'Born in an Atomic Test Tube': Landscapes of cyclonic development at Uranium City, Saskatchewan

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Abstract

Drawing together insights from neo-Innisian geography and environmental history, this paper explores the landscape and environmental changes engendered by 'cyclonic' patterns of development associated with uranium production at Uranium City, Saskatchewan. Strong postwar demand for uranium led to the establishment and rapid expansion of Uranium City on the north shore of Lake Athabasca as a 'yellowcake town,' dedicated to producing uranium oxide concentrate to supply federal government contracts with the United States military. In spite of optimistic assessments for the region's industrial future, the new settlement remained inherently unstable, tied to shifting institutional arrangements and external markets, and haunted by the spectre of resource depletion. The planning and development of the townsite at Uranium City reflected both neo-colonial desires to open the north to Euro-Canadian settlement and efforts by the state to buffer the stormy effects of resource dependency. Ultimately, however, quixotic government efforts to implant an outpost of industrial modernity in the Athabasca Region failed to forestall the inevitable winds of change, which left in their wake destructive legacies of social dislocation and environmental degradation, already evident with the near-collapse of the uranium export market by the early 1960s.

A cyclone hit the northern shore of Lake Athabasca in 1944—neither a climatological event nor force of nature, it was instead a whirlwind of industrial development lasting, in its first phase, some 15 years or so. Centred on the exploitation of extensive low-grade uranium deposits, this paroxysm of development radically remade the region's physical and human landscapes, overturning traditional land uses and social arrangements, and erecting entirely new forms in their place. The boom began with a rush for uranium in northern Saskatchewan that attracted thousands of prospectors, mining capital, and state interests to this remote region. This led to the establishment and rapid expansion of Uranium City as a 'yellowcake town' dedicated to producing uranium oxide concentrate to supply government contracts with the United States military. This, in turn, stirred hopes that Uranium City would become a springboard to the industrialization of Saskatchewan's northern hinterland.

Yet the new landscapes created by the cyclonic forces of staple development were inherently unstable, buffeted by changes in technology, tied to shifting institutional arrangements and external markets, and—ultimately—haunted by the spectre of resource depletion. By the early 1960s, the region was already in decline, due to the near collapse of the international uranium market. After two more decades of boom and bust cycles, the town of Uranium City was virtually abandoned. While the proximate causes of this decline were ore depletion, low commodity prices and changing labour arrangements in the northern mining sector, this paper contends that a deeper account of the rise and fall of Uranium City lies in its connection to the historical geography of resource-extractive economies in modern Canada and the quixotic attempts to control the human and environmental effects of what Harold Innis aptly described as 'cyclonic' patterns of development. In examining the early history of Uranium City, this paper

ties together several strands of inquiry associated with Innisian political economy: natural resource extractive economies and the geographical relations they spawn; colonialism and national development; and the role of the state in shaping these patterns and processes. The case of Uranium City illustrates how the cyclonic nature of a particular staples development, and efforts to control or at least mitigate these stormy effects, were registered in the physical landscapes and environmental legacies of this resource extractive region.

Cyclonic landscapes

In his writing on global mineral rushes, the economic geographer and historian Harold Innis deployed the metaphor of a cyclone to describe the *intensity* of economic and cultural changes resulting from the incursion of metropolitan industrial capital and technologies into remote, resource-rich regions (Innis 1943; Drache 1995, xvii; Watson 2006, 160). Innis described the economies of staples-dependent frontier countries as 'storm centres to the modern international economy,' subject to violent disturbances in market and institutional conditions (Innis 1946, 33). As further developed by Trevor Barnes (2005, 112), 'cyclonics' indicates the 'whirlwind ferocity of capitalist accumulation at resource sites, and the equally ferocious decline that follows.' Such instability renders settlement and economy on the periphery of the capitalist system inherently precarious, subject to the disruptive shocks of geographically distant technological changes, market cycles, and government policies. Barnes extends these insights further, arguing that different staples exhibit particular 'space-time biases' rooted in the geographical and historical processes through which they are discovered, produced, and incorporated into cycles of capitalist accumulation (Barnes 2005; Barnes et. al. 2001). As Jody Berland (1999) suggests, the production of space under the cyclonic conditions of staples development results not simply in

disorder, but rather the creation of a new spatial order, however temporarily, at these marginal sites.

