

Environmentality on the Canadian Prairies: Settler-Farmer Subjectivities and Agri-Environmental Objects

Julia M.L. Laforge  and Stéphane M. McLachlan

*Department of Environment and Geography, University of Manitoba, Winnipeg, MB, Canada;
julia.laforge@umanitoba.ca, steph.mclachlan@umanitoba.ca*

Abstract: State and institutional actors have been shaping settler-farmer subjectivities in order to transform the landscape and thus the history and geography of the Canadian Prairies. This paper expands the application of environmentality from its origins in colonial forestry to interrogate agriculture on prairie landscapes. The Canadian state used the technologies of environmentality to influence “common sense” attitudes and behaviours, which acted to deterritorialize Indigenous communities and then manipulated their subjectivities to guarantee settler-farmer access to land. Later, institutions and states moulded settler-farmer subjectivities of correct farming behaviour in an effort to convert soil, water, and seeds into economic resources. These environmental objects, in turn, acted upon settler-farmer subjects by setting biophysical and genetic limits such as soil fertility, water quality and quantity, and plant hardiness and disease resistance. Resisting environmentality requires understanding processes of subjugation while also creating counter-narratives of “good” farming behaviour and Indigenous-settler relations.

Keywords: environmental history, settler-farmer subjectivities, Canadian Prairies, Indigenous–settler relations, agriculture, good farmer

Introduction

The “common sense” assumptions about farming on the Canadian Prairies have been formed through interactions of soil, water, seeds, politics, histories, cultures, and the agency of farmers themselves. Federal governments, institutions, and corporations have all affected the attitudes, discourse, and behaviour of Canadian farmers since Confederation in 1876 as part of an ongoing colonial project to settle the land, assert sovereignty, and create an export-based agricultural economy (Braun 2002; Cunfer 2005; Daschuk 2013; Potyondi 1995; Russell 2012). As a result, farming practices and the Prairie landscapes have changed dramatically in the past 200 years since Euro-Canadian exploration and settlement; from native grassland disturbance to dismissal of prairie fire regimes and the extirpation of the bison, through the ravages of the Great Depression, followed by advancements in mechanization and industrialization, and eventually the rise of agribusiness and neoliberal agricultural policies (Cunfer 2005; Owrarn 1980; Potyondi 1995; Savage 2004). Empirical details of these changes have been well rehearsed by scholars of these landscapes (Owrarn 1980; Russell 2012; Waiser 2005), but the ways that policies, in this case analysed as technologies of environmentality, have changed

discourses, attitudes, and behaviours of prairie Canadian settler-farmers are still poorly understood. This process required the shifting of identities and subjectivities, and has been fraught with conflict and resulted in ongoing land-use struggles, environmental destruction, and a recent decline of rural communities. This research explores the subtle transformation of “common sense” attitudes towards farming through environmentality in order to provide new insights into the histories and geographies of agriculture, land, and food systems on the Canadian Prairies, particularly since the Great Depression.

The decisions that a farmer makes has dramatic effects on the landscape, from production decisions regarding which crops to grow and how to grow them, the drainage of wetlands, and the planting or removal of trees. These decisions have implications for the construction of railways and roads to move agricultural goods, the (de)construction of grain elevators, the location of grain-handling facilities, all of which have changed the landscape on the Canadian Prairies. Farmer decisions shape local environments, but they also produce wide-ranging externalities. Farmers’ bodies, behaviours, decisions, and management practices have the potential to change water flow and quality in downstream rivers (Wheater and Gober 2013), to reduce or increase soil erosion across the region (Amichev et al. 2015), and can even contribute to weather patterns downwind as broadleaf crops such as canola have been shown to change evapotranspiration patterns (Raddatz 1998). Farmers are not making such decisions in isolation; they are responding to economic, socio-cultural, political, and technical influences that come through talking to their neighbours, seed and fertilizer company consultants, university researchers, extension workers, and engagement with media. These decisions are also inaugurated in conjunction with state farming policies and produce emblematic and “correct” prairie landscapes, yet the vision for these landscapes can represent stark contrasts over time. Thus, through these on-farm decisions, farmers are effectively recreating the landscape in the image of state and capitalist interests.

In this paper, we examine the shifting subjectivity (Gibson-Graham 2006; Harris 2009) of dominant discourses that define what it means to be a “good” farmer (Burton 2004; McGuire et al. 2013) on the Canadian Prairies and how soil, water, and seeds are framed as technologies of governance. We argue that the current “good” farmer subjectivity of industrial, productivist agriculture is part of a centuries-long process of environmentality in which the Canadian state has shaped identities of both settler-farmers and Indigenous people. This colonial project to create an export-based agriculture regime relied on the creation of two separate and distinct subjectivities and sets of relations with nature, which at the same time were contingent on and reproduced by each other. We explore how the history and the spatiality of the white settler-farmer men, and later their families, who worked to turn “unproductive” land into orderly fields, have been shaped by the process of governmentality and environmentality, following the work of Agrawal (2005) and others (see Braun 2000; Kosek 2006; Li 2007; Tsing 2005), who also use these frameworks to explore human–environment interactions. The process of environmentality creates environmental subjects who then act to create an image of the environment that is enabled by state actors and institutions in order to ensure

productive access to environmental objects, such as water, soil, and crops like wheat and canola.

This paper will examine how environmentality can explain historical and current patterns in Canadian Prairie farmer subjectivities. We begin by exploring the concept of environmentality and how it has been used to explore various environmental subject- and object-making processes. After exploring the pre-settlement context in Canada and how the making of a state vision of Indigenous subjectivities facilitated the establishment of and subsequent domination by settler-farmers and settler culture, we examine the environmental objects that governments sought to manage through the institution of the Prairie Farm Rehabilitation Administration (PFRA) (established in 1935 and ended in 2013 by the federal government). A second example focuses on the shifting materiality of the seeds used to grow the main crops on the Canadian Prairies, by looking at the role of the Canadian Wheat Board (CWB) (started by farmers in 1935 and endorsed by Parliament, its monopoly status was ended in 2012 by the federal government) as well as public and private crop breeding projects and policies. These case studies allow the exploration of how soil, water and seeds were all shaped by industry and state institutions into objects to be managed by farmers-subjects in Western Canada and how these objects in turn (re)created farmer subjectivities. These programs, policies, and institutions changed the way that farmers saw themselves, and also the way that they interacted with the environment. Yet, the influences of environmentality and governance are not all-encompassing and exploring the role of collective and individual resistances can yield important counter-narratives and subject positions that hint at how farmers' agency and episodic influence can shift state policies, potentially reimagining the "common sense" that the state seeks to maintain (Li 2005).

Environmentality on the Canadian Prairies

Sometimes called eco-governmentality or green governmentality, the concept of environmentality emerged from Michel Foucault's theories of governmentality and biopower (Agrawal 2005; Foucault 1991, 1994; Kosek 2006). Foucault's writing on governance includes discussions of biopower, discipline, sovereignty, and the manipulation of social norms through both the directive use of power and the more subtle manipulation of conduct of individuals (Foucault 1991; Lemke 2001). As monarchies contended with the shift towards democratically elected officials, heads of state had to continue to justify their importance to citizens in order to maintain their sovereign power (Foucault 1991). This was partially accomplished by shifting the management of the economy from families to the state so that the state could manage the population using "surveillance and control as attentive as that of the head of a family over his household and his goods" (Foucault 1991:92). In this way, the state could involve itself in the everyday lives of citizens and claim to be acting for the common good. Once the population has accepted that governments should be responsible for the management of the economy, public health, natural resources, and so on, they become more willing to change their behaviours based

on subtle shifts in social norms directed by governments and institutions (Foucault 1991, 1994).

Environmentality explores how environmental subjects are created as part of the process of governance, and especially how government policies and actions work to change individual attitudes and behaviours as they emerge out of social and political relations (Agrawal 2005; Foucault 1990). The process relies on transforming citizens into environmental subjects and natural resources into environmental objects requiring management; these natural resources are then framed as a key part of the national economy and thus the responsibility of federal governments (Agrawal 2005; Kosek 2006; Peyton and Franks 2016). The technologies of environmentality shift discourses around acceptable behaviours through bureaucratic persuasion and policy-making, market-based interventions, regulatory restrictions such as inspections or enforcement, and, on rare occasions, disciplinary punishment such as imprisonment (Dressler 2014). This shifting subjectivity of local people has been examined primarily from the perspective of raw resources such as forestry products, including in India (Agrawal 2005), Indonesia (Li 2007; Tsing 2005) and New Mexico (Kosek 2006). Many authors have made important links to colonial histories that link Indigenous people to nature, producing the simultaneous management of both people and resources in the ongoing interest of colonizers (Braun 2000; Kosek 2006; Thorpe 2012). This research expands on this literature by exploring the underemphasized experiences of rural and farmer subjects, particularly in North America. We suggest that this conceptualization could provide transformational potential for contemporary environmental subjects to engage in resistance through self-cultivation and reimagine agricultural landscapes.

