of dairy-land in Northern New Zealand, and the rush to buy up land for dairy conversion has brought to the fore class lines. Based on the observations in Canterbury, it seems that the HWP

gradually highlighted class differences. Originally the project required that family farmers interested in receiving water contribute several thousand dollars to get the proposal off the ground. According to the farmers interviewed, the project kept undergoing changes and more money was required by each family to invest for a return of water. Explanations for why the project's fiscal specifics changed were fuzzy at best. Residents began to question the guarantee of water and in return concern grew that if the project failed, no invested money would be returned. Three farmers I spoke with said project leader Dobson had given them mixed information on the future of shares. Farming families expressed being increasingly in the dark and anxious when doubts were raised over the project's ability to actually materialize. Families who could not afford to continue to invest dropped out, and tensions between farmers increased as the pressures to make decisions about a poorly understood water scheme mounted. I heard Dobson and farmers in the area who were categorized as more financially secure referred to as "bullies." This characterization was matched with stories of disputes and circulating accusations between different community circles.

The proposal to dam Lake Sumner created significant public outcry especially from those who recreated on the river each year. In late 2009, Fish and Game New Zealand proposed a statute that would protect Lake Sumner and the lower branch of the Hurunui River. This water conservation order (or WCO) was submitted and afterwards taken through the typical statute review process with ECan. As expected, ECan hired independent commissioners to look into the proposed Hurunui WCO that would limit the ability of developments such as damming. ECan then found *for* total protection of Lake Sumner but allowed for the development of southern branch of the Hurunui River. The next step in the WCO process would have been for the motion to go to the Environment Court for an appeals process, which was anticipated. Unexpectedly, Environment Minister Nick Smith stopped the statute process, blocking the conservation order's future. At the same time, he was instrumental in dissolving ECan via the 2010 ECan Act and replacing the elected councilors.

The HWP eventually revised their water storage scheme to draw from branches of a more minor

river system, the Waitohi, apparently to appease those not in favor of damming significant portions of Lake Sumner and the lower Hurunui. Former project manager Amy Fincher, in public statements, press releases and op-eds in local newspapers, described the increased costs of the project as being due to the difficulties of obtaining community support and consensus. Community consultation was posited as costly, reproducing a narrative that top-down governance is more effective and cost-efficient. In-fighting began as farmers became divided, some angry at those who had opposed the projects, some dismayed at learning canals would be cut through their property, some bitter over lost investments, but most pointing at each other.

The HWP lost its economic promise to some like Edem. The HWP soured to those like Edem when it seemed clear that dairying would benefit a few disproportionately while all farmers absorbed the cost. The divide between sheep and dairy farmers is increasing. Edem and farmer Steve Tynder were among those to call sheep and cattle farming in Canterbury “traditional farming” in their explanations of a changing small-town Canterbury. Repeatedly interviewees who were connected to sheep and cattle production criticized dairying as being of a different culture that required less hard work and less knowledge of the land. “Dairy is not farming,” Tynder claimed, “it's not land-based, it's chemical farming, you just put a spigot into the ground and walk away” (interview, Dec. 2013). These statements suggest that different farming methods encourage contrasting ways of relating to ecological systems, and consequently create varying conceptions of what is native, natural, or appropriate.

Project delays, management reorganization, and budget revisions to the HWP have made those originally in favor of the storage scheme disappointed and disillusioned about prospects for moving forward. Still, the desire to “move with the herd” in agricultural communities makes few farmers willing to openly express their misgivings with the HWP or dairy-related developments in general (interviews, Jan. 2014). A school teacher, Kate O'Dare, I spoke with reported some women have dared not speak out against the negative aspects of agricultural change they are witnessing because they risk been seen as disloyal to the farming community moving towards dairy. Farmers, O'Dare says, have

been in awful financial situations that create both debt and shame. She thinks many felt they had to put up shares in the HWP and are now stuck with no promise of return with water and with many of their ties to other farmers either strained or broken.

When I arrived to continue ethnographic work in 2013-2014, three years had passed since the ECan Act revised democratic structure of the local environment council. I had heard only dispatches from contacts in the region regarding the shifts in governance and the growing presence of dairy in the landscape. Despite the overhaul and replacement of councilors with appointed commissioners, the regional council's responsibilities remain the same. These include monitoring air quality, “processing consent applications and compliance monitoring of activities involving resource use” (ECan website, accessed 2014). The ECan Act set national precedence and public opinion on the overhaul continues to be mixed. In December 2013 I contacted both those of the fired committee and a voice from the recently formed commission. The respective claims on the health of Cantabrian local democracy were remarkably contrasting.

Jan Asher was driven to run for council after becoming violently ill from drinking water contaminated with E.Coli. She and her husband, Thomas, own a seaside property on the outskirts of Cheviot. The land en route to her home on the beachfront is pastured dairy. Cheviot had been on “boiling-order” for over five years since testing by extensions of ECan revealed high levels of bacterial contaminants in what had been assumed safe tap water. After a crippling bout of bacterial poisoning, Asher questioned why “in a developed country one could get so sick from what should be potable water” (interview, Jan. 2014). The existing ECan management at the time, she felt, was not adequately addressing the water concerns of her area. Months of campaigning and outreach and local fundraising resulted in her securing a seat by regional elections in 2007. The majority of the work at that time was directed towards finding a cohesive water management strategy for the Canterbury region which would meet the diverse and growing demands of different stakeholders. Water management strategies moved forth while new irrigation schemes as well as river protection statues were proposed by different

independent parties. Central government's Minister of the Environment Nick Smith announced a review of ECan's efficiency right as the main water management strategy and protection statues were coming to completion by ECan process. According to Asher, there was a major disconnect between government rhetoric and the actual findings from the commissioned report (see Creech 2010). The Creech report described the ECan council as fraught with tough decisions given a rush for water but also one that was slowly sorting through the backlog of consent applications for water use. The central government media response, however, became in Asher's opinion an orchestrated effort to denounce the council. Asher, along with the other councilors, lost her job after the ECan Act was delivered and rendered the elected council obsolete and dismissed.

Asher and the other elected official were offered no notice and no compensation. She reported not taking the loss of her job personally, because “it was clear the agenda at hand and that this was a 'stitch-up' from the beginning...we were in the way of central government's pro-irrigation agenda and so we had to be canned” (interview, Dec. 2013). This government intervention claimed “exceptional” cases such as that of Canterbury’s water future necessitated “special treatment and new governance because too much [was] at stake” (interviews, Dec. 2013 and Jan. 2014). According to those critical of the overhaul, the media played a key role in reinforcing what Asher qualifies as “defacto truths that central government could take us out and carry on their merry way, that central government knows best” (interview, Dec. 2013). The emergent discourse surrounding the overhaul legitimized the measures by central government, which were quietly setting legal precedent (Joseph 2011).

Whereas Asher represented a concerned citizen turned council representative, Sir Richard Karr, also formerly of ECan, had spent a lifetime in politics. He served as Speaker of the New Zealand House of Representatives and was councilor within the Canterbury regional council for nearly a decade, including a position as Regional Council chairman. In our interview, Karr described not recognizing the new political terrain of New Zealand: “I've been in politics for decades, and I never imagined such an anti-democratic move like [the ECan] overhaul could slip in and gut people's control over their own

resources” (interview, Jan. 2014). Karr believed resistance to the overhaul had previously been growing but the devastating series of earthquakes that hit Christchurch in 2011 seriously hampered progress towards reclaiming local democratic management of water. “There are people without water running in their homes, with cracks through their floors or without roofs at all...pro-democracy organizing has of course taken a back seat to simply getting going again” (ibid). When I inquired about political participation post-earthquake, Karr replied that the number of people voting had dropped. He cited the earthquake recovery as distracting citizens from what he saw as troubling new trends denying local voices. Karr and others repeated statements like “local democracy has been removed from Cantabrians” and “the only way it will be better managed is if we had a democratic council...then we are all answerable to our communities who are affected” (interviews, Dec. and Jan. 2013-2014). The suggestion is that Canterbury residents have little recourse for resistance to their regional council's actions. Asher lamented, “in Canterbury, we're second class citizens” (interview, Dec. 2013).