The cyclone metaphor not only attempts to capture these economic fluctuations and their spatial consequences, but (from a mining perspective) also helps avoid the naturalization of economic booms and busts inherent in the notion of a 'resource cycle' (Clapp 1998) or Aschmann's (1970) classic theory of a mine's 'natural history.' Instead, it points to the importance of considering how 'politics and institutions thoroughly constitute as well as condition the resource cycle' (Reed and Prudham 2001, 13; Norcliffe 1999). In particular, cyclonics emphasizes the effects of the dynamic initial phase of commodity development, with its rapid influx of labour, technology, and communications (including transportation) into resource regions, and the equally disturbing periods of transformation and/or decline that accompany subsequent shifts in commodity production, demands or prices, institutional arrangements (such as government regulations) or, less frequently, outright resource exhaustion. As Innis (1946) argued, the disturbances characteristic of frontier regions have created challenges for governments, which struggled both to foster resource-based economies and to stabilize them in the face of their economic volatility. It is the contention of this paper that Innis' metaphor—less a theory of development than what Barnes (1996, Chapter 8) refers to as a 'local model' of historical-geographical patterns—may be extended beyond political economy to help explain the dramatic transformations of landscape, environment, and social relations on Canada's northern mining frontier.

At the same time, it is important to recognize the limits of this metaphor and to emphasize—as rural sociologists increasingly suggest we must—the 'historical specificity' in 'the *ways* in which the relationships between resource extraction and regional development have

changed over time' (Frickel and Freudenburg 1996, 448; Freudenburg 1992; Wilson 2004). Indeed, Barnes et. al. argue that 'Innis's model of the cyclone is devised to highlight the specificity of a particular kind of commodity production in a particular place' (2001, 2131); their study of Port Alberni, B.C., demonstrates how the specific institutional and market conditions of the forest industry shaped the historical trajectory and economic fate of the town. Thus, the instability characteristic of settlements at the resource periphery reflects cyclonic processes related to individual staples: 'Single industry towns ... are borderline communities connected to the spatial and temporal relations produced by the staples on which they depend' (Barnes 2005, 110). Similarly, as students of the Innis-inspired 'new political economy' school have argued, mineral industries in Canada and elsewhere are marked by geographical patterns of uneven development under which resource peripheries remain in a state of social and economic underdevelopment while benefits flow to metropolitan regions (Drache 1995; Clement 1997; Watkins et. al. 2006). These patterns produce uncertainty and unpredictability in the 'extractive spaces' (Bridge 2001; Brechin 1999) of mining regions, which often remain dependent upon the exploitation of a single resource for export markets: 'In addition, cyclical patterns (boom and bust cycles) in the economy… affect the stability of levels of production and levels of employment, not only in single enterprise towns but in the whole of the resource extractive sector' (Bradbury 1979, 149; Bradbury 1984a). Notwithstanding recent calls to recognize the diversity amongst resource-dependent communities in Canada (Randall and Ironside 1996), it is clear that mining communities, in particular, struggle with the destabilizing effects of commodity market fluctuations and resource exhaustion.

Yet political economy alone does not entirely constitute the stormy geography of mining regions. Acknowledging the 'nature' of staples (as Innis so famously does in the first chapters of

his work on the cod fisheries and the fur trade) points to a second corollary of cyclonics, only hinted at in Barnes' work: that staples are not only commodities embedded within the geographies of technology, markets, and institutions, but are also *natural* resources, each with its own biophysical, ecological or geological limits, processes, and characteristics (Bakker and Bridge 2006; Wilson 2004). Thus resource development, as viewed from the extractive margin (as Barnes et. al. [2001] suggest we see it), is at once shaped by and reshapes local landscapes and environments. This perspective brings into focus a set of historical and geographical questions that typically preoccupy environmental historians. Even without explicit references to Innis or staples, environmental historians illustrate how the reliance of communities on a renewable resource such as forestry or a fugitive resource such as the fishery produces particular kinds of historical-geographical patterns (perhaps, 'space-time biases') that must be disaggregated from the broad general category of staples (or commodities) in order to understand the history and fates of these communities. For mining, the classic example is William Cronon's account of Kennecott, Alaska, which traces the 'paths out of town' that connected this remote mining region to networks of capital and technology, resulting in the transformation of its natural (and human) environment. At Kennecott, 'a particular vein of a particular mineral created an opportunity, and a particular culture with particular social and technical needs then seized that opportunity for its own purposes' (Cronon 1992, 49). Recent works by Thomas Andrews (2008) and Kathleen Brosnan (2002) on Colorado, Kathryn Morse (2003) on the Klondike, and Andrew Isenberg (2005) on California similarly highlight how mineral production brings into existence a variety of communities whose dependence on the products of the earth placed them in a uniquely intimate, if at times obscured, relationship with the natural world.