Making Environmental Subjects on the Canadian Prairies

This paper will follow Agrawal's (2005) narrative of environmentality, and will consider how the state claimed sovereignty over the territory that is now Canada by first gathering data on environmental objects and organizing it using statistics, ensuring that the state became the holder of knowledge. We contend that this process began in the 1600s with exploration and trade and continues today with construction of infrastructure and implementation of bureaucracies. At first, discipline and force were used to deterritorialize Indigenous communities and transform their identities through subjugation. While settler-farmers were not necessarily directly engaged in the dispossession of Indigenous people, this process allowed farming identities to be developed in relationship to policies regarding immigrant recruitment and private property regimes, interactions with neighbours and family, experiences on the land, market forces, and embodied experiences. Then, beginning in the 1930s, environmentality was further reinforced through neoliberal governmentality using coercion to regulate farmer behaviours, a process that further entrenched a set of practices and identities that ensured long-term access to and control over agricultural resources (Fletcher 2010). This neoliberalization of subjectivities resulted in the deregulation of agricultural

markets, the emphasis on free market ethics, and increased corporate control of the food system in the 1980s. In Canada, resistance to efforts to subjugate has taken many forms, including the efforts of communities working to build self-cultivated subjectivities grounded in community-based economies (Ballamingie and Walker 2013; Gibson-Graham 2006; Laforge et al. 2016). However, the influence of the state in manipulating hegemonic narratives has changed the ways settler-farmers see themselves in their everyday relations with the environment, to the state, and to each other.

Since the exploration and settlement of Canada took place through the economic and nationalist interests of the colonial powers of Britain and France, this process of normalizing and enforcing the role of the state had largely occurred among white settlers; however, Indigenous subjugation remained a necessary step in establishing sovereignty. Early efforts to create an Indigenous environmental subject relied on the twinned process of deterritorialization and the erasure of a culture of agriculture from many Indigenous histories. This took many discursive forms in Canada: the Frontier, Terra Nullius, the image of the Noble Savage, or the disappearing Indian of salvage ethnography (Braun 2002; Thorpe 2012). All of these artifices allowed European settlers to build a vision of civilizing the empty wilderness, or displacing a people who were not using the land “correctly” (Harris 2004; Owsram 1980). The moral and legal influence of Locke and Hobbes were at the root of settler-colonial frameworks supporting private property as the basis of civilized societies and in maintaining that agriculture was the only suitable use of land (Epp 2008; Harris 2002). As part of a land ethic of “taming the wilderness” (Cronon 1995), thousands of acres of native Prairie grasslands were ploughed under, trees were cut down, and wetlands drained to create orderly and productive fields of wheat and oats, and eventually new commercial crops like canola. In this way, governments acted to secure their role and influence by situating national economic wellbeing as a phenomenon requiring the conservation of natural resources from exploitation and poor management at the hands of local Indigenous communities (Carter 1992; Coulthard 2014; Herriot 2016; Kosek 2006). Both the so-called “Indian agents” and missionaries, as state and church agents, saw the transition to agriculture as a civilizing practice of cultural conversion (Massie 2014; Russell 2012; Truth and Reconciliation Commission 2015).

However, the understanding of the Canadian Prairies as non-agricultural, under-utilized land was artificially created as part of the colonial process (Carter 2016; Daschuk 2013; Lowman and Barker 2015). Farming and gardening were practiced by many First Nations and Métis peoples before Euro-Canadian settlement, as evidenced from samples containing maize and other domesticated plant pollens in the sedimentary deposits of lakes across northern North America dating back approximately 1000 years (Munoz et al. 2010). However, even the emphasis on “productivity” of land ignores the many cultural and spiritual Indigenous values of land (Herriot 2016). Oral traditions and personal diaries dating back to records from 1805 often describe Indigenous agriculture as similar to current permaculture practices where seeds were planted and left to grow with minimal intervention and later harvested. This work was done primarily by women and included a diversity of related cultural and spiritual ceremonies (Carter 2016; Morrison 2011). Evidence of

these management practices has been documented, including the use of fire to suppress the spread of forests on the open prairie, thus encouraging bison populations and other animal species (Savage 2004) and the management of “wild” plant species such as blueberries and wild rice (Davidson-Hunt 2003). However, this agricultural history has been effectively erased from dominant historical narratives, which emphasize an arduous survival based on hunting and gathering (Carter 1992; Russell 2012).

Hunting and gathering were more than important sources of food for Indigenous people, with bison hunting in particular providing important cultural and economic value (Daschuk 2013; Russell 2012). A variety of factors including disease, the systematic extirpation of bison, concerns over state sovereignty (particularly US interest in Canadian territory), and differences in worldviews contributed to the outcome of a series of treaties negotiated between 1871 and 1921 on the Canadian Prairies (Daschuk 2013; Russell 2012). Craft (2013) describes how these treaty negotiations were interpreted differently between Indigenous people and state negotiators due largely to starkly different worldviews and legal frameworks. For example, this difference during Treaty One negotiations saw the Anishinaabe conceptions of sharing land as part of building a kinship relationship while the Canadian state saw it as an economic exchange as part of a private property regime (Craft 2013). Treaties with First Nations leaders on the Canadian Prairies allowed the state to access large tracts of land in exchange for promises including monetary compensation, access to farming equipment and training, education, and health care among others (Daschuk 2013; Epp 2008; Russell 2012). These treaties resulted in the sequestering of First Nations on reserves that were often dominated by muskeg or rocky terrain, thus guaranteeing that land suitable for agriculture remained “empty” for selection by European immigrants (Daschuk 2013). Despite the low soil fertility of most of this reserve land, many Indigenous farming efforts resulted in high yields of wheat, further evidence of existing local agricultural knowledge (Carter 2016; Tang 2003). However, this success was effectively sabotaged by changes to government policies that shifted to a more disciplinary and forceful approach after the Métis led North West Resistance in 1885 (Russell 2012). State fears of Indigenous rebellions resulted in an increased role for “Indian agents” in limiting both the mobility and economic participation of First Nations citizens and represents disciplinary environmentality (Daschuk 2013; Russell 2012; Tang 2003). Finally, the criminalization of cultural practices such as sun dances and sweat lodges demonstrated the beginning of the cultural genocide that further subjugated Indigenous people (Truth and Reconciliation Commission 2015).

Governmentality and environmentality have “a material as well as discursive dimension: relations of power are inscribed in physical space as well as social relations” (Kooy and Bakker 2008:377). Thus, “common sense” discourses result in physical infrastructure that further entrench systems of influence and control. For example, the power of Canada’s colonial governments was widely enforced through disciplinary institutions including Residential Schools, forced relocations of communities, and flooding for hydroelectric dams and other acts of cultural genocide, which continue to have ripple effects today (Alfred 1999; Coulthard 2014; Herriot 2016; Simpson 2004). At the same time, the concept of biopower

changes discursive understandings, and emphasizes the use of state policies to enhance, monitor or otherwise control the health of the population, for example by enacting sanitation programs, selective sterilization, or even vaccination programs, with the end goal of fostering a more productive population (Fletcher 2010; Kooy and Bakker 2008). As a tactic of assimilation through population management, Indigenous women who married non-status men, those not deemed “Indian” and thus no longer the responsibility of the state, also lost their treaty status. Indian Affairs Deputy Minister Duncan Campbell Scott highlighted the reason for this assimilation-by-de-legitimization in 1902 when he stated that the purpose of the Indian Act “is to continue until there is not a single Indian in Canada that has not been absorbed into the body politic, and there is no Indian question, and no Indian Department” (quoted in Truth and Reconciliation Commission 2015). The tracking of people as “populations” through censuses is an important component of biopower and governmentality, which at the same time serves to dehumanize and disempower citizens (Kosek 2006). For example, compelling parents to send their children to residential schools served to dehumanise, track, and assimilate Indigenous children from 1880 until 1996 as an example of disciplinary environmentalism (Truth and Reconciliation Commission 2015). Finally, contemporary research on environmentalism has “focused on how changes in governance of the environment produces (and is part of) knowledge categories and truths that ‘socially situated actors’ come to understand, internalise and act on in terms of their natural and social environment” (Dressler 2014:250). Settler colonialism in Canada resulted in the undermining of Indigenous knowledge (Settee 2013), food systems (Morrison 2011), and identities that were forcibly removed from both land and cultural traditions (Coulthard 2014).

Concurrently to the reshaping of Indigenous subjectivities, the Canadian state was also shaping the subjectivities of settler-farmers in order to foster attitudes and behaviours that would ensure the long-term management of agricultural resources. Economic and nationalist interests of the Canadian state in establishing an agricultural territory to export wheat to the British Empire was so great that, despite declaring the region unfit for agriculture in 1857, the Canadian government encouraged the construction of the Canadian Pacific Railway mainline through the prairie grassland starting in 1881 (Owram 1980; Waiser 2005). The process of managing the “conduct of conduct” of farmers is part of ongoing settler colonialism in Canada where “the intended environmental subject is individualized, entrepreneurial and, above all, accepting of the inherent extractive potential of Canadian resources” (Peyton and Franks 2016:455). Settler-farmers who were mostly European men, and later their families, have had their subjectivities moulded using the coercive influence of environmentalism since their arrival in Canada in order to establish a politically stable population to contribute to the Canadian economy (Carter 2016; Danysk 1996).