Those who viewed the overhaul as a needed cleanup of stymied council negotiations reminded me that technically ECan *was* still a democratically elected entity. The commissioners had been selected by the central government, but central government was in place via democratic election. The perspective on regional change from inside the new regional environmental council was positive and focused on economic development. The Honourable Douglas Barrow, a significant voice from this perspective, warmly greeted me in January of 2014 in the offices of the Canterbury Regional Council. Barrow had served as both Minister of Health and Minister of Finance under three different prime ministers. Barrow was part of a Labour government initiated economic reform. The reforms, known colloquially as “Rogernomics” (after Roger Douglas' spearheading), were informed by free market based ideologies and propelled New Zealand into a more integrated role in the global economy. The structural changes of liberalization were met with mixed public response, some noting the growth of GDP and the ability of the agricultural sectors to secure new markets, others pointing instead to a subsequent poverty level rise and the cuts to wages and health sector programs.

Barrow was appointed Deputy Chair to the Regional Council in 2010 along with the other six commissioners elected by the central government to replace the fourteen elected councilors. He stated several times that he had not been part of the decision to overhaul the previous ECan design, but that he could see why such review and dismissal was needed. He outlined the former structure of the regional council, describing the different interests that resulted in decisions being at loggerheads¹¹. Barrow's explanation of the tensions in Canterbury mirrored the majority of those found in the media: this was an urban-rural perception problem and that two sides fundamentally did not understand each other. He described deadlock in the council and said previous governance was as “unstable as it was stymied” (interview, Jan. 2014). Barrow felt confident that the commissioners were streamlining process successfully.

In the interview, Barrow described the impetus for the overhaul:

Barrow: ...On matters to do with water the council was quite polarized and I think that the single reason that the government sacked the council...was because of the government view or perception that the council was not making adequate progress in relation to the management of water. There would be many who would say that...what the government was really interested in was not so much the management of water as the promotion of irrigation, which is, if you like, a particular outcome, and I think that that is substantially but not wholly the case. So I think the government is undoubtedly interested in the promotion of irrigation but I think that that it not its only interest.

Pendergrast: *Why are they substantially interested in irrigation?*

Barrow: Because...for many ministers it is simply a matter of their believing----as I do, comes to that---the irrigation of the rest of Canterbury that isn't already irrigated will deliver an economic benefit that is significant indeed of a scale that you shouldn't rightly ignore and can't easily achieve in many other ways [interview, Jan. 2014].

Barrow argued in favor of the government intervention, stating that in times when a region is not going in a desirable direction, the central government is legitimized in changing the course. This is the positive view on the same matter that instigated Asher's decrying the “central government knows best”

¹¹ When asked, however, how many times the council had become deadlocked on a decision, Barrow wasn't certain but guessed perhaps twice.

rationale. Barrow stated being “comfortable with the notion of getting back to a democratic mandate” and that whether or not and when this happens “is ultimately a central government choice” (interview, Jan. 2014). What form such a mandate or structure would be created in the future was not clear in his mind. In 2013, by vote of Parliament and new legislation, the central government extended seats of the commissioners from 2013 to 2016. It is worth noting at this juncture that New Zealand's Parliament has *parliamentary sovereignty*, which means that Parliament represents supreme legal authority for the country. A “supreme” court within the government system does exist; however, the role of this court in New Zealand is to interpret legislation rather than rule laws unconstitutional. Importantly, such an unconstitutional ruling would not resonate far because New Zealand has no formal constitution but rather a collection of Parliamentary granted acts and statues. Therefore the ECan Act represents both a legal precedent and an example of a mandate that only another Parliamentary ruling can negate¹².

Deputy Barrow said community conversations would determine values and then help set guidelines for the regional council's work. “Community groups,” he offered, “can govern themselves *when you invite them to*” (interview, Jan. 2013). The suggestion is that public consultation, consensus-based decision making, or self-determination regarding resource management are each possibilities, but they must be *allowed* by state governance.

The public consultation work is represented by district-based zone committees that post-overhaul were set up as a motion towards self-regulation. Both Barrow and Ngai Tahu¹³ business development sector leader Andrew Sullivan cited the zone committees as evidence that the public sentiment was being considered in policymaking regarding water. By contrast, those I spoke to in rural Canterbury who had participated in zone committees had mixed sentiments about whether their opinions and collective positions were falling on receptive ears. From 2010-2013 the Hurunui Zone committee worked to come to a consensus and deliver a report with agreed upon standards of, among

12 For perspectives on New Zealand rule of law, see Philip Joseph's (2011) scholarship.

13 Ngai Tahu is the largest *iwi*, or tribe, in the South Island.

other things, acceptable nitrates in the Hurunui River. Angie Darvis, partner to one of the township's main medical doctors, described the process as arduous given the contrasting goals of the stakeholders. According to Darvis and other interviewees on the subject---and as confirmed by examination of the report itself---months upon months of negotiations ended with the Hurunui District zone committee presenting a report to ECan on the community's proposed standards such as water flow, water take, and acceptable nitrate levels. The report was heard and revised significantly, with councilor-led ECan opting to raise the agreed upon level of nitrates. The expressed concern by ECan was that the Hurunui zone committee had set the standard too low and such a level would impinge upon farmers' ability to develop dairy in the area. ECan moved to increase acceptable nitrate levels by 25%, writing over the three years of consensus-built work and raising questions about whether the zone committee was being truly taken into considerations of local governance.

III. Perceptions of Environment and Public Health

Today, many residents of the small towns that dot the sparsely populated Canterbury region are questioning their local water sanitation. In the past years, approximately ten percent of wells in Canterbury exceeded the maximum level of nitrate concentrations acceptable in drinking water (ECan 2012). It is fairly uncontroversial that the decline in potable water is due to increased organic effluent from cow dairy farms. Degradation in water quality has also been linked to inorganic run-off from pasture to which agro-chemical nitrate fertilizers have been applied.

Interestingly, Deputy Barrow argued that increased irrigation in Canterbury would increase reliability of water access and thus the efficiency of water use and create less waste. He therefore positioned increased irrigation---typically applied in the form of pivot irrigation¹⁴---as a more environmentally conserving measure. This perspective changed an interpretation of a type of agricultural practice from destructive to conservationist. Barrow discussed the burgeoning risks from

¹⁴ Pivot irrigators are large overhead sprinkler systems that rotate on a pivot. These are reserved for larger farms as their installation and machinery are too costly for smaller farmers.

bacterial contamination, nitrate spikes, and concentrations of cadmium (all linked to dairy farming practices), and he argued these issues could be mitigated and were inevitable. He also believed the concerns about health risks were largely inflated.

Often, Barrow explained, “environmental linkages are more obvious than economic linkages” and that people are overly worried because they “almost see too great a linkage [with environmental issues]” (interview, Jan. 2013). In discussing the costs versus the benefits of dairy, Barrow made it clear that he felt the economic benefits greatly outweighed negative impacts. He went on to problematize a discomfort with environmental stressors coming from economic gains:

Barrow: You can hear people say: 'You're destroying the environment, and what's worse, you're doing it for a profit!' And I'll say, you know, curious that, I don't understand why it's worse to destroy the environment for a profit. You destroy the environment, it's a bad thing, why is it worse to...well, I throw that line in because I think for a lot of people...they think that it is not just bad that the environment is being destroyed, it's bad that it being destroyed for private gain...they feel worse about it...part of me again...as a student of economics [says] we're not talking exploitation, we're just talking private gain...[and] without private gain there's no contribution at all, so far from making [environmental damage] worse it makes it absolutely essential. A lot of people who are not thinking very deeply about economic issues see the private nature of the transactions involved in farming as part of the problem...the private ownership becomes part of the problem and I don't know how to crack that...we need to think about how to address that. For many people, the fact that farmers are making a private profit out of destroying the environment makes destroying the environment worse. [laughs] Ain't that something [interview, Jan. 2013].

Many in rural Canterbury I spoke with seemed less than confident of the ability of ECan to ensure water safety from contamination. Mike Hardy, a sheep farmer, said he had not tested his own drinking water and he “probably didn't want to know” [interview, Dec. 2013]. Hardy and other interview subjects expressed significant anxiety regarding water safety. The impetus for Genie and William Foster to test their own water came when Genie found out she had breast cancer. The Fosters decided to take stock of possible toxicity in their environment, believing there might be more carcinogens around them than what they had previously considered. They live in a part of Canterbury that ECan deems a water “safe zone” undisturbed by high contamination; they draw from groundwater via a well. Independent testing by a contracted environmental scientist hired by the Fosters gave startling results

that contradicted the safe zone assumptions. The Foster farm drinking water contained 170 times the World Health Organization standard for arsenic, 70 times the WHO maximum for acceptable levels of cadmium, 3 times the acceptable levels of nitrates, and trace residues from pesticides. The source of arsenic is less clear than the dairy-related nitrates and cadmium, the latter of which is bound to the phosphorus applied in the NPK combinations within synthetic fertilizer used in dairy production¹⁵.