This paper draws together these insights into resource regions to explore the landscape changes engendered by uranium production at Uranium City, and suggests a series of important avenues for their interpretation under the umbrella of cyclonic development. As a high-value and strategic mineral, uranium provided a powerful motive force for what Liza Piper (2009) refers to as the 'industrial assimilation' of Canada's sub-Arctic environment by capital and the state in the decades around the Second World War. Through new technologies, markets, and institutional arrangements, uranium was extracted, refined, and shipped south from what a generation earlier had been almost impossibly remote northern locations. The new settlement of Uranium City became a focal point for these far-flung arrangements after the war. Here, the 'space-time weave' achieved by uranium development stitched together: distant markets; extensive transportation networks and processing facilities; the extensive and voracious resource demands of an industrial mining operation; regional, national, and international political economies; and regional populations, ecologies, and landscapes. Through the 1950s, cyclonic processes rapidly brought together these many actors and conditions, and then almost as rapidly rent them asunder. It is this early period of intense resource development and the equally sudden destabilization of the arrangements surrounding it that form the main period of study in this analysis, though preceding and subsequent periods are also considered.

Uranium City's troubled career as a staples-producing community not only reflects the geographical political economy of uranium, but also reveals the historical-geographical impetus of a Canadian colonial modernity. For many contemporaries, uranium represented Canada's entry and participation in the atomic age, the ultra-modern world of industrialism and mass consumption. The uranium industry was tightly regulated and dominated by a federal Crown corporation, Eldorado Mining and Refining, and both the federal and provincial state attempted

to buffer the disorderly effects of resource development through rational planning and the close management of people and space at Uranium City. The leadership role of the state in this enterprise exemplified (for some) the newfound confidence of Canadians in government as a provider or guarantor of services. This modernizing vision coincided with the nationwide desire to open up the north to industry and Euro-Canadian settlement. Barnes et. al. (2001, 2134) highlight the colonial context of staples production, noting that the peripheral location of resource towns underscores their role as 'a crystallization point for both a set of external forces of colonization and a set of internal forces of internal institutional formation.' As a catalyst for northern colonization, uranium development in Canada provided an expansive state with an opportunity to realize its goals of the assimilation of northern resources and Aboriginal communities into the broader political economy. Yet this enterprise, and the material effects that accompanied it, remained rooted in the notions of land and nature that regarded northern territories as empty and/or unused, and built upon unequal legal geographies of colonialism that eroded Native sovereignty and access to resources (Borrows 1997; Willems-Braun 1997; Sluyter 2002; Desbiens 2004).

Along with the dynamics of the staples economy, these cultural and ideological dimensions played a significant role in constituting and reworking the physical and social landscapes of Uranium City and district. Town planning and development regulation at Uranium City reflected contemporary efforts by the state to stabilize resource communities and their largely imported workforces by creating settlements that mirrored southern Canadian values and landscapes. These landscapes, and the economies they supported, actively marginalized Aboriginal people, who remained physically and occupationally segregated in the new industrial economy, yet suffered the consequences of the environmental changes and economic

dependencies associated with cyclonic development. Ultimately, government efforts to implant an outpost of industrial modernity in the Athabasca Region failed to forestall the inevitable winds of change, which left in their wake destructive legacies of social dislocation and environmental damage.

Sowing the wind: The uranium industry and Canada's north

The rapid development and expansion of the uranium industry in Canada in the decades around the Second World War reflected both the advent of uranium's use in atomic weapons as well as renewed efforts to tap the mineral wealth of the nation's vast northern territories. As Shelagh Grant (1989) has shown, Canadian wartime planners and bureaucrats promoted the idea of a 'New North': a barren environment transformed through modern technologies into a productive, modern landscape. Minerals were regarded by many contemporaries as a catalyst for Euro-Canadian settlement and national expansion (Laytha 1939; Townsley 1935; McAllister 2007). These nationalist desires intersected with the international geographies of the atomic age to draw the remote sub-Arctic region of Canada (and its inhabitants) into dramatically new and often disruptive relations with industrial society, state power, and global geopolitics. The founding of Uranium City at the outset of the Cold War placed this distant corner of Northern Saskatchewan at the forefront of Canadian participation in the nuclear arms race. Its status as an ultra-modern industrial settlement also marked it as the harbinger of a new era of economic and social progress in Canada's north.

Canadian entanglement in these nuclear geographies dates from the discovery and development of radium and uranium in the Northwest Territories beginning in the 1930s. On prospecting trips to Great Bear Lake in 1929 and 1930, Ontario-based 'mine-maker' Gilbert

Labine located significant deposits of silver and pitchblende, a radium- and uranium-bearing

mineral. Labine's company, Eldorado Gold Mines Ltd., subsequently established a mine and

concentrating mill for the production (initially) of high-value radium (Garbutt 1964; Bothwell

1984). The company established a townsite, Port Radium, at the mine, to which mine workers

and supplies were flown from southern Canada. Along with the discovery of oil at Norman Wells

in 1920 (which supplied the Port Radium mine) and the gold strike at Yellowknife on Great

Slave Lake in 1935, industrial resource extraction brought waves of prospectors and miners to

the north, and stimulated the expansion of transportation and communications connections

linking the region with southern capital and state interests (Coates 1985; Zaslow 1988; Rea

1968). Many southern Canadians welcomed the decisive transformation of this 'vast, empty,

cold, country' (Kupsch 1985) away from the fur trade and towards industrial activities,

especially mining.