Controlling Canadian agriculture involves controlling the technology and infrastructure of agriculture, once again reflecting the material dimension of governmentality (Kooy and Bakker 2008). The process of developing an agricultural export system was carefully designed to include the establishment of a railway line to move people and grain. Limiting the movement of Indigenous people to reserves

also made it easier to build railways to bring settlers westward (Tang 2003). From the late 1800s until 1914, millions of settlers arrived, drawn by the provisions of the Dominion Lands/Homestead Act of 1872 which allowed settlers to settle on 160 acres (a quarter section) of land for only \$10, if they cleared the land and built a home within three years (Waiser 2005). Technologies including seed varieties, livestock breeds, and equipment were often brought over by settlers themselves, but were kept from Indigenous farmers who were forced into “peasant farming” practices with poor quality farm equipment that was maladapted to Prairie farming and which often never arrived on reserves (Carter 1992; Russell 2012; Tang 2003). The selection of what were considered “good” farmers from Europe—including Ukrainians, Germans, and British immigrants—and limiting the arrival of those who were seen as less desirable—including those from Spain, Italy, or Greece (Carter 2016; Waiser 2005)—is an example of the Canadian state’s use of biopower. Immigrants were (and continue to be) subject to racial hierarchies as government programs sought to establish a “suitable” and cooperative farming population facilitated by the “whitewashing” of the image of a “good” farmer on the Canadian Prairies (Carter 2016; Danysk 1996; Daschuk 2013; Massie 2014). Women were also not “good” farmers, since “farming has uniquely retained its masculine association” (Carter 2016:381) and were not even allowed to own farmland until after 1929.

Neither these material nor discursive dimensions of environmentality prevented “good” farmers from experiencing the many hardships caused by the prolonged drought and economic depression of the 1930s. At the time, there were limited government support programs to help farmers address either the biophysical or economic realities of this period, and many farmers left agriculture and sometimes Canada entirely, while others migrated further north to homestead again in less drought-prone regions (Laforge and McLeman 2013). As a result of this environmental and economic catastrophe, state agricultural and social policies were developed to help support the settler-farmer population in Western Canada while protecting large tracts of land from American interests (Knuttila 2003; Skogstad 1987). While farmers had agency within the confines of state policies, it was typically in their best interest to follow the directions that the state provided. For example, accessing newly opened land through the Homestead Act meant that land was more affordable for settler-farmers, and in turn the state achieved a dispersed population to break the soil, set up the wheat economy, and assert its dominion over this territory (Waiser 2005). This persuasive and coercive environmentality reinforced obedient settler-farmer subjectivities as those who followed state formulated practices were rewarded with land and livelihoods.

Since environmentality’s primary influence is on the definition of “common sense”, farmers can themselves contribute to, resist, or reify these approaches, which can in turn affect the agricultural policies in place. An individual’s ability to resist is influenced by their diverse embodied experiences, cultural traditions, and communities; these are also what determine whether or not subjugation to state environmentality will occur. For example, between 1910 and 1940, settler-farmers confronted state subjugation by developing wheat pools and farmers’ unions in order to harness their collective marketing and advocacy power during a period

of agrarian and socialist reform on the Prairies (Atkinson and McCrorie 2003; Waiser 2005). Settler-farmer resistance took the form of farmer-led initiatives like the co-operative Grain Growers Company in 1905, Wheat Pools in 1924, and the National Farmers Union in 1969 (Atkinson and McCrorie 2003; Beingessner et al. 2011). These farmer-led institutions shaped the “symbolic and cultural production” (Ferguson and Gupta 2002:981) that helped farmers until the 1970s and 1980s, when the neoliberal political ideology in Canada resulted in a shift away from welfare state policies (Skogstad 1987). This political transition was marked by changes in farmer attitudes from cooperation and agrarianism to individualism and competitiveness (Atkinson and McCrorie 2003). Since the self-cultivation of subjectivities does not supersede the presence of governmentality in the lives of settler-farmers and Indigenous people, as the neoliberal model progressed, subjectivities on the Prairies were coerced once again into accepting free-market ideologies as the state attempted to break down community-based and civil rights era communitarian values of the 1960s (Atkinson and McCrorie 2003; Eaton 2013).

Environmental subjects, whether they are Indigenous, forester, or farmer, have material interests in the world around them. In this sense, subjectivities are complicit in the shaping of environmental objects in a mutual process of (re)creation (Agrawal 2005). Bodies themselves are made as both subjects and objects through processes of biopower where human health and reproduction are governed by the state so that these bodies can be used to access resources (Kosek 2006). In other words, the production of environmental objects as resources (or not) has implications for both subjectivities and materialities (Bakker and Bridge 2006). The power of state institutions to manage access to and control over natural resources in the best interests of the state is an outcome of a “common sense” discourse and resulting subjectivity that asserts that governments are best suited to manage national economies and their natural resources. In Canada, natural resources have been discursively and materially central to the economy and nationhood since Confederation, making the federal government the “natural” body responsible for the management and wise use of these critical resources (Peyton and Franks 2016). These environmental objects have been shaped by settler-farmer subjects as well as the ongoing effects of neoliberal environmentalism.

Making Environmental Objects on the Canadian Prairies

The making of environmental objects to be managed is foundational to the process of environmentalism and critical in the shift from “nature” to “resource”. The physical outcome of environmentalism is to position environmental objects as economic goods (Peyton and Franks 2016), which in turn can have implications for the materiality of the objects themselves. For example, Agrawal (2005) examined how trees were made into resources for colonial governments using statistics and other scientific tools. This move allowed colonial governments to understand and manage the forest according to its own vision of what a forest ought to be, which had material implications for its composition and biodiversity. Yet these surveys, tracking, and management programs required the exclusion of

local populations from using forests for fuel, hunting, or other activities that were deemed non-productive, a pattern that was repeated in Canada (Braun 2002; Thorpe 2012). Dressler (2014) applied the insights of environmental scholarship in his study of swidden practices in the Philippines, in one of the rare examples that examines agriculture using environmentalism. Changes in discourse around “proper” farming practices produced a shift motivated by economic interest in forestry and the environmentalism of urban civil society organizations pushing a sustainability agenda, which ultimately had negative impacts on farmers’ livelihoods (Dressler 2014). Similarly, on the Canadian Prairies, both the management of soil and water resources and later the development of annual crops like wheat and canola represent coercive technologies of environmentalism. In these cases, the state treated farming issues as apolitical and technical problems, which has resulted in discursive and practical shifts on the part of settler-farmers. Since environmentalism can have both “good” or “bad” outcomes for the environment depending on the ideologies of the state, this section will consider how environmental objects have been both protected and eroded through environmentalism.

At the time of settlement, the rich Chernozemic soils of the Prairies helped with high initial yields of early crops (Cunfer 2004; Soils of Canada n.d.). These soils are the result of slow decomposition of organic matter due to cold Prairie winters and the complex root structure of grasses that allow for good water and air interaction, which together make this soil highly fertile (Savage 2004). Rainfall patterns on the Canadian Prairies are cyclical, and multi-year wet or dry periods are common (Marchildon 2009; Wheeler and Gober 2013). The presence of Prairie potholes or sloughs provides water storage during these dry years, although such storage is limited (Marchildon et al. 2008). Average precipitation amounts are below 500 mm annually, with most rainfall occurring in the spring (Marchildon et al. 2008); however, frost risk remains until late May and locations in the prairie grain belt have an average of only 110 growing days (Archer 1980). Early spring and summer rainfall helps with growing crops like wheat and canola. Meanwhile, the fall harvest is facilitated by drier conditions. At the time of settlement, knowledge of soil and water on the Prairies was known only through the experiential knowledge of Indigenous people, who were never asked to share their knowledge with surveyors (Settee 2013), and a few decades of direct observations of early European explorers.

Soil and water as environmental objects in this period of early settlement were poorly understood and often taken for granted and as a result experienced poor management. Agricultural techniques used by these settlers were poorly suited to the dry climate and deep ploughing left scars and produced a landscape that was vulnerable to soil erosion (Waiser 2005). The practice of summerfallowing, which involved letting the soil “rest” by keeping it bare and free of weeds or vegetation through tillage for a year to restore fertility, also resulted in wind erosion and dust clouds (Cunfer 2004, 2005). In addition, sloughs were drained to increase “productive” acreage and create an idealized and uniform landscape (Stunden Bower 2011). Despite the lack of rigorous science in soil management at the time, Cunfer (2004) found that North American farmers used a variety of ways to manage soil fertility: swidden,¹ using legumes to fix nitrogen in the soil, integrating residual

plant material, and spreading livestock manure. However, the soil on many farms was soon being mined for much of its nutrients, particularly nitrogen, as there was no true strategy to sustain long-term cropping (Cunfer 2004). Thus, when a multi-year drought struck in the 1930s, the “good” farmers of the Canadian Prairies were poorly prepared and saw their fortunes blow away with their topsoil and their hope dry up like the many shallow wetlands that punctuated the landscape. Fertile soil as an environmental object was transformed to dust, prompting the federal government to intervene by establishing the Prairie Farm Rehabilitation Administration (PFRA) (Marchildon 2009).