Deputy Chairman Barrow responded to a series of questions informed by my qualitative findings on perceptions and concerns of public health.

Pendergrast: *[As dairy expands] is there more of an effort [by Ecan/the regional council] to do water testing? What would a crisis look like with water contamination?*

Barrow: The more we test, the picture doesn't alter...as we fill in gaps and test more, the picture is the same. I never use the word 'crisis' because I don't like it.

Pendergrast: *Only recently has there been a discussion---nationally and regionally---of what's acceptable in terms of nitrate, cadmium, etc, levels. How does the regional council decide what constitutes a healthy river? At what point is something a public health risk?*

Barrow: *[Responding to Canterbury Medical Officer Harold Wilson's outcry after reading an ECan commissioned report on nitrates]: I think for example that (Wilson's) view is entirely sincere...and deeply misconceived. If I didn't think Harold was sincere, I would call him mischievous, deeply mischievous. I don't think there is anything about the state of the water which we don't know now and need to know. Right now, the nature of the risks we are running...we have started to put the framework in place...it'll take twenty years for practices and management to respond. It'll take twenty years for the impact of the responses to be felt in terms of water quality. Because the measures of quality are going to get worse before they get better...people must understand the nature of the health risks [interview, Jan. 2013].*

Understanding the nature of health risks to Barrow involved educating families that levels of nitrates in drinking water sources in many parts of Canterbury are harmful to pregnant women, nursing mothers, and infants under 18 months. He confirmed the reports that I had both heard and seen that stated much of Canterbury was above the WHO standard for acceptable nitrate levels.

Barrow: *If you banned all dairy tomorrow---and that is not a serious proposal---we'd still not meet the standard for a decade...you could think of that as a problem but it is a problem to which there is no solution...you can't sink a bore [for well water] and think that water is safe for drinking in much of Canterbury if you are a less than 18 month old infant or a nursing mother.*

15 See public engagement on the subject by Dr. Mike Joy of Massey University-Palmerston North.

They are the only segment who are affected [negatively]. Apart from rural farmers, there is nobody in Canterbury...who wants to sink a bore and drink the water...Around most of the globe in developed countries the water is treated. In cities in New Zealand it is treated, except in Christchurch, because it comes from underground groundwater which naturally filters...nowhere else thinks you can drink water without chlorination. Most people in the world drink treated water and not untreated water. The moment you collectivize and join in a [water treatment] scheme, you cover the health risks. Most are not exposed to a health risk...actually the only human health risk from water arises from swimming and ignoring warning signs...or when they have a local bore and are giving water to babies and pregnant women [interview, Jan. 2013]

When relayed the information gathered by the farmers independently testing their well water, Barrow reminded me that testing was being done strictly for nitrates, not for arsenic or cadmium or any other contaminants. Asked why these latter chemicals were not being tested for or monitored, Barrow said the public debate had been about nitrates, and therefore ECan had been pressured to test for predominantly for nitrates. When the public discourse changed to include cadmium or other contaminants, he suggested, the testing and monitoring would also change accordingly. How the public would come to advocate for such monitoring was not clear. The Fosters and others concerned over the degree of safety of their well water reported being unable to reach Barrow or anyone else in ECan to ask questions.

These statements from Barrow signify another form of tension in the current environmental management between centralized governance and an expressed commitment to community input. His responses also show unexpected moments of invoking local autonomy while maintaining central authority. Barrow's words dismiss calls for dairy moratoriums as unthinkable and thus protestations against dairy intensification are not seen as valuable community input. The Deputy Commissioner's arguments continue the logic of centralized government interventions as necessary and natural. At the same time Barrow's statement above places almost bewilderingly large responsibility on residents to be versed in environmental science enough to know how to protect themselves from contamination. The role of ECan increasingly appears to be to streamline agricultural intensification while communities are tasked with the absorption of the consequences of this development.

IV. Indigeneity and Development

The tensions between the Ngai Tahu and Waitaha *iwis* (tribes) show how claims on land and indigeneity in Canterbury have become steeped in the issues of water and land management as well. Just as the previously mentioned dominant narratives on dairy have homogenized and obscured complex debate within communities over rights, the multiform Maori perspectives on environmental issues like development for irrigation can, via power struggles, be reduced to a single stance of the most powerful tribe.

Sir Andrew Sullivan, chairperson of a tribal council within Ngai Tahu, conveyed a relatively rosy picture of inter-tribal relations and economic return from dairying. Ngai Tahu is currently investing millions of dollars into converting forestry lands to dairy production. Through the claims made by the Waitangi Treaty and the 1998 Ngai Tahu Claims Settlement Act, Ngai Tahu has significant acreage on the east coasts of the South Island for agricultural investments. Ngai Tahu as an *iwi* combines three groups, Kāi Tahu, Kāti Mamoe and Waitaha. Ngai Tahu came to the South Island and Northern Canterbury roughly 300 years ago to a land occupied by other indigenous groups. The Waitahi *iwi* is one of the smaller tribes that Ngai Tahu claims to be part of their own. The Waitaha *iwi* has members who claim a distinct lineage and separate cultural history from that of Ngai Tahu, and there is bitterness between the tribes regarding questions of tribal distinction. In recent years the disconnect between Waitaha and Ngai Tahu views has included disagreements with Ngai Tahu over water management and the investments in dairy farming.

I asked Sullivan about conflict between *iwis* and he was largely dismissive, saying “I am Waitaha and Waitaha are Ngai Tahu...we cannot divide each other anymore” (interview, Jan. 2013). Regarding new governance and the ECan overhaul, Sullivan felt the move was a positive step forward in enriching Canterbury's future. He felt intensification of the dairy sector would mean an improvement for all Maori lives in the area. I asked if there was a connection to dairy among Maori in the South Island, and he reported connection was less the incentive than the believed profitability of dairy

production. Sullivan also maintained that the zone committees were representing townships and Maori *iwis* appropriately and fairly.

The Waitaha I spoke with denounced being lumped into the same tribe as Ngai Tahu. These members were frustrated by the assumption that Waitaha would have the same position on dairy investments and property management espoused by Sullivan. Ron Wilkens was associated with Ngai Tahu before deeper investigations into family history revealed he was in fact Waitaha. The distinction matters greatly to him. In Wilken's mind, the relatively recent settling of the Ngai Tahu in the South of New Zealand translates related to what he claims is a very different environmental conceptions and cosmologies. Wilkens feels those of Ngai Tahu heritage do not have the same land and environmental narratives that the Waitaha have cultivated. Wilkens holds a strong affinity for the Waitaha pacifist philosophy and what he describes as the tribe's ethic of ecology: "Whole lives," he described, "are dedicated to and directed by the stars" [interview, Dec. 2013]. He believes Waitaha ecological knowledge is unique and distinct from that of Ngai Tahu and that Waitaha knowledges of Canterbury are fading as tribe is subsumed into Ngai Tahu more and more. He remarked, "They don't understand this land and it wasn't long after they came that the place went to 'fish and chips' anyway" (interview, Dec. 2013).

Wilkens' family home was without water the day I visited. Dishes piled high in the sink and buckets were used to flush the toilet system. Wilkens reported dairy farming first began trickling into his area around 1985. He grew up nearby his current home, and he noted that as a child, not a single dairy farm could be found nearby. "It was a desert before," he commented, and the town, like many in Canterbury, was filled with sheep for meat and wool production (interview, Dec. 2013). While the heads of the HWP had described Culverden as the model of excellence for a future of economic prosperity from dairy, Wilkens said he preferred the Culverden that existed before conversion.

Wilkens draws parallels between the squeezing of the Waitaha into Ngai Tahu and the squeezing of Cantabrian rural residents in the water crisis. Ngai Tahu, Wilkens mentioned, is in his

mind increasingly “seen as a corporation” by Waitaha (interview, Dec. 2013). In his opinion, the government changes the standards of water health and tribal recognition based on the political climate and not on what is best for the people. He felt discouraged by these fluctuations: “There’s no sense of something being *just* [in the minds of] particular groups; laws on water and laws on tribal inclusion are both set to serve those in power” (interview, Dec. 2013). According to Wilkens and other Waitaha, the state is exacerbating inter-tribal conflicts. Since the 2010 ECan overhaul, Wilkens believes the new strategy for those opposing the current political direction is to get people out of Parliament and then let them change Ecan. “Parliament can do anything they want,” he remarked, echoing critiques from scholars who see the ability of parliamentary supremacy to squash contestation (interview, Dec. 2013, see Joseph 2011).