The Second World War heralded the dramatic extension of southern technology,

industry, and state and military activities across the region. A central (though initially secret)

aspect of this advance was the reopening of the mine at Port Radium (closed shortly after the

beginning of the war) in 1942 to produce uranium ores for the Allied atomic bomb project. As

the awesome powers unleashed by nuclear fission became understood, the need to control the

global uranium supply became evident. A key source of uranium, the Port Radium mine's

production became the focus of intense diplomatic wrangling between Britain, Canada and the

United States (Bothwell 1984). As the American atomic bomb project forged ahead, Canadian

production became a critical addition to that country's uranium stockpile. In 1944, the federal

government nationalized Eldorado[i] to ensure the smooth production and delivery of uranium

oxide (U_3O_8) concentrates for Allied nuclear weapons laboratories. Although it is unclear

whether Canadian-sourced material was used in the atomic weapons dropped on Japan in August 1945, Canada's co-operation in uranium supply, processing, and research for the Manhattan Project was a key and widely celebrated contribution (Eggleston 1965).

The subsequent rise of the uranium industry in Northern Saskatchewan was nothing if not 'cyclonic.' In 1944, prospectors working for Eldorado (which maintained exclusive control over exploration, mining, milling and export of uranium) staked claims to pitchblende deposits on the north shore of Lake Athabasca near Fish Hook Bay (Kupsch 1978). Stimulated by the enormous demand for uranium of the United States Atomic Energy Commission (USAEC), exploration and staking continued after the war, culminating in a huge prospecting rush in the late 1940s after the relaxation of government controls over the exploration and mining phases of uranium production. Armed with Geiger counters, aided by government subsidies, and lured by promises of a guaranteed price for uranium, prospectors flooded the Athabasca region; between 1948 and 1953, some 20,000 claims were staked across Northern Saskatchewan (Brazier 1977, 6), and by 1954, an estimated 150 mining companies were active in the Beaverlodge District (Saskatchewan, Department of Natural Resources, No date b). In 1951, Eldorado announced it would construct a mill to process uranium ore from the area, stimulating a further rush into the region. Another large uranium strike 20 miles to the southwest at Crackingstone Point led to the construction of mines and mills at Gunnar (1955) and Lorado (1957), which seemed to cement the future of the region as a major mining district (Figure 1). [INSERT FIGURE 1 ABOUT HERE]

The region's prosperity relied upon the unique market for refined uranium oxide, driven by American military demands. As Eldorado President W.J. Bennett warned the annual conference of prospectors and developers in 1951, uranium's future remained closely tied to this

buyer, since Canadian domestic demand was minimal, nor were there prospects of a market for industrial power in the immediate future (Bennett 1951a). As Bothwell (1984, Chapter 7) recounts, the achievement of a 'just price' and guaranteed contracts for uranium was intended to promote stability in the industry by removing the normal price fluctuations that beset other mineral developments. Prices negotiated between Canadian and USAEC officials in the late 1940s (and extended in the 1950s) included a formula to account for exploration, transportation, and refining costs, all of which were considerable, and aimed to stimulate further exploration and development (Bothwell 1984, 324) . Uranium oxide precipitate, a yellow powder referred to as 'yellowcake,' was shipped through an extensive air, land, and water transportation network from Eldorado's mills (and later others) to the Eldorado-run refinery at Port Hope, Ont., for final processing before delivery to the USAEC (Bothwell 1984, Chapter 10). Thus, the uranium economy relied on a geographically dispersed yet fragile network of state actors and institutional arrangements, private and public capital, transportation networks, and physical infrastructure aimed to ensure the material flow of uranium from its hinterland geological matrix in Northern Saskatchewan to its ultimate destination in U.S. nuclear weapons stockpiles.

Despite these seemingly precarious arrangements, considerable optimism attended the uranium boom in Saskatchewan, as it had in the Northwest Territories. Echoing Canadian nationalist sentiments around mineral development in the NWT, the province's new Co-operative Commonwealth Federation (CCF) government welcomed uranium developments as the cornerstone of its own policy to create a 'New North' in the extensive sub-Arctic region north of the fertile belt and parklands (Saskatchewan 1948). As Premier Tommy Douglas declared in 1948, 'The next four or five years will see tremendous development in northern Saskatchewan. … Standing as we do on the threshold of the atomic age, uranium is of

tremendous importance to our industrial development' (cited in Barron 1997, 142-43).