In many ways, the PFRA represented the continuation of an early stage of environmentalism that Agrawal (2005) identified, where the state quantifies the resources that it seeks to manage through the use of statistics. As the PFRA attempted to manage soil and water for the purposes of agriculture, it had to first quantify these objects before it could manipulate settler-farmer behaviours through policy interventions. Thus, PFRA engineers immediately mobilized “surveys, comprehensive soil and hydrological studies, drainage design and air photo analysis” (Marchildon et al. 2008:406). As a welfare state project, the PFRA was widely lauded after its creation in 1935, indicating a general acceptance of state interference in agriculture (Arbuthnott and Schmutz 2013; Marchildon 2009). The PFRA initiated a variety of projects, including establishing community pastures, building dams for local irrigation, providing free trees for shelterbelts, and conducting extensive research on cultivation practices all in an effort to reclaim soil, conserve water, and make farms viable (Amichev et al. 2015; Marchildon 2009).

The practices that the PFRA mobilized reflected attitudes on how the environment should be managed for agriculture. In this “synoptic” vision, the damming and diversion of rivers for massive irrigation projects produced a manageable landscape by reducing its natural complexity (Loo 2016). Marchildon et al. (2008:406) describe how the PFRA worked to change the culture of farming on the Prairies by:

encouraging farmers to adopt new farming methods designed to counteract the negative effects of soil drifting and soil erosion as well as new methods to conserve surface water as well as a concerted effort to construct dugouts for stockwatering on thousands of prairie farms.

Dams also represented political rather than simply agronomic decisions since it was suggested to Prime Minister Bennett in 1934 by a grain company manager that the visibility of such water projects would “put [the] party in good standing with these farmers” (quoted in Marchildon 2009:287). In addition, the PFRA’s focus on research into cultivation practices suggested an ideological preference that held that the management of prairie soils “naturally” included cultivation and contributed towards the goal of making the Prairies the “bread basket of the world”. In fact the Premier of Saskatchewan, James Gardiner, stated about the southwest portion of the province in 1937:

I am not altogether in agreement with the position taken that the lands of that area should have remained ranch lands. The history of land development fairly well proves

that a pastoral form of agriculture always precedes a more permanent form (quoted in Marchildon 2009:294–295).

However, this emphasis on cultivation minimized the potential role that livestock ranching could have had in protecting delicate Prairie soils which today are still under threat due to erosion (Herriot 2016). The PFRA, as a branch of Agriculture and Agri-Food Canada, continued to change agricultural discourses and practices that solidified soil and water into environmental objects that farmer-subjects were coerced into managing for economic gain. “Good” farmers planted shelterbelts, built dugouts, or used correct crop rotations to ensure soil and water quality remained high, not just for themselves, but for the entire rural community and the national economy.

Similarly, settler-farmer attitudes and behaviours around seeds and crop production were being carefully directed by state policies during the early settlement years. At the beginning of the 20th century, seed catalogues in Canada listed grasses, millets, clovers, alfalfa, field corn, buckwheat and flax among what were considered to be the most important field and grain crops (Szego 1995). Cereal crops were not in high demand from seed companies since they were easily saved or available for local trade and faced higher transportation costs due to the higher quantities needed (Szego 1995). Most farmers at the time engaged in subsistence farming, which supported a diversity of agricultural practices and only occasionally sold their excess production. Since the climate of the Canadian Prairie is characterized by a short growing season, extreme annual temperature variation, and low precipitation, most early settler-farmers planted wheat varieties that had come from northern Europe because few varieties had been bred for the shorter growing seasons in Canada (Kuyek 2007). In addition, the Homesteader Act discouraged settlement in towns or other communal arrangements, and instead, farms were quickly established across the prairie in the patchwork patterns associated with the township and range survey system (Owram 1980; Waiser 2005). By the end of the 19th century and the beginning of the 20th century, being a “good” farmer meant removing excess trees, breaking the land, and staying alive through the long, cold winters (Archer 1980). Eventually as the infrastructure improved and transportation became easier, export agriculture became increasingly important and an export-oriented settler-farmer subjectivity replaced the subsistence subjectivity.

While early seeds were brought over by settlers themselves and saved year to year, eventually control over the seed supply shifted to public breeders and small seed companies, and later to larger, eventually multinational, corporations that used the legal system to support their monopoly control over royalties, genetic patents, and ownership rights (Kuyek 2007; Szego 1995). Public plant breeding programs in Canada were developed under the premise that seeds were a public good rather than a commodity and that the process of plant breeding was in the national public interest (Kuyek 2007). The first crop breeding efforts were directed by the Dominion Experimental Farm in Ottawa, established in 1888. The first Director of the Experimental Farm, William Saunders, focused on collecting and disseminating seeds to farmers in order to facilitate the important work that farmers were already doing in their fields to develop new varieties. By 1895, 26,000 free

wheat seed packages were sent to Canadian farmers and another 35,000 were sent the following year in an effort to meet the high demand from farmers (Kuyek 2007). Seeds, and the resulting crops, were becoming an increasingly economic good, but were still primarily under the control of farmers.

Since then, various programs administered by Agriculture and Agri-Food Canada, university agriculture researchers, seed co-ops, and private seed companies have worked to develop new crop varieties focused on disease resistance and drought tolerance. State and corporate actors legitimized their knowledge claims in the 1920s through the quantification of wheat protein, which was used as a proxy for rating the quality of wheat (Varty 2004). Debates over wheat quality from different Prairie bioregions meant that protein, as a quality of good bread-making flour, became the de facto criteria that determined price. As Varty (2004:736) writes: “the call for scientific measurement of an invisible constituent—protein—as a guarantor of ‘transparency’ [*sic*] in state-controlled grading legislation and as a mediator of private interest and public administration betray[ed] [a] ‘trust in numbers’”. Creating trust in the scientific understanding of biophysical characteristics of wheat resulted in new social and agronomic understandings of farming on the Prairies. Seeds, however, are not just economic and biophysical, they are also cultural; for example, Kuyek (2007:3) argues that “the seeds we plant are profoundly social: They reflect and reproduce the cultural values and social interests of those who develop them”. Thus while public seed research and regulation was generally beneficial for farmers, it also normalized the top-down processes of crop development (Kuyek 2007). The discourse surrounding the embedded economic value of seeds is critical to understanding the environmentalism of the Prairies, particularly the development of wheat and canola as environmental objects.

Difficult economic and climate conditions prompted many farmers to form collective networks and establish tools like marketing boards to guarantee stable prices for farmers (Skogstad 1987). In response to pressure from farmer cooperatives, the Canadian Wheat Board (CWB) was formed in 1935 to create parity in wheat marketing and to address high rail freight rates, and in 1943, its mandate was expanded to include barley and oats (Magnan 2011; Skogstad 1987). The CWB represented a key way that farmers could sell their wheat collectively and ensure that, regardless of their location, they had access to international markets and that the price of delivery was equitable due to the common pooling of the grain (Kneen 1990; Magnan 2011; Skogstad 1987). The CWB may have originally been a farmer-led initiative, but it was only through government intervention that the CWB gained monopoly-power (Kneen 1990; Magnan 2011). By protecting the financial value of wheat, barley, and oats, the CWB produced environmental relations through market-based technologies and globally promoted the message that these crops were better suited to Prairie agriculture and that only “good” settler-farmers grew these crops. This worked to transform settler-farmer attitudes towards wheat as its symbolic importance in making the Prairies a “bread basket” was now further implicated in its role in building communities and economic opportunities (Eaton 2013; Kuyek 2007; Varty 2004).

The next phase of environmentalism took a more neoliberal form in the 1970s and 1980s. The state began to shift away from disciplinary governmentality of earlier

eras, as demonstrated by Indigenous subjugation, towards a process to extend free market rationality into other realms (Fletcher 2010). Environmentality in agriculture in this period sought to create farmers who “manifest her/his own self-interest through enterprise and competition for maximum profits” (Fletcher 2010:174), in contrast to the use of morality arguments used during the disciplinary phase of environmentality. Prior to the 1970s, farms had been smaller, more diversified, and still emphasized wheat. This production was supported by infrastructure and markets to ship, measure, grade, distribute, process, and simplify wheat’s genetic and qualitative diversity (Varty 2004). Alongside a political shift from welfare state-style stabilization projects to productivist attitudes and the downturn in global commodities markets, many farmers abandoned their agricultural livelihoods in the 1980s and 1990s (Burton 2004; Skogstad 1987). This outward migration was precipitated by regional droughts and market collapses in the 1970s and 1980s, and further exasperated by the discovery of mad cow disease in 2003, and ultimately resulted in an abrupt population decrease in rural areas and the agglomeration of land into larger and larger farms (Anderson and McLachlan 2012; Sommerville and Magnan 2015). This political shift was also marked by discursive shifts around soil, water, and seeds.