Wilkens and all the sheep farmers I spoke to recalled access to pristine drinking waters in previous decades. Wilkens said growing up he believed he enjoyed the best water in the world; now, he remarked, the water was increasingly chlorinated and recreating was more risky because of toxic blooms from nitrate increases. He recounted farm dogs being killed from eating nitrate-induced algae containing contaminants. Increasingly “no swimming” signs have been seen along the banks of waterways in Canterbury. Wilkens, like other Cantabrians who were not in dairy farming, told me he would start pumping his own water to avoid contamination from rivers with effluent. He remains concerned, as others reported, about groundwater contamination. This expressed insecurity rubs against the assurances by ECan commissioners that environmental pollution can be contained and that the public will be adequately informed about how to stay safe and healthy.

What of the promises of dairy to boost local economies? Sir Sullivan's suggestion was that Maori in the South Island were all going to feel the trickle-down from Ngai Tahu's investments¹⁶. Dairy production, Wilkens told me, bring to townships new farm equipment stores, veterinarians, and other retailers. However he feels the increase of employment such businesses might bring is small overly and

¹⁶ These investments from Ngai Tahu in agriculture projects reach approximately 1.5 billion NZD as of 2014.

that more people are driving out of smaller communities to make purchases in Christchurch. Wilkens stated the economic boosts from dairy do not balance out the drastic increase in the cost of arable land and cost of environmental damage which “ratepayers like me will have to mop up while others get rich” (interview, Dec. 2013). I asked Wilkens what the path of resistance to these aspects of rural change might be. He remarked, shaking his head, “Blowing up the bridge at this point, I guess” (interview, Dec. 2013).

V. Heterogeneity in the farming community

As mentioned, part of Commissioner Barrow's explanation of Cantabrian conflict emphasized an urban-rural divide. This framing of disagreement states that the populations of urban Christchurch and the rural farming townships fundamentally do not understand each other. Barrow and those in favor of the ECan redesign maintained this lack of understanding was a great source of the conflict that stagnated the regional council pre-overhaul. This explanation makes restructuring part of conflict resolution and suggests the communities could not manage themselves. The narrative of urban-rural misunderstandings also simplifies the heterogeneous experiences within rural zones of Canterbury. While there are farmers and rural community residents who view the conversion to dairy in Canterbury favorably, there are groups of meat and wool farmers who meet the changing agricultural landscape with deep unease and criticism. At the very least the experience on the ground uncovered a far more fractured rural Canterbury than the urban-rural divide intimates.

The ethnographic research I conducted in 2013-2014 revealed a growing division between sheep farmers and dairy farmers in Canterbury. While some farms have converted from sheep ranches to dairy cow operations, many spearheading local transitions come from wealthier dairying communities from regions like Waikato in the North Island. The sheep farmers I interviewed were at times dismissive of dairying, questioning whether the model constituted “farming” at all. These sentiments disapproving of dairy reveal identity challenges within different farming sectors. Sheep farmers told me that dairy farming was not dry-land farming but rather “putting in a tap and walking

away” (interview, Dec. 2013). The latest census data shows Canterbury's income is in general increasing (Statistics NZ, 2013 data accessed 2014). However the qualitative data from the small-town Canterbury obtained through ethnographic research suggests a lop-sided amassing of wealth and growing inequality between farmers of different sectors.

In sheep farmer Antony Grange's view,

...we [farmers] have been able to farm in New Zealand without a speed limit...now there is a sign gone up but no one is policing it...they've made some rules, they've sent some signals to the community, but we all know the dairy farmer over here and the dairy farmer over there have all increased their cow numbers. We're seeing more and more that what leaves your farm is important because we're seeing the effects on waterways. [Regarding waters schemes like the HWP] the group of farmers initially had good will about the project. Because we put in money we got fully paid shares...but now the rules have changed. Farmers didn't realize it was pay up fully or lose fully. If you didn't fully pay a share then you lost out. This was done on purpose; the company has done a lot of things which are right for the company and which are not right for the shareholders. There were guarantees...of delivery, but over time something didn't seem right with the numbers. There was a degree of fudge and bother as to what they could deliver at what price. The figures were there for farmers to read but the weren't presented in a way that everyone had access to them [interview, Jan. 2013].

Grange, like many other sheep farmers, once saw irrigation projects as having the potential to guarantee all farmers more water security. Eventually he became dubious of water schemes and other efforts that seemed to disproportionately improve conditions for dairy farmers. None of those I interviewed who had come to view the HWP unfavorably believed there was anything illegal conducted; however, all mentioned some degree of obfuscation by HWP management.

The cultural difference between irrigated and non-irrigated, dairy and nondairy farming units is increasingly significant and impacts how rules of environmental use and management are carried out. Sheep farmers as well as ecologists at Massey University and Lincoln University claimed nitrate and phosphate levels have gone up roughly 300 percent over the last five years of dairy intensification in Canterbury. Unrest is growing as sheep farmers believe they are unfairly taking on financial and environmental costs to their farms. Sheep farmers who once saw potential for equitable water sharing through the HWP were newly concerned with a decreased reliability on water. Many reported now

fearing water schemes would allow larger dairy farms to draw far more from the total river and groundwater supply, leaving those in sheep production worse off than in previous years. These sheep farmers also worried about increased rates (taxes) that might become necessary to collectively manage environmental cleanup.

Opposing views came from dairy farmers who believed their work was keeping small towns alive. Newly transplanted dairy farmers like David Parker felt that townspeople in Canterbury were closed-minded and reluctant to welcome in outsiders. He and his wife expressed frustration with being on the outside of what they described as entrenched networks of old sheep farming families. Parker said sheep farmers targeted dairy farmers and others not involved in their industry because of the “tall poppy syndrome in New Zealand” [interview, Dec. 2013]. This cultural norm can be described as one of attacking individuals or groups that stand apart from the crowd; the “tallest poppy”---here dairy farmers in Parker’s conception---is the first to be cut. The Parkers attributed being on the outside due to their relative success, and they guessed the anger directed at dairy was coming from shame over the decline in sheep farming profitability. They shook their heads at what they viewed as a “backwards region which dairy is helping modernize” [interview, Dec. 2013]. Dairy farmers interpreted the booming Culverden as the model of *modern progress* that dairy conversion would allow.

I asked Parker about his responsibility in the community, especially when it came to environmental practices. If he were told his practices were causing harm to water and soils, would he alter his methods? Parker replied he trusted science to tell him how to best proceed. I quoted the work of a prominent ecologist who had been vocal in multiple media platforms about the increasing waterways pollution. Parker responded, “Well, he is just one scientist and an extremist at that...Look, if a few fish get a headache it is still worth bringing better return for the whole community to enjoy” (interview, Dec. 2013). Parker and other dairy farmers who were skeptical of environmental science data on river health seem to hold some scientific arguments as more sound than others. Knowledge claims, whether scientific, local or indigenous, are being evaluated in terms of their ability to reinforce

dairy as a good, safe and economically viable practice for the region. The logic of dairy development increasingly makes statements of concern over dairy intensification seem “radical” or “extreme,” even when these views originate from field experts. Barrow’s disdain for a local medical officer---whom he suggested is meddling---mirrors this trend, as does Ngai Tahu leader Sullivan’s disregard for Waitaha dissent.

There is a significant gap between the narratives of urban-rural misunderstanding and the empirical evidence showing farming community heterogeneity and multiform divides over water issues. The former narrative of duality homogenizes rural Canterbury community in their farming practices and perspectives. This flattening obscures the increasingly inequalities and burgeoning tensions many rural townships face. The growing bitterness between farm sectors in rural Canterbury places more power in the bureaucracy of ECan, since these communities are now far less likely to collectively organize towards local water management.