Apparently willing to overlook uranium's final destination in American nuclear weapons, the

socialist CCF embraced the largely state-controlled uranium industry as part of its own program

to 'diversify the provincial economy, tap northern resource riches to help fund the coming prairie

utopia, and bring justice to northern residents' (Quiring 2004, 13). Nevertheless, the CCF also

viewed the mining industry with suspicion, and sought a larger role for government in fostering

and regulating industrial developments. 'No longer are [the people of Saskatchewan] prepared to

allow speculators and industrialists to harmfully, and for their own selfish pecuniary interests, to

[sic] exploit the renewable and non-renewable resource wealth of Saskatchewan,' wrote one

bureaucrat in a report on uranium development (Berezowsky 1951). Rather, the Beaverlodge

discoveries would provide the springboard to industrial modernity in Saskatchewan through the

co-ordinated exploitation of northern natural riches.

Cyclonic environments

As with all mines, uranium development in the Beaverlodge District entailed a variety of

well-known physical landscape transformations, from the puncture of the earth's surface via

shafts and adits, to large-scale surface stripping and excavation of open pits (at Gunnar). Less

well-appreciated is mining's transformation of underground environments and the intricate

technical knowledge it involved, well-described by Liza Piper. The delineation and working of

underground ore deposits, she argues, brought prospectors, geologists, and miners into intimate

relations with underground landscapes and geological processes, and were critical in determining

the viability of mining operations (Piper 2007). Both mining and milling also produced extensive

wastes, in the form of either stripped 'overburden' or surface soils, non-mineral bearing 'waste'

rock, and the remainder after ore processing, known as tailings, all of which required disposal and/or containment (Francaviglia 1991; Goin and Raymond 2004). Due to the low average grade of the ore, uranium production generated millions of tons of tailings; at Eldorado's mines, large amounts of this material was used as backfill underground, but much was dumped at the surface. During the early period of their operation, Beaverlodge area mines were permitted to use small local lakes as tailings impoundments, although these frequently overflowed and carried tailings (along with unknown amounts of heavy metals, radioactive material, and process chemicals) into Beaverlodge Lake and (at the Gunnar operation) Lake Athabasca (Canada 1982; IEC Beak Consultants et. al. 1986). Before the 1970s, however, few pollution control regulations were placed on mines generally or on uranium operations specifically (Sims 1981, 88-89; Stenson 2006). Provincial officials vacillated on the issue of controlling water pollution; they monitored tailings impoundments and urged improvements on the companies, but appeared resigned to allowing the 'sacrifice' of local lakes for waste disposal (*Globe and Mail* 1964; MacDonald 1951; Shannon 1954; Sheridan 1960). Uranium production posed an additional challenge in that it generated significant health and environmental threats from radiological contamination (Sims 1981; Mogren 2002; Amundsen 2002; Kuletz 1998).

Northern mines were also nodal points for larger flows of energy and materials that could have profound impacts on distant landscapes and environments. Piper, for instance, traces the generation (via a hydroelectric dam) and mobilization (of diesel from Alberta) of energy supplies to feed the tremendous demands of the mine (2009, 248-250). Hydroelectric power for Eldorado's Beaverlodge operations was provided by the lease and expansion of the Wellington Lake dam, some 30 kilometres from Uranium City, originally built by Consolidated Mining and Smelting for its nearby Box gold mine (which closed in 1942). Flows of labour and materials

necessitated rapid planning and construction of transportation facilities at a series of sites across the region. These included a company airstrip at the Eldorado mill site on Beaverlodge Lake; a Saskatchewan Government Airways float plane base on Martin Lake near the site of Uranium City; and a port established by the Northern Transportation Company (NTCL, a wholly owned subsidiary of Eldorado) at Bushell on Black Bay on Lake Athabasca, which linked the region to the extensive NTCL water transportation network that spanned much of the Mackenzie Basin (Bothwell 1984, Chapter 10).

Another example of the distant environmental effects tied to the Uranium City mines was their voracious appetite for wood. Mine and townsite construction created a tremendous demand for lumber for ties, shaft timbers, and general construction. The mixed jackpine forests of the rugged Tazin Lake uplands of the Beaverlodge District provided a poor timber supply, so Eldorado turned to the old-growth white spruce forests of the Peace-Athabasca Delta region at the Alberta end of Lake Athabasca for its lumber needs. Although these forests were located within Wood Buffalo National Park, and therefore nominally protected from logging, federal Northern Administration and Lands officials responded enthusiastically for timber permit requests by EMR, even carrying out surveys to determine the amount of merchantable timber available. As parks historian Barry Potyondi notes, federal administrators regarded the supply of the Uranium City mines as only the beginning of park forest exploitation in service of anticipated northern industrial developments, especially mines and railways (Potyondi 1981, 139-140). In 1951, a small sawmill operated by a contractor was erected at Peace River, employing mostly Native labour from the Fort Chipewyan area (Potyondi 1981; McCormack 1984). By 1956, Eldorado had harvested well over 18 million board-feet (fbm) of sawn lumber and a further 400,000 linear feet of round timber from Timber Berth 253. In 1958, the company used its high-

level contacts in the federal Northern Affairs department to broker a no-bid contract for access to a further 30 million fbm of timber, although its actual harvest was curtailed by the burning down of its sawmill (for the second time) and reduced lumber demands by the early 1960s (Robertson 1958).