Policies like the PFRA no longer applied in the neoliberal era where individual productivity maximization was seen as the primary driver of farmers. Thus in 2013, the PFRA and its programs were terminated amid modernist and productivist attitudes of competitive advantage and economies of scale (Arbuthnott and Schmutz 2013; Burton 2004). This has had significant effects on farmer behaviour and thus on the agricultural landscape of the Prairies. For example, the end of the PFRA shelterbelt program, which provided free trees, as well as ongoing economic pressures have resulted in many farmers tearing up shelterbelts in order to expand the area of cultivation on their farms (Amichev et al. 2015; Herriot 2016). The elimination of these trees could result in a corresponding loss of natural habitat and biodiversity, and a potential increase in soil erosion in the future, but has the immediate effect of changing the landscape (Clearwater et al. 2016; Herriot 2013).

The transition also represents changing “common sense” attitudes towards soil erosion. The programs of the PFRA were seen by many as redundant by 2013 because of the decrease in soil erosion due to the use of conservation tillage, direct-seeding, soil drainage, precision farming (i.e. the use of GIS and satellite imagery in managing nutrient inputs), and agribiotechnology (i.e. herbicide tolerant crops), which ostensibly reduced the need for tilling the soil and exposing it to the threat of erosion (Amichev et al. 2015; Argue et al. 2003). Soil management is now a technical problem addressed by modern equipment and improved genetics, rather than one part of a larger farm management system. However, the long-term implications of this change in practices may be difficult to fully comprehend since the benefits of a reduction in soil erosion may be offset by increased pesticide use associated with no-till and herbicide-resistant crops and the implications for wildlife (Clearwater et al. 2016). Some research shows that the decrease in the number of trees on the prairies, combined with the draining of wetlands, has resulted in increased rates of runoff and silting, and thus flood occurrences downstream, consequently changing the water

landscape on the Prairies and the role of water as environmental object (Dumanski et al. 2015). The application of phosphorus and nitrogen on cropland can improve soil fertility, but their increased presence in waterways indicates increased drainage and can result in eutrophication of water bodies (Clearwater et al. 2016). The diversion of wetlands or sloughs has also become a persistent problem on the Prairies, even though it is illegal in most jurisdictions to drain wetlands; the fines and likelihood of being caught are less significant than the potential economic gains of more farmland (Ducks Unlimited Canada 2015; Dumanski et al. 2015; Herriot 2016; Stunden Bower 2011).

The shift towards neoliberal governmentality also had remarkable effects on the transformation of seeds as environmental objects. By the 1970s, it had become clear that an ideological divide was growing and many farmers had “abandoned cooperation for free-market principles” (Magnan 2011:123), a shift that coincided with an increase in production of new crops, especially canola. Beginning in the 1980s, a shift in size and influence of multinational seed companies like Cargill took place (Kneen 1990). Agribusiness corporations are interested in proprietary hybrid seed development, ensuring that farmers must return every year to purchase fresh seed rather than saving seeds that quickly lose their vigour (Kneen 1990), or patented genetically modified seeds that are illegal for farmers to save year-to-year (Kuyek 2007). Through vertical integration, companies like Cargill and Syngenta provide support and advice on crop inputs including fertilizers, chemicals, and seeds, work that used to be done by less biased public extension services offered by universities and provincial governments (Kneen 1990; Kuyek 2007).

The powerful coalition between state and corporations commodified farmer knowledge and contributed to the production of the enterprising farmer subjectivity on the Prairies (Winson 1994). These free-market subjectivities resulted in open opposition to the CWB in the 1990s, which suggested that the CWB amounted to a subsidy and violated free trade rules, and concluded with the termination of the CWB’s monopoly in 2012 (Magnan 2016). The single-desk exporter for cereal grains in Western Canada went from providing over \$7 billion CAD in revenue (Magnan 2016) to an empty building today (perhaps ironically located only a few blocks from the Cargill corporate offices in Winnipeg). Many farmers believed that they could get a better price if they were allowed to sell wheat themselves on the open market, indicating a firmly neoliberal subjectivity (Carter et al. 1998; Magnan 2016). Concurrently, settler-farmer preferences regarding the types of crops that were grown and where to access their seed also changed. Canola came to challenge the dominance of wheat on the prairies; a crop whose successful transition from mechanical lubricant to food-grade oil is linked to (and perhaps only possible because of) scientific and technological advancement (Eaton 2013). Through these changes, the management of the genetic material has shifted from field, to public seed bank, to private laboratory (Kuyek 2007). The commodification of hybrid and GM seeds had undermined seed saving and public breeding, resulting in the subsequent commodification of traditional seed knowledge of farmers and an increased reliance on transnational seed companies to provide support and advice to farmers (Eaton 2013; Kuyek 2007; Mauro et al. 2009).

This shift from disciplinary governmentality to neoliberal governmentality continued to see the exclusion of Indigenous subjects from agriculture. The PFRA and other state policies had reinforced subjectivities of exclusion through institutional racism. For example, in 1938, the PFRA forcibly removed Métis farm families from Ste. Madeleine in south-western Manitoba in order to establish a community pasture (Herriot 2016; Payment 1989). Métis farming was often based on communal property ownership which was not part of “good” capitalist farmer behaviour, thus to ensure that the families did not return, their houses were burned (Herriot 2016).² Moreover, the programs and assistance of PFRA and other federal and provincial projects to address flooding were not available to First Nations families despite reserves often being situated on floodplains (Stunden Bower 2011). Neoliberal environmentality had also erased Indigenous cultural and spiritual history to seeds. In particular, corn and sunflowers represent key commodity crops today, but despite their genetic transformation, have their origins in North American Indigenous practices (Carter 2016; Kuyek 2007; Szego 1995). As Szego (1995:13) shows in his history of the Canadian Seed Trade Association (CSTA), there was often very little reflection on the origins or implications of growing different seeds:

bought or stolen from the Indians [*sic*], corn is said to have saved the English colonies of Virginia and Massachusetts more than once. The indian [*sic*] corns were basic and primitive and had changed very little during the centuries they had been grown. Improved varieties were developed as open-pollinated strains in the 1800s in the United States and in the early 1900s in southern Ontario.

Throughout the history of seeds, the making of this environmental object has involved the undermining of agency of various environmental subjects. First was the complicit involvement of settler-farmers in the removal of Indigenous people as agricultural subjects and later the removal of settler-farmers themselves by agribusiness corporations who now claim ownership and make decisions regarding seed.

Discussion and Conclusion

Understanding both the physical geography of the Canadian Prairies as well as its cultural history is to understand the intimate relationship between humans and nature and the politics of agriculture. We have explored the dimensions of the tensions of environmentality through the environmental objects of water, soil, and seeds, chosen because of their importance to agricultural economics, their centrality to Prairie farming culture, their biophysical implications for rural landscapes and environments, their controversial transformation in recent years, and the ways that settler-farmers, Indigenous subjects, and state power have interacted to change their material and symbolic qualities. Thus far, the process of environmentality has been to consider how environmental subjects have been made and how these have shaped and transformed environmental objects. However, the understanding of biophysical characteristics of these environmental objects is also culturally derived. The way that the biophysical is known is economically and culturally mediated; in much the same way that Aristotle “knew” stars to be circles painted on a celestial ceiling (Busch 2003). Or the way states and corporations had no

economic interest in bison as agricultural resources until relatively recently because these were not seen as good candidates for domestication, although the biophysical realities of animal diseases on game farms may act to transform discourses yet again. Recent technological advances and ongoing neoliberal environmentalism are continuing to challenge ways of knowing, for example the search for more and more economically viable resources has resulted in the practice of biopiracy, the extraction and commercialization of previously ignored traditional Indigenous flora and fauna (Goyes and South 2016; Shiva 1999). This reframing could threaten the already tenuous spiritual and cultural relationships Indigenous people have with their food systems, as crops like wild rice and wildlife like bison are transformed into commodities (Morrison 2011). The processes of environmentalism require that knowledge held by state or corporate actors produces standardized, one-size-fits-all production paradigms that effectively undermine settler-farmer and Indigenous agency (Kneen 1990; Kuyek 2007; Mauro et al. 2009).

Environmentalism on the Canadian Prairies has gone through two main phases, the disciplinary phase during early colonialism and settlement and the neoliberal phase using coercion and incentives. The premise of environmentalism is that power is diffused through multiple technologies of governance to manage citizens and the environment for the “betterment” of the whole of the state and its constituents (Dressler 2014; Kosek 2006). This moral imperative is particularly important for disciplinary environmentalism (Fletcher 2010). Later, economic growth is used as an indicator of success by the state and the environment becomes a source of economic wealth (Agrawal 2005; Fletcher 2010; Peyton and Franks 2016). Due to the ongoing, intergenerational relationship between farmers and the natural environment, agriculture is rarely considered an “extractive” activity, rather it is framed as a “productive” resource enterprise. The difference in process and timeline means only that environmental subjects were created using the “slow violence” of Residential Schools, cultural genocide, technocratic reorganization, and environmental destruction (Nixon 2011). Neoliberal environmentalism continues to impact Indigenous subjectivities with an emphasis on individualism and private property over shared responsibility and communal land tenure. For example, 80% of agricultural land on First Nations reserves is leased to non-Indigenous neighbours to farm for profit, a process that was briefly corporatized by One Earth Farms based in Toronto from 2009 to 2014 (Cross 2014; Magnan 2012).