VI. Labor and the trickle-down question.

Proponents of dairy conversion claim milk production will bring prosperity to Canterbury. Yet the ethnographic results suggest a much more complicated and arguably negative outcome for labor relations and wealth distribution. Marie Simper does not see Culverden's transition as progress for most local Cantabrians. Simper lives alone in a nearby town¹⁷ and said the dairy conversions in the area have not helped people like her find employment opportunities. She claims money is spent out of town back in bigger cities. She struggles to find work and believes that inequality in the area is rising. In her mind, smaller local shops get bypassed for larger ones closer to Christchurch proper. New Zealand is dangerously “ beholden to the global economy” and the “absentee farming” of dairy production is actually putting people like her in greater economic instability (interview, Dec. 2013). Simper described those in dairy as coming from wealthier backgrounds who brought capital investment with them to Canterbury from previous inheritances. She claimed that dairying investment by wealthier

¹⁷ I have omitted the name of this town at the request of the interviewee.

families was often one of many income streams including maintaining rental properties. She repeated the perspective that sheep farmers had wanted more water and had helped pay for water projects that were going to ultimately privilege larger dairy farms. Over time the rising costs of land, water improvement infrastructure and property taxes could squeeze out smaller sheep farmers who couldn't keep up. Increasingly many small-farm families were questioning their future in Canterbury. Simper reported many farmers she knew were considering selling to dairy investment groups because of their increasing debt to banks.

Cantabrian life for many is indeed a struggle and more conventional ways of farming pre-dairy intensification are not to be romanticized. However, it was difficult to find empirical evidence to support the claim that small towns were “dying”; the narrative of withering town life seemed largely built to make dairying a necessity. Looking at census data taken from 2013 there has not been a marked flight from rural areas to cities (Statistic NZ, 2013). Some population shifts have taken place between communities but certainly not the kind that would suggest a grand exodus. When asked about unemployment, farmers and local residents could name very few who were completely without work. The employment boom dairy farmers described was in fact related to hiring immigrant labor. Sheep farmer Grange was critical claims that dairy intensification meant economic and employment benefits, and he included immigrant labor as a hidden reality of dairy's effects on social relations:

[There would be] a trickle down effect...if the service people [of dairy farms] actually lived in towns like Hawarden. It's not the multiplier it should have been. Labor and environmental laws don't benefit local communities. [Dairy farmers] are farming for a model that allows them to farm towards capital gain...if they can farm for cheaper labor they will [interview, Jan. 2014].

Terry Malcolm, an itinerant worker currently employed seasonally by pig farms in Canterbury, described dairy farmers' hiring preference for Filipino immigrants. The dairying jobs are difficult, requiring long hours and supplying little time off. He noted an increase in immigration to Canterbury specifically to fill labor positions in dairy, with Filipinos being trained in dairy abroad specifically for prospective jobs in New Zealand. Malcolm said the relentless nature of dairy production was isolating

these immigrant workers and decreasing their ability to interact with others outside the farm. He suggested that communities are fracturing in part because immigrant populations of workers are growing while not integrating well.

Malcolm described economic development of the area as negatively impacting small-town Canterbury life; the town meeting halls, rugby clubs and other arenas of community gathering in Culverden have disappeared. Malcolm called Culverden a “truck-stop town” in which he would never choose to live. He noted it became this way due to dairy production’s reliance on transient and contingent workers who had little incentive to join community activities or projects (interview, Dec. 2013).

Filipino workers living on dairy farms expressed overall positive views about their situation, though each could tell a story of another who had been abused physically or had been emotionally intimidated on a dairy farm. I contacted the owners of larger dairy farms around Canterbury that Filipino interviewees claimed were sites of farmworker mistreatment. I was unable to directly interview anyone from these farms. None returned my calls and I was blocked when I visited a Culverden site by a locked gate and no trespass signs.

VII. Prospects for resistance

Those concerned about environmental problems and the development interventions to local resource governance sense the only way to try to scale back dairy intensification is to wait for a new central government election. The hopes for locally based resistances to dairy development appear seriously dimmed in Canterbury. Mark Edmond, an engineer living just outside Christchurch, voiced this pessimism. He said he was originally motivated to get involved in community activism after the proposal to dam Lake Sumner came to light. In his view, farming has become a “mechanized factory that debases life” and he is angry that “a ruling few could do this against a strong movement of water protection...a few hundred farmers have gotten their government to squash us” (interview, Dec. 2013). Edmond described his big picture take on the changes happening in Canterbury:

What's being done to us here is just like being done in the rest of the Western world. There's a deliberate and premeditated attack on democracy by powerful elite...it's so Marxist; it's hard to believe that Marx was so correct...that in a world of diminishing resources, it's been determined that people with power will find ways of working around the old safety nets and advantages of democracy and take what they want...I don't believe it was like that in the '60s, '70s and '80s. We've got our own version of a Western disease here and it happens to be focused on dairy farming, with massive taxpayer funded schemes to store water which are very, very unwise schemes...they seem to involve really crackpot engineering. We've got a group of people who have decided that they can make a lot of money...no matter how much evidence you put in front of them, they'll rationalize about it [interview, Dec. 2013].

I asked Edmond about the claims that Dobson and others in favor of the HWP had made about how increased irrigation would benefit those in dairy, sheep farmers, and the economy of Canterbury as a whole. Edmond pointed out the revised HWP had come under serious scrutiny. In 2012, ECan reviewed the HWP's proposal for the Waitohi, which would draw upon the tributary to create greater irrigation. As part of typical ECan water consent review process, the council hired independent assessments of the viability of the project from farming, environmental sustainability and economic cost angles. Dr. Geoffrey Kerr, a Canterbury-based economist, concluded in his report for ECan that “the likelihood of external costs (some of which may become internalised if mitigation is required), suggest the scheme has the potential to impose net costs on society as a whole, but also may be unviable for irrigators” (Review of Assessment of Economic Benefit, ECan hearing on Waitohi proposal, 2012). Kerr's assessment is not unique, and yet it is among those that fade into the background behind the dominant rhetoric of the importance of moving forward with dairy.

Edmond recounted visiting a West Coast town that had largely converted to dairy a few years prior. The second-hand story was of farmers who were, in the light of intensification, finding neighbors buying out neighbors. Edmond said reports from this area noted farmer suicides spurred by debt, while other tales described yearnings to leave the area, sell farms and walk away from millions in investments. Competition was seen to be increasing and there was to Edmond a palpable sense of desperation and ruin. Edmond expressed concern that this picture was going to Canterbury's future and

the reality for all other regions pressured to take on dairy intensification.

Chapter 4: Discussion and ways forward

My ethnographic research painted a portrait of Canterbury as a region fraught with ever-deepening tensions over water use and water rights, resource management, cultural identity, economic futures, public health, environmental protection and socio-economic inequality. The meta-narratives on dairy and the push to expand milk production into Canterbury celebrate the idea that development can positively shape the environment towards an economically diverse and resilient future. The ability to transform dry-land regions into green-grass dairy country is heralded as economically progressive and financially savvy. Those who can best capture water for its ideal usage (which for the dominant narrative means feeding dairy production) are engineering a bright New Zealand future. This developing future of mono-crops of dairy is represented as the most rational choice, as the measure towards improvement and as modern innovation against backwardness. The dairy farmers I spoke to and the government-appointed commissioners all adopted language of *rationality* and *progressiveness* being tied to economic expansion. This view saw environmental management predominantly as making increasingly worrisome ecological realities (such as rising levels of nitrates) acceptable via the frame of human control. Barrow and others argued their position with a sensibility of good governance that could objectively redefine what healthy use of rivers looked like for the Cantabrian citizen. Those proponents of dairy I interviewed overwhelmingly dodged my questions of what determined a healthy river. Industry advocates instead described how people could change their behavior and adjust human-environmental relationships (like swimming, drinking from wells, and so on). Mitigation, changing environmental engagement, and raising standard levels of chemicals like nitrates have become the environmental management of those rationalizing dairy. Arturo Escobar explains, “the concepts of planning and management embody the belief that social change can be engineered and directed...[the] narratives of planning and management, always presented as ‘rational’ and ‘objective,’ are essential to developers” (1996:50). As Barrow described, a moratorium on expanding dairy is not a serious consideration; this proposal in the framework of dairy-reliant NZ is highly *irrational*.

Another important construct central to the development of the dairy sector in Canterbury is the concept of poverty. What exactly does the “good life” entail? Dairy, in the words of ministers of the central government, Fonterra spokesmen, and Federate Farmers, promises a future of more wealthy New Zealanders. The economic climate of rural South Island is certainly one filled with unknowns. Farmers who have worked for decades in the wool, beef and lamb industries have uncertain prospects with markets, and many told me their trade was perhaps not fiscally viable for the next generations of young farmers. All the critiques of the dairy industry do not deny the reality of the difficulty of dry-land farming and the stress that highly fluctuating market values of commodities like wool create for Cantabrians involved in agriculture. Yet there is a difference between a challenging rural existence and one that is fundamentally impoverished and in need of outside aid or projects of intervention. ECan overhaul supporters framed Canterbury as in need of dramatic improvement. Making a community believe they are poor and desperate for top-down schemes to improve is a powerful consequence of development rhetoric and the creation of subjectivities by cultural hegemony (see Gramsci 1971).