Although located far from the mines themselves, mining-induced lumber operations had profound impacts on the local environment in Wood Buffalo National Park. Thousands of hectares of old-growth white spruce were clear-cut, with few efforts at artificial regeneration. Poor forest practices resulted in the loss of snags, lack of watercourse buffers, excessive debris in streams, and loss of vertical and horizontal structure, all with detrimental effects on wildlife (Timoney 1996a, 1996b). On Timber Berth 253, Eldorado and its contractor came under fire from federal Northern Affairs officials for logging outside the berth, wasteful milling and logging practices, and bulldozing sawdust and wood waste directly onto the iced-over Peace River, to be carried away at spring break-up (LeCapelin 1956). Further, park officials' predictions of further development were correct: several other private operators received cutting rights and erected sawmills in the region, supplying both southern markets and mines in the Uranium City district (Potyondi 1981, Appendix A). Various private concerns subsequently promoted railways, mineral prospecting, and a townsite within the park, proposals welcomed by Northern Affairs officials (Potyondi 1981, 161). Though only a few of these activities ever materialized, beyond lumbering and accommodations for mill workers at Sweetgrass Landing, the development impetus frequently created conflict with official mandates to park landscapes.

Uranium mining in the Athabasca district spurred the industrial colonization of northern resources, both at primary extraction sites and beyond, through the expansion of transportation links and ancillary resource and energy demands. In this sense, uranium development mirrored

the 'cyclonic' character of nineteenth-century gold rushes as described by Innis, in its rapid

penetration and spatial reorganization of hinterland regions by capital, technology, and labour.

This process generated profound environmental consequences, but few paused to consider the

long-term (and far-flung) ecological impacts, unencumbered as the industry was by effective

conservation or environmental protection regulations (Sims 1981). A damning report by

provincial biologist F.M Atton chronicled the pollution resulting from poorly planned and

shoddily built tailings impoundments, and noted there was no reporting of the characteristics of

tailings, their volume, or where they were deposited (Atton 1958). But most provincial

authorities in Saskatchewan were mainly concerned with ensuring the capture of resource rents

and managing the administrative challenges of the mining boom. Mining's environmental

consequences and legacies, however, already evident during the early phases of mining, often

long outlived the initial developments themselves. Although the Eldorado Beaverlodge mine was

decommissioned upon closure in 1982, dozens of other mines, as well as the Gunnar and Lorado

mill sites, were simply abandoned without remediation (Canada 1982). The abandoned sites and

millions of tons of tailings produced in the Beaverlodge District, although not considered acutely

toxic to humans or the surrounding biota, are currently the subject of a $47.9 million joint

federal-provincial remediation effort launched in 2007 (Saskatchewan Research Council 2009).

This project also aims to stabilize or eliminate many of the physical hazards, such as mine shafts

and abandoned buildings, that still dot the landscape long after the end of mining.

Cyclonic communities

As in the United States, the remote locations of uranium mines in Cold War Canada

fostered the creation of 'yellowcake towns,' settlements devoted exclusively (or nearly so) to the

production of uranium. As Michael Amundsen notes, the towns dotting the uranium fields of the American west were often, but not always company-controlled. Whether open towns or company towns, these settlements remained 'Creatures of Uncle Sam,' tied to the peculiar market demands and regulatory structures of the U.S. government's national security interests (Amundsen 2002, Chapter 7). The Canadian post-war yellowcake towns of Uranium City and Elliot Lake, Ontario, were similarly enmeshed in uranium's market and regulatory nexus, but they differed from their American contemporaries in that the towns themselves were also shaped by substantial government involvement in planning, settlement, and administration. For CCF politicians and bureaucrats in Saskatchewan, planning at Uranium City aimed to ensure that the benefits of industry accrued to the province and its residents, and that resource extraction around Lake Athabasca demonstrate the principles of rational, orderly development.