The reshaping of the properties of prairie environmental objects—soil, water, seeds—are co-produced gradually by environmental subjects who are then, in turn, formed alongside the environmental objects they manage. Seeds have been shaped by farmer-breeders, scientists, and public officials so that the biological traits of the plant has changed, but these seeds also act upon farmers by determining the types of cropping systems and agronomic practices they could employ, thus changing landscapes (Eaton 2013). Meanwhile, soil and water management on the prairies has seen farmers switch from practices of summerfallowing to the widespread adaptation of technologies of conservation tillage and pesticides, a transition that required a whole-scale capital and knowledge investment in new farming practices, a transition that benefited large agricultural corporations. The changes in environmental objects and their symbolic and material meaning are reflected in

the neoliberal environmentality that resulted in the termination of state programs that acted to support and protect environmental objects through disciplinary environmentality. While these may appear to be irreconcilable state actions, first to introduce the PFRA and support the CWB and then to terminate them, they reflect ongoing projects to maintain sovereignty and control over natural resources for the national economic interest. Various multi-stakeholder governance structures have been established across the Prairies in the last decade including Manitoba's Conservation Districts, ad hoc groups to manage former federal and provincial community pastures, and conservation easement agreements and it will be interesting to observe the degrees to which neoliberal environmentality is resisted or integrated into these arrangements.

Environmentality is not necessarily a "top-down" approach to governance (Li 2005). State schemes themselves are rarely straightforward enactments of policies, but rather, multiple authorities engage with conflicting proposals to produce policies that may be reactionary, such as to suppress resistance, or respond to corporate demands (Li 2005). The art of governance requires that these contradictions and failures are smoothed over and that any political questions are repositioned as technical in order to reassemble policies to give the appearance of cohesive governance (Li 2007). As a result of the complexities of the state, there are multiple entry points for resistance and transformation. The spaces of resistance and the frictions between self-cultivated subjectivities and environmentality in this paper have often taken place over the cultural, symbolic, and practical aspects of soil, water, and seeds. Territory and subjectivity are interconnected and resistance to claims to the land is also the resistance to a subjectivity defined by environmentality (Peyton and Franks 2016). In the case of land and soil, discussions over treaty rights, land access, soil fertility, and the health of the land have brought settler-farmers, Indigenous people, and others together in resisting development from oil and gas extraction and pipelines across Western Canada (Peyton and Franks 2016). For example, resistance on the Canadian Prairies, as an expression of agency, resulted in Idle No More, a national (and later global) environmental and human rights movement led by Indigenous activists, especially women, exemplifying a resistance through a revival of Indigenous self-cultivated subjectivity and identity (Coulthard 2014).

The corporatization of soil and water, and their production as environmental objects, makes these "resources" subject to private property regimes and thus changing these objects requires changes in individual farmer behaviour and management. Seeds, however, are transportable, and resistance to their corporatization is located in the backyards and farms of Canadians through the tangible and symbolic act of saving and sharing seeds (Mascarenhas and Busch 2006; Phillips 2008). While there is also political resistance to the legal frameworks that make seed saving illegal on the part of both settler-farmers and Indigenous peoples in Canada (Eaton 2013; Fairbairn 2012; Pechlaner and Otero 2008), much of the resistance of seeds' environmental object formation comes from informal seed saving in rural and urban environments, including the work of Indigenous seed sovereignty activists (People's Food Policy Project 2011; Sierra Seeds 2016). Seeds such as wild rice are increasingly symbolic and material examples of Indigenous resistance to narratives of settler colonialism (White Earth Land Recovery Project 2013).

By understanding the motivations and discourses behind agricultural policies and their implications for rural communities and the environment, we can better imagine alternatives to neoliberal hegemonic thinking. The practices of self-cultivation not only gives space to imagining other ways to be a “good” farmer, but also to recognize the ways that we have all become subjugated, especially by neoliberal environmentalism and its rationalities (Gibson-Graham 2006; Healy 2014). The ways that settler-farmers are interacting with the state is also changing and more civil society and grassroots coalitions are building networks of community-based economies to oppose corporate influences (Ballamingie and Walker 2013). As these challenges to the status quo are made, they will likely rub against the technologies of environmentalism that continue to manipulate behaviours back towards subjugation. As Kosek (2006:286) writes: “the formative aspects of power are not just the conspicuous ones of domination or control. Instead, formation takes place through the cultivation and identification of individuals—by means of both their internal natures and their external landscapes”. Thus, the current perception of a “good” farmer is as a successful business owner who is “likely to disregard environmental impacts of their decisions and place personal profit before public welfare” (McGuire et al. 2013:57). However, settler-farmers have also demonstrated their willingness to change their behaviours when they act to carefully manage environmental assets through the use of sustainable and agroecological practices (Burton 2004). Therefore, resistance can result in new subjectivities as well as new environmental realities and ways of knowing and doing farming.

Situating the narrative of prairie agriculture in ongoing settler colonialism is a way to account for the dispossessions that took place through this process (Lowman and Barker 2015). The making of the settler-farmer and the settlement pattern it produced required that the barrier posed by the legitimate claim to the land by Indigenous people had to be removed (Coulthard 2014; Daschuk 2013). Land, and the relationships that both settler-farmers and Indigenous people have with it, offers an opportunity to explore resistance to and contestation of environmentalism and the ways it changes our relationships with nature. Many farmer-settler and Indigenous subjects find significant spiritual importance in land and it is often a key part of identity formation, as Lowman and Barker (2015:48) describe:

Land is at the root of any issue or conflict you could care to name involving Indigenous and Settler peoples in Canada. The land is what sustains Indigenous communities and identities. The land is what Settler people need in order to have a home and economic stability.

Within the cracks of this complex set of relations, openings are appearing that can facilitate the emergence of new collective visions of land, soil, water, and seeds on the Canadian Prairies. Therefore, it is important to commemorate partnerships between settler-farmers and Indigenous people, including those from the past such as the horses provided by the Muskeg Lake First Nation to help newly arrived Doukhobor immigrants in Petrofka, Saskatchewan in 1909 (Tang 2003). Recent reconciliation efforts also offer hope for the future, including land agreements between settlers in Laird, Saskatchewan and the Young Chippewayans First Nation

whom they had displaced in 1879 (Polachic 2017) and between the Esk'etemic band and a local rancher in the Cariboo area of British Columbia (Lamb-Yorski 2017).

As narratives from the Truth and Reconciliation process are becoming widespread in Canadian media and households, an opportunity to cultivate new subjectivities and transformative political identities has emerged (Coulthard 2014; Truth and Reconciliation Commission 2015). Conversations about agriculture, settlement, and the history and geography of these ongoing colonial legacies are a critical part of this process (Epp 2008; Herriot 2016; Lowman and Barker 2015). The concept of “settler common sense” has allowed settler communities to be complacent about their own exploitative place in the colonialism of Canada, while the discursive strategies of past state policies of assimilation continue to manifest in the present (Lowman and Barker 2015). However, it is possible for both Indigenous and settler-farmers’ subjectivities to be reconciled through careful practices of self-reflection, decolonization, and atonement (see Herriot 2016). Reconciliation will require listening to counter narratives, making room for Indigenous knowledge and subjectivities, and contesting powerful systems of oppression, including the challenges inherent in a system of agriculture built on Indigenous land. Herein lies the potential of ongoing practices of self-cultivation of subjectivities and collective resistance, to reconcile the colonial inheritance of Canadians and resist the neoliberal environmentality of the present, both necessary steps in building a sustainable and just agriculture system that meets the needs of all Canadians.

Acknowledgements

We would like to thank M. Wheeler, A. Curran, S. Zell, and J. Peyton for their important feedback on early drafts of this manuscript. We would also like to thank the reviewers for their insightful and relevant comments that greatly improved and clarified our arguments. This research was funded in part by the Manitoba Alternative Food Research Alliance, a SSHRC Community-University Research Alliance Grant, the Wa Ni Ska Tan Hydro Alliance, a SSHRC Partnership Grant, and the University of Manitoba. Finally, we would like to acknowledge that we live and work on land that traditionally belongs to Indigenous people in Canada and that working towards reconciliation and decolonization is necessary to address historical and ongoing effects of colonialism, and we hope that this paper contributes to that conversation in some small way.

Endnotes

¹ Although never called *swidden* in North America, the practice of short-term land tenure was common in early settlement periods.

² As a result, families were scattered across the Prairies, some in urban centers including Winnipeg and Saskatoon, others in resettlement sites along road allowances, and on rare occasions on farmland provided in compensation (Herriot 2016).