Popular media certainly has not ignored the questions of environmental impact from dairy intensification. The current discourse on “dirty dairying” focuses mainly on the ways the *external* environment is being challenged by intensification of agricultural production. This focus is imperative to tracking the significant ecological pressures. At the same time, the idea that these changing natures are also affecting humans and community cohesion is possibly neglected by the work of environmental science alone. Environmental social science and qualitative methods of ethnographic research have the potential to unearth the complex layers of human-nature relations, and this case study revealed dairying as having a culture of relations to land different from those of dry-land farming. Local knowledges obtained by dry-land farmers in Canterbury have been gathered through generations of maintaining land. The sheep farmers I spoke to have been among populations “running the hills” for years and they

spoke of connections to the grasslands as among the things changing in the landscape (interviews, Jan. 2014). These farmers saw the intensified dairy farm model increasingly as creating a physical environment they did not understand. Paired with geophysical change, social dynamics in townships were being altered. Some viewed these alterations as providing more business opportunities, stores, and larger schools. Others pointed to friction and discord among farm families formerly tightly bonded. Both sides felt anger at those opposing their perspectives. The agricultural conversion has been dramatically re-shaping the socio-cultural landscape of community networks.

The interrelationship between changing social relations and changing ecological systems is well conceptualized through theories of social nature, which position humans not outside environmental systems. Instead humans are critical parts within ecological systems, and they shape what an environment socially means and how it will be used through the forces of value and behavior. Noel Castree's work on social natures emphasizes that nature is not so much just "out there" consistently across space but part of sited experience.

Castree writes:

What does this mean? It is not at all a denial of the material reality of those things we routinely call natural---be they trees, rivers, animals, or anything else. Rather, it's an insistence that the physical opportunities and constraints nature presents societies with can only be defined *relative to* specific sets of economic, cultural, and technical relations and capacities. In other words, the *same* 'chunk' of nature---say the Amazon rainforest---will have *different* physical attributes and implications for societies, depending on how those societies use it. In this sense, **the physical characteristics of nature are contingent upon social practices: they are not fixed** [2001:13, emphasis added].

Therefore, when social practices related to nature change, so do associated values the implications of the shifting attributes. Economic, environmental and social relations are all part of the same story, and as one of these relations becomes dominant and powerful, the others are shaped in turn. The dairy economy has become dominant enough to change the ideas of what "safe" means for water, and this is and likely will continue to impact how people relate not only to their environment but also to farming

practices and to each other. If citizens begin to think of their waterways as toxic, for example, rivers may no longer be viewed as essential recreational, spiritual, or food-shed related aspects of a community. Instead, rivers may become dangerous vectors of pollutants and disease needing to be controlled. New boundaries may be created to manage these waste-ways and treat those who suffer from exposure to them. Commissioner Barrow's narrative regarding treated drinking water as “modern” and well-water usage as backwards privileges technological infrastructure development over other ways of interacting with natural resources. Increased need for waste mitigation and irrigation creates a heavier reliance on technologies and scientific instruments that most likely will come from outside the community. This reliance on tools for management reinforces a top-down governance of communities. Somewhat bizarrely, the increasing concern about public water health, which is a direct consequence of dairying, is being used in Canterbury to legitimize more government technocratic intervention. This twist is possible when rural populations are increasingly encouraged to see rivers and water sources as part of an environment outside themselves that must be controlled towards efficient dairy expansion. Seeing nature as external to the local Cantabrian community allows rivers to be translated into commodities to be extracted. Waterways can be packaged in whatever form most behooves the economic incentive at large.

An increasingly popular narrative from pro-dairy lobby and farmers themselves is that Canterbury is barren and can be rendered productive, fertile and verdant. The dreams of lushness and productivity make Canterbury's already existing nature seemingly counter to a vibrant human life. The landscape of the region has been reduced to being empty just like populations in Canterbury have been defined as poor. The claim of barrenness is in conflict with perspectives of dry-land farmers who described a culturally significant, biologically diverse ecosystem that required intricate local knowledge to manage.

Development efforts can intervene to fill a landscape once a place has been deemed empty, impoverished and under-utilized. Part of the action of development assumes that locals do not have the

capacity to improve (Li 2007). As Mitchell's "rule of experts" analysis explains, the process of creating calculability homogenizes relations to simplify the world, reducing complexity via the production of a single commodity (2002: 95). Expert witnesses emerge to testify about river quality and management, many of whom have not lived near the rivers in their lifetime. Those who stand to gain from particular interpretations of river health increasingly influence the conception of a healthy river ecosystem, and the knowledges of river systems become de-localized.

This construction of empty landscapes has political consequences and works to limit the validity of those making their livelihood on so-called wastelands. Jennifer Franco explains, "All around the world powerful actors (transnational as well as national) are pointing out that the lands in which they invest are 'marginal' and 'unproductive' lands...This has been shown to be untrue for many cases; either the land is already used by small-scale food producers, or is of prime quality and associated with good (potential) access to water" (2013). While farmers initially attracted to the HWP were interested in having more on-farm storage and pasture to fatten animals, they did not jump en masse on the opportunity to convert to dairy. In the words of one farmer, "This is *dry* land, so we do dry-land farming...why on earth would you try dairy here?" (interview, Jan. 2014). Theories derived from political ecology help explain how scarcity can be constructed within an environment and how this can powerfully supplant other ways of existing, both in terms of perceptions of environment and in terms of social relationships among those dependent on a resource. Lyla Mehta's work on water scarcity describes how in the frame of resource shortages "science and tech are evoked as panaceas" and there is a focus on "supply side solutions" (2011: 373). Her discussion of dry-land farming in the Gujarat province of India points out the adaptation and social networks key to living *with* scarcity and that these relations accept cycles of nature to include drought. Her findings have resonance with data collected from dry-land farmers who exhibited identities forged by dry-land practices like sheep shearing, mustering (horse-based herding of flocks), and pasture management. The dairy conversion in

some perspectives is actually hindering the ability of culturally valuable social spaces to thrive. The construction of scarcity suppresses a nuanced view of a landscape and what productivity and vitality might mean beyond economic product and market return.

Over the years the water consent applications in Canterbury have increased and the concept of minimal flow for a waterway has been revised. Formerly free-flowing rivers now run dry. The concept of what constitutes a good environment is socially constructed, and this process proceeds not by consensus but by dominant ideologies that get engineered by the powerful. The major environmental construction at work positions rivers like the Hurunui as resources to be maximized. As Castree's writing suggests, new economic relations and privileging opens up the Hurunui district as one filled with underused opportunity, as a region of promise and boundless water just waiting to be efficiently directed. The nature of a river's *resourceness* for humans becomes redefined, not primarily for at-source drinking, trout fishing, recreation, etc., but for agricultural support. *Resourceness* then, is linked to economic viability, the nature of which is just as constructed. Li (2012) describes *resourceness* as not an “intrinsic or natural quality...[rather] it is an assemblage of materialities, relations, technologies and discourses that have to be pulled together and made to align” (presentation, October 2012). Li maintains:

Land itself is not the abstract entity that we call 'land' and think of as a 'resource.' Before it is 'land' it is ground/earth/soil/forest/pasture/ancestral territory/place of spirits—any number of particular designations. Its resourceness and its investibility have to be brought into being by imaginative and discursive devices, and new practices...A crucial element in constituting the resource-ness of land is the set of practices, relations and discourses that endow it with utility, value and price [presentation, 2012].

By analyzing the development rationale at work for Canterbury's waterways and for government intervention, I have highlighted the language and creation of a social reality. On a theoretical level, this case study serves as an example of how the melding of political ecology frameworks with food regimes analysis can result in a better conception of how particular place is

transformed. The empirical evidence shows the political nature of the new natural and social ecologies of Canterbury and the histories that helped produce these particularities. In rural New Zealand projects of dairy are transmuting what is socially possible while also altering land and elsewhere diet. The transformations at work are laying the foundation for new frontiers of capitalist intensification that will continue to impact communities and environmental systems as dairy expands.