In town planning, at least, the CCF was in tune with the sentiments of postwar Canada. As hinterland natural resource activities boomed, both governments and industry sought to create independent communities that would foster stable workforces by providing the social, cultural, and economic amenities demanded by modern families. The movement towards comprehensively planned towns was 'designed largely to remove companies from town control, to stimulate popular local government organization, and thus the provision of urban services, and to foster an atmosphere of permanence' (Porteous 1970, 318). Although resource-town planning dates to early in the twentieth century, communities on the staples frontier often exhibited chaotic development, strict company control, and social and economic volatility (Lucas 1971; Stelter and Artibise 1978; Bowles 1992). Efforts to counter these problems culminated in the nearly fifty comprehensive town planning exercises undertaken between 1945 and 1958 for resource communities across the country, most notably Kitimat, British Columbia, Schefferville,

Quebec, and Elliot Lake (Hodge 2001, 194; Robinson 1962). Planners struggled to resolve the tension between economic instability of resource towns and their projected role as catalysts for regional development. In Saskatchewan, planning represented an attempt by the state to moderate the cyclonic effects of the staples economy, particularly in its early phases. The contradictions and failures that beset this effort may be attributed to uranium's peculiar market and institutional arrangements, as well as the at-times contradictory goals and actions of the federal and provincial government agencies involved.

In many ways, a yellowcake town seemed to provide the ideal situation for enacting the stabilizing goals of town planning in northern Saskatchewan. All aspects of uranium development were strictly regulated by government agencies; the principal company operating in the region, Eldorado Mining and Refining, was itself a federal Crown corporation. Eldorado officials embraced the idea of a planned town, in part to avoid the burdens of administrating a company town for its employees. The company had successfully operated the mine community at Port Radium since the 1930s, but its officials hoped that the costs of housing miners in the Athabasca district could be shared amongst the several mining companies active in the region (Bothwell 1984, Chapter 8). In 1949, Eldorado moved its base of operations from Fish Hook Bay on Lake Athabasca to nearby Beaverlodge Lake, and by 1951 had entered negotiations with the province over the regulations and procedures for establishing a mining community. Eldorado directly linked its strategies of ore extraction and processing to the problem of employee settlement and retention. Discussing the need for adequate and attractive housing, company President William J. Bennett commented that, 'We have a fair tonnage that will stand almost any kind of operation. We have indication of good sized tonnages of low grade material and I think it is important we be efficient enough to mine this marginal ore. We cannot do it unless we can

develop a first class staff and labour force'(Bennett 1951b). While the company remained leery

of committing to a central townsite unless other mines were likely to develop, Bennett noted that,

'it is in our interest that [the town] be as close to the property as possible without actually being

on our doorstep,' and the company actively lobbied the province over the location of the new

town (Bennett 1951c).

Seeking models for the settlement, provincial officials studied similar planned

communities with an eye to establishing key principles for townsite regulation. An initial 1949

report outlined several of these principles, including: the lease of land to mines rather than

outright sale; the location of a townsite away from the mine site; the avoidance of water pollution

and damage to fish; the survey of large lots (50' frontage) to enable gardening to supplement

imported produce; and finally, the discouragement of squatting in a 'shanty town' on the

outskirts of the community (Bereskin 1949). After a review of planned settlements at Deep River

and Ajax, Ontario, Arvida, Quebec, Yellowknife, Northwest Territories, and Snow Lake,

Manitoba, Saskatchewan Department of Natural Resources officials adopted the Snow Lake

Townsite Agreement as the basis for negotiations with Eldorado (and other mining companies)

for the financing of the town's surveys, clearance, infrastructure and administration

(Saskatchewan, Department of Natural Resources, 1951b). The government and the company

both regarded quality housing as important to retaining competent staff, yet noted that miners

tended to be reluctant to assume the burden of housing finance due to the volatile nature of the

industry. Thus assistance was sought from the federal Central Mortgage and Housing

Corporation (CMHC) for orderly housing development through home financing schemes and

planning reviews (Crossley 1951).

Both the physical landscapes of the new town and their representation to southerners

exemplified the government's vision for the future of the region. Like many other 'instant'

resource communities, the town plan exhibited the characteristics of a 'suburb in the wilderness'

(Bowles 1992; McCann 1978). The residential site was separated from the Eldorado mine-mill

complex by about nine kilometers, in keeping with the trend towards the separation of homes and

industries (Saskatchewan, Department of Natural Resources 1951a). Wide, curvilinear streets

and boulevards, cul-de-sacs, and ample lot sizes reflected the influence of Garden City and 'new

town' ideas, which sought to mitigate the social and environmental effects of industrialism

through ample amenities and salubrious physical spaces (White 2004). As a notice issued by the

Deputy Minister of Natural Resources, C.A.L. Hogg, to workers landscaping the site in 1951

noted, 'It is common history in many Canadian mining regions for mineral development to result

in dispoiled [sic] countryside and shabby shack towns. We are planning to avoid such unsightly

developments here. ... We have an opportunity to foster the planning and building of a tidy and

model town which will be a fine place to live in and visit, with good homes, treed streets and

clean right of ways' (Hogg 1951b). By creating a suburban landscape in place of the traditional

mining boomtown, with its male-dominated company bunkhouses, this design also sought to

attract a more stable workforce by appealing to postwar Canadian values of home and

automobile ownership, family-centred life, and patterns of domestic consumption (Stelter and

Artibise 1978, 13-14; Halseth and Sullivan 2002, 23; Harris, R. 2004).