References

- Agrawal A (2005) *Environmentality: Technologies of Government and the Making of Subjects*. Durham: Duke University Press
- Alfred T (1999) *Peace, Power, Righteousness, and Indigenous Manifesto*. Oxford: Oxford University Press

- Amichev B Y, Bentham M J, Cerkowniak D, Kort J, Kulshreshtha S, Laroque C P and Van Rees K C J (2015) Mapping and quantification of planted tree and shrub shelterbelts in Saskatchewan, Canada. *Agroforestry Systems* 89(1):49–65
- Anderson C R and McLachlan S M (2012) Exiting, enduring, and innovating: Farm household adaptation to global zoonotic disease. *Global Environmental Change* 22(1):82–93
- Arbuthnott B K and Schmutz J K (2013) “PFRA Community Pastures: History and Drama of a Prairie Commons.” SaskNotes, Canadian Centre for Policy Alternatives. <https://www.policyalternatives.ca/publications/reports/sasknotes-pfra-community-pastures> (last accessed 10 August 2017)
- Archer J H (1980) *Saskatchewan: A History*. Saskatoon: Western Producer Prairie Books
- Argue G, Stirling B and Diaz P (2003) Agricultural chemicals and agri-business. In H P Diaz, J Jaffe and R Sterling (eds) *Farm Communities at the Crossroads: Challenge and Resistance* (pp 207–222). Regina: Canadian Plains Research Centre, University of Regina
- Atkinson R and McCrorie J N (2003) The decline of agrarian radicalism on the Canadian Prairies. In H P Diaz, J Jaffe and R Sterling (eds) *Farm Communities at the Crossroads: Challenge and Resistance* (pp 323–328). Regina: Canadian Plains Research Centre, University of Regina
- Bakker K and Bridge G (2006) Material worlds? Resource geographies and the “matter of nature”. *Progress in Human Geography* 30(1):5–27
- Ballamie P and Walker S M L (2013) Field of dreams: Just Food’s proposal to create a community food and sustainable agriculture hub in Ottawa, Ontario. *Local Environment* 18(5):529–542
- Beingessner N, Boehm T and Moore H (2011) Getting to food sovereignty: Grassroots perspectives from the National Farmers Union. In H Wittman, A A Desmarais and N Wiebe (eds) *Food Sovereignty in Canada: Creating Just and Sustainable Food Systems* (pp 43–58). Halifax: Fernwood Books
- Braun B (2000) Producing vertical territory: Geology and governmentality in late Victorian Canada. *Ecumen* 7(1):7–46
- Braun B (2002) *The Intemperate Rainforest: Nature, Culture, and Power on Canada’s West Coast*. Minneapolis: University of Minnesota Press
- Burton R J F (2004) Seeing through the “good farmer’s” eyes: Towards developing an understanding of the social symbolic value of “productivist” behaviour. *Sociologia Ruralis* 44(2):195–215
- Busch L (2003) Canola: A Cinderella story. In H P Diaz, J Jaffe and R Sterling (eds) *Farm Communities at the Crossroads: Challenge and Resistance* (pp 45–51). Regina: Canadian Plains Research Centre, University of Regina
- Carter S (1992) *Lost Harvest: Prairie Reserve Farmers and Government Policy*. Montreal: McGill-Queen’s University Press
- Carter S (2016) *Imperial Plots: Women, Land, and the Spadework of British Colonialism on the Canadian Prairies*. Winnipeg: University of Manitoba Press
- Carter C, Loyns R and Berwald D (1998) Domestic costs of statutory marketing authorities: The case of the Canadian Wheat Board. *American Journal of Agricultural Economics* 80(2):313–324
- Clearwater R L, Martin T and Hoppe T (eds) (2016) “Environmental Sustainability of Canadian Agriculture.” *Agri-environmental Indicator Report Series, Report #4*. Ottawa, ON: Agriculture and Agri-Food Canada
- Coulthard G S (2014) *Red Skin White Masks: Rejecting the Colonial Politics of Recognition*. Minneapolis: University of Minnesota Press
- Craft A (2013) *Breathing Life into the Stone Fort Treaty: An Anishnabe Understanding of Treaty One*. Vancouver: Purich
- Cronon W (1995) The trouble with wilderness, or, Getting back to the wrong nature. In W Cronon (ed) *Uncommon Ground* (pp 23–68). New York: Norton
- Cross B (2014) One Earth Farms restructures: CEO says efforts will now be focused on beef production. *The Western Producer* 15 May. <http://www.producer.com/2014/05/one-earth-farms-restructures/> (last accessed 11 May 2017)
- Cunfer G (2004) Manure matters on the Great Plains frontier. *Journal of Interdisciplinary History* 34(4):539–567

- Cunfer G (2005) *On the Great Plains: Agriculture and Environment*. College Station: Texas A&M University Press
- Danysk C (1996) "A bachelor's paradise": Homesteaders, hired hands, and the construction of masculinity, 1880–1930. In C Cavanaugh and J Movat (eds) *Making Western Canada: Essays on European Colonization and Settlement* (pp 154–182). Toronto: Garamond
- Daschuk J (2013) *Clearing the Plains: Disease, Politics of Starvation, and the Loss of Aboriginal Life*. Regina: University of Regina Press
- Davidson-Hunt I (2003) Indigenous lands management, cultural landscapes, and Anishinaabe people of Shoal Lake, Northwestern Ontario, Canada. *Environments* 31(1):21–41
- Dressler W (2014) Green governmentality and swidden decline on Palawan Island. *Transactions of the Institute of British Geographers* 39(2):250–264
- Ducks Unlimited Canada (2015) "Illegal Drainage Threatens Iconic Big Grass Marsh in Manitoba." <http://www.ducks.ca/stories/policy/illegal-drainage-threatens-iconic-big-grass-marsh-in-manitoba/> (last accessed 31 August 2017)
- Dumanski S, Pomeroy J W and Westbrook C J (2015) Hydrological regime changes in a Canadian Prairie basin. *Hydrological Processes* 29(18):3893–3904
- Eaton E (2013) *Growing Resistance: Canadian Farmers and the Politics of Genetically Modified Wheat*. Winnipeg: University of Manitoba Press
- Epp R (2008) *We Are All Treaty People: Prairie Essays*. Edmonton: University of Alberta Press
- Fairbairn M (2012) Framing transformation: The counter-hegemonic potential of food sovereignty in the US context. *Agriculture and Human Values* 29(2):217–230
- Ferguson J and Gupta A (2002) Spatializing states: Toward an ethnography of neoliberal governmentality. *American Ethnologist* 29(4):981–1002
- Fletcher R (2010) Neoliberal environmentalism: Towards a poststructuralist political ecology of the conservation debate. *Conservation and Society* 8(3):171–181
- Foucault M (1990) *The History of Sexuality, Volume One: An Introduction*. New York: Vintage Books
- Foucault M (1991) Governmentality. In G Burchell, C Gordon and P Miller (eds) *The Foucault Effect: Studies in Governmentality* (pp 87–104). Chicago: University of Chicago Press
- Foucault M (1994) *Power* (ed J Faubion). New York: New Press
- Gibson-Graham J K (2006) *A Postcapitalist Politics*. Minneapolis: University of Minnesota Press
- Goyes D R and South N (2016) Land-grabs, biopiracy and the inversion of justice in Colombia. *British Journal of Criminology* 56(3):558–577
- Harris C (2002) *Making Native Space: Colonialism, Resistance, and Reserves in British Columbia*. Vancouver: University of British Columbia Press
- Harris C (2004) How did colonialism dispossess? Comments from an edge of empire. *Annals of the Association of American Geographers* 94(1):165–182
- Harris E (2009) Neoliberal subjectivities or a politics of the possible? Reading for difference in alternative food networks. *Area* 41(1):55–63
- Healy S (2014) The biopolitics of community economies in the era of the Anthropocene. *Journal of Political Ecology* 21:210–221
- Herriot T (2013) Why is Ottawa abandoning swaths of prairie grassland? *The Globe and Mail* 6 April. <http://www.theglobeandmail.com/news/national/why-is-ottawa-abandoning-swaths-of-prairie-grassland/article10823827/?page=all> (last accessed 31 October 2016)
- Herriot T (2016) *Towards a Prairie Atonement*. Regina: University of Regina Press
- Kneen B (1990) *Trading Up: How Cargill, the World's Largest Grain Company, is Changing Canadian Agriculture*. Toronto: New Canada Publications
- Knuttila M (2003) Globalization, economic development, and Canadian agricultural policy. In H P Diaz, J Jaffe and R Sterling (eds) *Farm Communities at the Crossroads: Challenge and Resistance* (pp 289–302). Regina: Canadian Plains Research Centre, University of Regina
- Kooy M and Bakker K (2008) Technologies of government: Constituting subjectivities, spaces, and infrastructures in colonial and contemporary Jakarta. *International Journal of Urban and Regional Research* 32(2):375–391
- Kosek J (2006) *Understories: The Political Life of Forests in Northern New Mexico*. Durham: Duke University Press