Previous authors examining world-systems have noted the creation of these new frontiers for profit accumulation and for externalizing growing environmental costs (McMichael 2013, Moore 2000, Wallerstein 1974). Arguably the new frontiers at work are being constructed thanks to the lingering expansionist logics of the first and second regimes as theorized by the FR framework. The new frontier of consumption that dairy in Asia represents for New Zealand hinges upon processes of the second food regime; without the export of new nutritional paradigms from the United States in the 20th century, it is hard to imagine a product such as dairy moving from luxury item to main staple at the Asian table. Traditions, staple diets and “necessary” foodstuffs are fabricated politically as well (see Mintz 1985). More work on the creation of dairy as necessity on the *demand* side needs to be done in order to further map out landscapes the corporate food regime manufactures.

Sheep farmers I spoke to informed me they would rather move than see the lands they loved irrevocably altered, ecologically and socially. Others said they were going to be forced to sell family lands after taking on debt from water schemes. These attitudes signal an impending abandonment that can be read as a squeezing of the public off lands through the limiting of agrarian possibilities. I interpret the transitions in Canterbury landscapes as facilitating accumulation by a few while many become dispossessed. This dispossession can be defined in Canterbury by farmland loss or through the slow erosion of community cohesion and local self-determination.

Neil Smith (2007) continues Harvey's argumentation with his own considerations of capitalist imaginings of nature and nature as “accumulation strategy.” He writes, “As nature is more intensely integrated into capital as an accumulation strategy, the comprehensiveness of the social production of

nature under capitalism becomes more and more apparent, and the necessity of a broad political response ever more urgent” (Smith 2007: 19). What “broad political response” is possible in the new terrain of Canterbury resource governance? Unfortunately the “tall poppy” syndrome mentioned by farmers in both dairy and sheep farming is helping undermine resistance. When asked about collective action, I was told that “farmers tend to move as a herd here in New Zealand, and we want to be seen as going along with the general trend in agriculture” (interview, Dec. 2013). Many confessed that dissent in the agriculture community is often strongly dissuaded. Constraints on capacity for local democratic participation accompany these already existent cultural features of consent.

The effort to synthesize political ecology theory with the food regime project relates to thinking through possible resolutions to water conflict. Place matters. Culture *sits* in places, and place is often the object and rallying point of social justice movements (Escobar 2001). However given that culture is made and re-made, it is essential to also understand global relations of power that might influence the construction of places. Understanding historical processes via frames like the food regime helps situate sited struggles in the context of a larger frame of global dispossessions and accumulations. Escobar (2001) argued against overly globalo-centric research that ignores the importance of the local. However I argue that attention to transnational processes of dispossession in a regime context are critical to changing social consciousness, especially in places like Canterbury, New Zealand. Part of what made the Zapatista uprising in Mexico notable and lasting beyond a sited political struggle of power was the movement's call of solidarity with other “peasant” marginalization processes (see Collier and Quaratiello 2005). Canterbury's communities in conflict are not just representative of a moment of uneasy agrarian transition. These stories are among many of populations worldwide drawn into dissonance because of water privatization, commodification and commercialization. Water conflict stories are connected by the regimes that engender them. I maintain that seeing connection and not just anomaly is requisite for isolated rural communities with cultures of acquiescence rather than resistance. Interconnectivity can breed solidarity movements that still recognize local sovereignty needs. It is

critical that scholarship---while paying attention to cultural particularity---understand disenfranchisements happening across space and place. The third food regime can be seen as the connecting transformative process against which alternatives can begin to emerge and organize. Solidarity movements across national borders have liberation potential in this way, especially for sites like Canterbury.

The New Zealand-based conversation on resource management needs to be opened to complicate conceptions of good governance and productive environments. A way forward for community conflict resolution regarding resources would be to at first acknowledge the complex and power-laded relationships among various stakeholders. The simplified narratives in the media and from central government are a disservice to the heterogeneous voices of Canterbury coping with dramatic changes to community relations, water safety and political participation. More work should be done to evaluate river health along with the health of local participation in resource governance.

In their work on “blue gold”, Maude Barlow and Tony Clarke claim that

...the demands of the so-called free market place farmers in the awkward position of entering into large-scale, water-hungry enterprises in order to increase volume of production...Once invested in highly mechanized, large-scale operations, farmers cannot continue to operate without depending on massive use of resources such as fossil fuels and water. Ironically, they are then placed in a position where they can do considerable damage to ecosystem...if farmers were encouraged and enabled to switch to...less fuel-intensive farming, water conflicts [would] be less frequent [2002].

In this conception put forth by Barlow and Clarke, Canterbury dairy proponents are equally losers in a landscape of a monoculture. Highly mechanized operations and the increased reliance on these operations arguably put all farmers at risk. Ecologists and economists I spoke with who were critical of the dairy juggernaut felt that those going into dairy were very vulnerable in the sense that they were putting all their hopes into an industry which could easily collapse (interviews, Jan. 2014).

If the conception of *environment* includes humans and is not just the space “out there”

to be controlled, then farming community vulnerability, conflict and dependency on a single commodity economy all point to a decreased environmental health. I argue that community clashes over resources need to be increasingly seen as an environmental issue. The human-nature divide at work with modern environment management in Canterbury encourages seeing social inequality and changes in access to democratic institutions as processes outside of the ecological concerns. When social struggles are disconnected from the list of consequences of intensified agriculture production, their linkage to ecological cost is not taken into account. Additionally the social constructions of nature at work, especially those of resource “scarcity” and unproductive land, must be seen as integral to social conflict in places like Canterbury. The conversation on water in New Zealand likely would change if the regional council were seen as able to affect social cohesion through environmental regulation. My case study is an attempt to view the processes of community development and environmental change as constituting each other in the hopes that such re-thinking will open up possibilities for conflict resolution. Seeing the effects dominant discourse and limited interpretations of the environment have on resistance encourages changing the narrative. As authors JK Gibson-Graham (2006) inform us, transforming our environments---of precious water resources, of the agricultural, of the “wild” and of the socio-cultural----is inextricably linked to transforming the ways we talk about environmental problems and how we imagine solutions. If in Canterbury multiple perceptions of healthy environments were allowed into the debate on water futures, and if community participation in resource management were viewed as essential and socially just, the landscape currently in ecological and social crisis might be better able to begin the work of imagining another Canterbury possible.

References

- Adams, W.M. 1995. "Green Development Theory? Environmentalism and sustainable development" in J. Crush, ed. *Power of Development*. New York: Routledge.
- Agrawal, A. 2005. *Environmentality: Technologies of Government and the Making of Subjects*. Durham: Duke University Press.
- Miguel Altieri and Victo Manuel Toledo. 2011. "The agroecological revolution in Latin America: rescuing nature, ensuring food sovereignty and empowering peasants," *The Journal of Peasant Studies*, 38(3): 587-612.
- Bakker, Karen. 2005. "Neoliberalizing nature? Market environmentalism in water supply in England and Wales." *Annals of the Association of American Geographers*, 95(3), 542-565.
- Bakker, Karen. 2010. *Privatizing Water: Governance failure and the world's water crisis*. Ithaca: Cornell University Press.
- Bakker, K. 2011. "Commons versus Commodities: Political ecologies of water privatization." in Peet, R., Robbins, P., and Watts, M. eds. *Global Political Ecology* London: Routledge, 345-368.
- Barlow, Maude and Tony Clarke. 2004. *Blue Gold: The battle against corporate theft of the world's water*. New York: Earthscan.
- Blaikie, Piers. 2001. "Social Nature and Environmental Policy in the South: Views from Verandah and Veld." In Castree and Braun, ed.s. *Social Nature: Theory, Practice and Politics*. Malden, Mass: Blackwell Publishers Inc.
- Campbell, Hugh. 2009. "Breaking New Ground in Food Regime Theory: Corporate Environmentalism, Ecological Feedbacks and the 'Food From Somewhere' Regime?" *Agriculture and Human Values* 26 (4): 309-319.
- Campbell, Hugh and Jane Dixon. 2009. "Introduction to the special symposium: reflecting on twenty years of the food regimes approach in agri-food studies." *Agriculture and Human Values* Vol. 26 (4): 261-265.
- Castree, Noel. 2001. "Socializing Nature: Theory, Practice, and Politics." in Castree and Braun, ed.s. *Social Nature: Theory, Practice and Politics*. Malden, Mass: Blackwell Publishers Inc.
- Collier George A. and Elizabeth Quaratello. 2005 *Basta! Land and the Zapatista Rebellion in Chiapas*. Oakland: Food First Books.
- Davis, Mike. 2001. *Late Victorian Holocausts: El Nino Famines and the Making of the Third World*. Brooklyn, New York, Verso.
- Dixon, Jane. 2009. "From the imperial to the empty calorie: how nutrition relations underpin food regime transitions." *Agriculture and Human Values* Vol. 26 (4) 321-333.
- Escobar, Arturo. "Constructing Nature: Elements for a poststructural political ecology." in Peet and Watts, ed.s., 1996. *Liberation Ecologies: Environment, Development, Social Movements*. New York: Routledge.
- Escobar, Arturo. 2001. "Culture sits in places: reflections on globalism and subaltern strategies of localization." *Political Geography* Vol. 20 (2) 139-174.
- Escobar, Arturo. 2008. *Territories of Difference. Place, movements, life, redes*. Durham: Duke University Press.
- Ferguson, James. 1994. *The Anti-Politics Machine*. Minneapolis: University of Minnesota Press.
- Franco, Jennifer. 2013. "Are African land grabs really water grabs?" *Transnational Institute: Agrarian Justice*. <http://www.tni.org/article/are-african-land-grabs-really-water-grabs>
- Friedmann, H. 1993. "The political economy of food: A global crisis." *New Left Review*, NLR I/ 197 (January-February), 29-57.
- Friedmann, H. 2000. "What on earth is the Modern World-System? Food-getting & territory in the modern era & beyond," *Journal of World-Systems Research* VI (2): 480-515.
- Friedmann, H. 2009. "Discussion: moving food regimes forward: reflections on symposium