- Kuyek D (2007) *Good Crop/Bad Crop: Seed Politics and the Future of Food in Canada*. Toronto: Between the Lines
- Laforge J M L, Anderson C R and McLachlan S M (2016) Governments, grassroots, and the struggle for local food systems: Containing, coopting, contesting, and collaborating. *Agriculture and Human Values* <https://doi.org/10.1007/s10460-016-9765-5>
- Laforge J M L and McLeman R (2013) Social capital and drought-migrant integration in 1930s Saskatchewan. *The Canadian Geographer/Le Géographe canadien* 57(4):488–505
- Lamb-Yorski M (2017) Rancher gifts land to Esk'etemc during title and rights ceremony. *The Williams Lake Tribune* 9 May. <http://www.wltribune.com/news/rancher-gifts-land-to-esketemc-during-title-and-rights-ceremony/> (last accessed 11 May 2017)
- Lemke T (2001) “The birth of biopolitics”: Michel Foucault’s lecture at the Collège de France on neoliberal governmentality. *Economy and Society* 30(2):190–207
- Li T M (2005) Beyond “the state” and failed schemes. *American Anthropologist* 107(3):383–394
- Li T M (2007) Practices of assemblage and community forest management. *Economy and Society* 36(2):263–293
- Loo T (2016) High modernism, conflict, and the nature of change in Canada: A look at *Seeing Like a State*. *The Canadian Historical Review* 97(1):34–58
- Lowman E and Barker A J (2015) *Settler: Identity and Colonialism in 21st Century Canada*. Black Point: Fernwood
- Magnan A (2011) The limits of farmer-control: Food sovereignty and conflicts over the Canadian Wheat Board. In H Wittman, A A Desmarais and N Wiebe (eds) *Food Sovereignty in Canada: Creating Just and Sustainable Food Systems* (pp 114–133). Halifax: Fernwood
- Magnan A (2012) New avenues of farm corporatization in the prairie grains sector: Farm family entrepreneurs and the case of One Earth Farms. *Agriculture and Human Values* 29(2):161–175
- Magnan A (2016) *When Wheat was King: The Rise and Fall of the Canada-UK Grain Trade*. Vancouver: University of British Columbia Press
- Marchildon G P (2009) The Prairie Farm Rehabilitation Administration: Climate crisis and federal-provincial relations during the Great Depression. *Canadian Historical Review* 90(2):275–301
- Marchildon G P, Kulshreshtha S, Wheaton E and Sauchyn D (2008) Drought and institutional adaptation in the Great Plains of Alberta and Saskatchewan, 1914–1939. *Natural Hazards* 45(3):391–411
- Mascarenhas M and Busch L (2006) Seeds of change: Intellectual property rights, genetically modified soybeans, and seed saving in the United States. *Sociologia Ruralis* 46(2):122–138
- Massie M (2014) *Forest Prairie Edge: Place History in Saskatchewan*. Winnipeg: University of Manitoba Press
- Mauro I J, McLachlan S M and van Acker R C (2009) Farmer knowledge and *a priori* risk analysis: Pre-release evaluation of genetically modified Roundup Ready wheat across the Canadian prairies. *Environmental Science and Pollution Research* 16(6):689–701
- McGuire J, Morton L and Cast A D (2013) Reconstructing the good farmer identity: Shifts in farmer identities and farm management practices to improve water quality. *Agriculture and Human Values* 30(1):57–69
- Menser M (2014) The territory of self-determination: Social reproduction, agro-ecology, and the role of the state. In P Andrée, J Ayres, M J Bosia and M-J Massicotte (eds) *Globalization and Food Sovereignty: Global and Local Change in the New Politics of Food* (pp 53–83). Toronto: University of Toronto Press
- Miewald C, Hodgson S and Ostry A (2015) Tracing the unintended consequences of food safety regulations for community food security and sustainability: Small-scale meat processing in British Columbia. *Local Environment* 20(2):237–255
- Monllor N (2012) “Farm Entry: A Comparative Analysis of Young Farmers, Their Pathways, Attitudes, and Practices in Ontario (Canada) and Catalunya (Spain).” Access to Land Report. http://www.accesstoland.eu/IMG/pdf/monllor_farm_entry_report_2012.pdf (last accessed 10 August 2017)
- Morrison D (2011) Indigenous food sovereignty: A model for social learning. In H Wittman, A A Desmarais and N Wiebe (eds) *Food Sovereignty in Canada: Creating Just and Sustainable Food Systems* (pp 97–113). Halifax: Fernwood

- Munoz S E, Gajewski K and Peros M C (2010) Synchronous environmental and cultural change in the prehistory of the northeastern United States. *Proceedings of the National Academy of Sciences of the United States of America* 107(51):22008–22013
- Nixon R (2011) *Slow Violence and the Environmentalism of the Poor*. Cambridge: Harvard University Press
- Owram D (1980) *Promise of Eden: The Canadian Expansionist Movement and the Idea of the West, 1856–1900*. Toronto: University of Toronto Press
- Payment D (1989) Review: Ken and Victoria Zeilig, *St. Madeleine: Community Without a Town; Métis Elders in Interview*. *Manitoba History* 17. http://www.mhs.mb.ca/docs/mb_history/17/stemadeleine.shtml (last accessed 10 May 2017)
- Pechlaner G and Otero G (2008) The third food regime: Neoliberal globalism and agricultural biotechnology in North America. *Sociologia Ruralis* 48(4):351–371
- People's Food Policy Project (2011) "Resetting the Table: A People's Food Policy for Canada." Food Secure Canada. <https://foodsecurecanada.org/sites/foodsecurecanada.org/files/FSC-resetting2012-8half11-lowres-EN.pdf> (last accessed 10 May 2017)
- Peyton J and Franks A (2016) The new nature of things? Canada's Conservative government and the design of the new environmental subject. *Antipode* 48(2):453–473
- Phillips C (2008) Canada's evolving seed regime. *Environments* 36(1):5–18
- Polachic D (2017) Reserve 107 documentary shows peaceful path to reconciliation. *Saskatoon StarPhoenix* 11 February. <http://thestarphoenix.com/life/relationships/reserve-107-documentary-shows-peaceful-path-to-reconciliation> (last accessed 11 May 2017)
- Potyondi B (1995) *In Palliser's Triangle: Living in the Grasslands, 1850–1930*. Saskatoon: Purich
- Raddatz R L (1998) Anthropogenic vegetation transformation and the potential for deep convection on the Canadian Prairies. *Canadian Journal of Soil Science* 78(4):657–666
- Russell P A (2012) *How Agriculture Made Canada: Farming in the 19th Century*. Montreal: McGill-Queen's University Press
- Savage C (2004) *Prairie: A Natural History*. Vancouver: Greystone Books
- Settee P (2013) *Pimatisiwin: The Good Life, Global Indigenous Knowledge Systems*. Vernon: J Charleton
- Shiva V (1999) *Biopiracy: The Plunder of Nature and Knowledge*. New York: South End Press
- Sierra Seeds (2016) "Indigenous Seed Sovereignty." <http://sierraseeds.org/indigenous-seed-sovereignty/> (last accessed 8 May 2017)
- Simpson L R (2004) Anticolonial strategies for the recovery and maintenance of Indigenous knowledge. *The American Indian Quarterly* 28(3/4):373–384
- Skogstad G (1987) *The Politics of Agricultural Policy-Making in Canada*. Toronto: University of Toronto Press
- Soils of Canada (n.d.) "Orders: Chernozemic." <http://www.soilsofcanada.ca/orders/chernozemic/> (last accessed 8 May 2017)
- Sommerville M and A Magnan (2015) "Pinstripes on the prairies": Examining the financialization of farming systems in the Canadian prairie provinces. *Journal of Peasant Studies* 42(1):119–144
- Stunden Bower S (2011) *Wet Prairie: People, Land, and Water in Agricultural Manitoba*. Vancouver: University of British Columbia Press
- Szego T (1995) *The Merchants of Seed: A History of the Canadian Seed Industry*. Nepean: Canadian Seed Trade Association
- Tang E (2003) "Agriculture: The Relationship Between Aboriginal Farmers and Non-Aboriginal Farmers." Western Development Museum/Saskatchewan Indian Cultural Centre Partnership Project. <http://apihtawikosisan.com/wp-content/uploads/2012/05/FNAgriculture.pdf> (last accessed 10 August 2017)
- Thorpe J (2012) *Temagami's Tangled Wild: Race, Gender, and the Making of Canadian Nature*. Vancouver: University of British Columbia Press
- Truth and Reconciliation Commission (2015) "Honoring the Truth, Reconciling the Future. Summary of the Final Report of the Truth and Reconciliation Commission of Canada." <http://www.trc.ca> (last accessed 31 August 2017)
- Tsing A L (2005) *Friction: An Ethnography of Global Connection*. Princeton: Princeton University Press

- Varty J F (2004) On protein, prairie wheat, and good bread: Rationalizing technologies and the Canadian State, 1912–1935. *Canadian Historical Review* 85(4):721–754
- Waiser W (2005) *Saskatchewan: A New History*. Calgary: Fifth House
- Wheater H and Gober P (2013) Water security in the Canadian Prairies: Science and management challenges. *Philosophical Transactions of the Royal Society A* 371(2002) <https://doi.org/10.1098/rsta.2012.0409>
- White Earth Land Recovery Project (2013) “White Earth Land Recovery Project: Facilitating the recovery of the original land base of the White Earth Reservation.” <http://welrp.org/> (last accessed 10 May 2017)
- Winson A (1994) *The Intimate Commodity: Food and the Development of the Agro-Industrial Complex in Canada*. Toronto: University of Toronto Press