- essays." *Agriculture and Human Values*. Vol. 26(4), 335–44.
- Foucault, Michel. 1982. *The Subject and Power*. Chicago: University of Chicago Press.
- Foucault, Michel. 2000. *Essential works of Foucault: Power*. Paul Rabinow and James Faubion, ed.s. New York: The New Press.
- Gibson-Graham, J-K. 2006. *A Post-Capitalist Politics*. Minneapolis: University of Minnesota Press.
- Goodman, D. and M. Watts. 1994. "Reconfiguring the rural or fording the divide? Capitalist restructuring and the global agro food system." *Journal of Peasant Studies*. Vol. 22(1) 1–49.
- Goodman and Watts. 1997. "Questions and Global Restructuring" in *Globalising Food.: Agrarian Questions and Global Restructuring*. New York: Routledge.
- Gramsci, Antonio. 1971. *Selections from the Prison Notebooks*. New York: International Publishers.
- Hannigan, J. A. 1995. *Environmental Sociology*. New York: Routledge.
- Harvey, David. 2003. *The New Imperialism*. Oxford: Oxford University Press.
- Harvey, David. 2011. *The Enigma of Capital: and the Crises of Capitalism*. Oxford: Oxford University Press.
- Holland, Dorothy, et al. 2007. *Local Democracy Under Siege: Activism, Public Interests, and Private Politics*. New York: New York University Press.
- Ingold, Tim. 2000. *The Perception of the Environment*. New York: Routledge.
- Jones and Carswell 2004. *Earthscan reader in environment, development and rural livelihoods*. New York: Routledge.
- Kimura, Aya Hirata. 2013. *Hidden Hunger: Gender and the Politics of Smarter Foods*. Ithaca: Cornell University Press.
- Le Heron, R., Pawson, E. (Eds.), 1996. *Changing Places: New Zealand in the Nineties*. Longman Paul, Auckland.
- Le Heron, Richard and Nick Lewis. 2009. "Theorising Food Regimes: intervention as politics." in *Agriculture and Human Values*. 26: 345-349.
- Li, Tania. 2007. *The Will to Improve: Governmentality, Development and the Practice of Politics*. Durham: Duke University Press.
- Li, Tania. 2014. "What is Land? Assembling a resource for global investment." *Transactions of the Institute of British Geographers* 14 July.
- Martinez-Alier. 2002. "The Environmentalism of the Poor." A report for UNRISD for the WSSD. [Online] Available from http://www.foe-scotland.org.uk/nation/ej_alier.pdf
- Luks, Fred. 2010. "Deconstructing Economic Interpretations of Sustainable Development: Limits, Scarcity and Abundance" in *The Limits to Scarcity. Contesting the Politics of Allocation*. Lyla Mehta, ed. New York: Routledge.
- McMichael, Philip and Harriet Friedmann. 1989. "Agriculture and the state system: The rise and decline of national agricultures, 1870 to the present." *Sociologia Ruralis* XIX (2) 93-117.
- McMichael, Philip. 2009a. "A Food Regime Analysis of the 'World Food Crisis'." *Agriculture and Human Values* Vol. 26(4): 281–295.
- McMichael, Philip. 2009b. "A Food Regime Genealogy." *Journal of Peasant Studies* Vol. 36(1): 139–169.
- McMichael, Philip. 2012. "Food Regime Crisis and Revaluing the Agrarian Question." Pp. 89-122 in *New Directions in the Sociology of Global Development (Research in Rural Sociology and Development, Volume 11)*, F. H. Buttel, P. McMichael (eds). Emerald Group Publishing.
- McMichael, Philip. 2013. *Food Regimes and Agrarian Questions*. Halifax: Fernwood Press.
- Mehta, Lyla. 2005. *The politics and poetics of water: the naturalisation of scarcity in Western India*. New Dehli: Orient Longman.
- Mintz, Sidney. 1986. *Sweetness and Power: The Place of Sugar in Modern History*. London: Penguin Press.
- Mintz, Sidney. 1990. "The Peasantry as a Sociohistorical Category: Examples from the Caribbean

- Region.” *In Agrarian Society in History*. M. Lundhal and T. Svensson, eds. London: Routledge.
- Mitchell, Timothy. 2002. *Rule of Experts: Egypt, Techno-politics and Modernity*. Berkeley: University of California Press.
- Jason Moore. 2011. “The end of the road? Agricultural revolutions in the capitalist world-ecology, 1450-2010” *Journal of Agrarian Change*, Vol.10(3): 389-413
- Joseph, Philip. 2010. Environment Canterbury legislation. *New Zealand Law Journal* 2010(5): 193-196
- Patel, Raj. 2013. “The Long Green Revolution.” *The Journal of Peasant Studies* Vol. 40:1, 1-63
- Paulson, Gezon, Watts. 2003. “Locating the Political in Political Ecology: An Introduction.” *Human Organization* 62(3): 205-217.
- Peet, Richard and Michael Watts. 1996. “Liberation Ecology: Development, sustainability, and environment in an age of market triumphalism” in *Liberation Ecologies: Environment, Development, Social Movements*. Peet and Watts, ed.s. New York: Routledge.
- Peet, Richard, Paul Robbins and Michael Watts (eds). 2011. *Global Political Ecology*. New York: Routledge.
- Peluso, Nancy and Michael Watts. 2001. *Violent Environments*. Ithaca: Cornell University Press.
- Polanyi, Karl. 1957. *The Great Transformation: The Political and Economic Origins of Our Time*. Boston: Beacon Press.
- Rist, Gilbert. 2006. *The History of Development: from Western Origins to Global Faith*. New York: Zed Books Ltd.
- Robbins, Paul. 2012. *Political Ecology: A Critical Introduction*. John Wiley and Sons.
- Scott, James. 1999. *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press.
- Neil Smith. 2007. “Nature as accumulation strategy.” In *Coming to Terms with Nature: Socialist Register 2007*, eds, Leo Panitch and Colin Leys. Monthly Review Press.
- Swyngedouw, Erik. 2007. Dispossessing H2O, the contested terrain of water privatization in Neoliberal Environment. Privatization is “transfer of entitlement” in *Neoliberal Environments: False promises and unnatural consequences*. Nik Heyden, James McCarthy, Scott Prudham, and Paul Robbins, eds. New York: Taylor and Francis.
- Tsing, Anna. 2005. *Friction: An Ethnography of Global Connection*. Princeton: Princeton University Press.
- Wallerstein, Immanuel. 1974. *The Modern World System, vol 1: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. New York: Academic Press.
- Wallerstein, Immanuel. *The Capitalist World-Economy*. Cambridge: Cambridge University Press.
- Weis, Tony. 2013. *The Ecological Hoofprint: The Global Burden of Industrial Livestock*. New York: Zed Books Ltd.
- Wolf, Eric. 1982. “Introduction.” *In Europe and the People without History*. Berkeley: University of California Press.
- Yapa, Lakshman. 1996. “Improved Seeds and Constructed Scarcity.” in Peet and Watts, ed.s. *Liberation Ecologies: Environment, Development, Social Movements*. New York: Routledge.