The government cemented the apparent modernity of the new town with its selection of a

name: Uranium City (Hogg 1951a).[ii] With its exotic associations with the frontier north and its

links to the ultra-modern atomic age, the 'city' became something of a media sensation in the

early 1950s. Reporters from *Life*, the *New York Times*, and southern Canadian media visited,

invariably recounting the romantic 'uranium rush' days and contrasting them with the emerging

modern community in the wilderness (*Saskatoon Star-Phoenix* 1953a, 1953b; *Globe and Mail*

1954; Anderson 1955; *Regina Leader-Post* 1957). Capturing these images of frontier modernity,

a *Regina Leader-Post* reporter described Uranium City as 'a community born in an atomic test

tube, being raised by men from many nations, and living forever in hope' (Moon 1953, 3).

Provincial Department of Natural Resource officials, writing in *The Canadian Geographer*,

contended that, through community and resource planning, 'an almost deserted land is becoming

a thriving industrial area' (McCutcheon and Young 1954, 62). True to script, United Nations

Food and Agriculture Organization bureaucrat Richie Calder likened arriving in Uranium City in

the mid-1950s to 'forsaking the "Old" North for the "New" North and stepping out of the

romantic past into the scientific future, into the Atomic Age' (Calder 1957, 66). Calder pointedly

noted the almost banal orderliness of the town, contrasting it with the hardscrabble boomtowns

of past mining rushes.

In spite of these optimistic assessments, even as the province began the surveying and

laying out the town the region's development had begun to spiral out of control. The renewed

staking rush following the Eldorado mill announcement in 1951 had, by early the following year,

overwhelmed the government's limited planning and management capabilities. Over the winter

of 1951-52, enterprising *cheechakos* hauled buildings across the ice of Lake Athabasca from the

nearby abandoned gold mining town of Goldfields, parking them along the rough cut of Uranium

Road at the new townsite (Phillips 1952; McIntyre 1993). Shacks and tent-buildings sprang up;

one mining company commenced a drilling operation on a claim in the middle of the surveyed

but uncleared site. Although the physical development of the town had only just begun, by spring

the government was forced to begin the disposition of town lots for commercial and residential

developments in order, according to one Saskatchewan official, 'to avoid complete chaos'

(Shannon 1952). Prospectors and businesses also began to locate at Bushell, the transportation

port established nearby on Lake Athabasca, much to the chagrin of both the government and

Eldorado. Despite the government's best intentions, Uranium City quickly emerged as a town of

windswept, grubby streets lined with poorly built shacks: 'A few substantial houses have been

erected or brought in from elsewhere, but as in the business district, most people seem to prefer

to build as cheaply as possible' (Saskatchewan, Department of Natural Resources 1954, 1952a)

Local residents alternately criticized the province and Eldorado for the poor roads and slow pace

of development (Brown 1953; *The Uranium Times* 1954).

These problems reflected, in part, the province's dispute with Eldorado over the financing

of townsite preparation. As the company's official historian, Robert Bothwell notes, much of the

blame for the dispute falls to the province (Bothwell 1984, 295-302). Although committed to

avoiding the creation of a 'company town,' the province nevertheless insisted on substantial

contributions from Eldorado towards infrastructure and construction at Uranium City. The

company supported the creation of a central townsite, but balked at assuming the nearly

$700,000 cost estimated for surveys, road clearance, infrastructure, and a hospital that would

benefit not only its employees but also competitors (Bennett 1952; Brockelbank 1953). As the

dispute dragged on into 1953, settlement planning at Uranium City struggled to keep up with the

influx of workers and prospectors. In that year, the province created a new administrative unit,

the Local Development Area, which allowed the government to regulate regional development

and land disposition while providing for joint government-industry financing of municipal and

regional services until the establishment of a regular municipality. The townsite at Uranium City

began to take shape, more or less as planned (Figure 2), and the province forged ahead with

further rounds of municipal planning studies in 1955 and 1956. The first, by an advisory

committee to the Beaverlodge Local Development Area, forecast further profitable uranium

development, predicting that Uranium City could become the largest city in Canada north of 55°

'and at the centre of the most intensively developed industrial area in northern Canada'

(Saskatchewan, Department of Natural Resources 1955). A comprehensive town planning report

published a year later acknowledged some of the early problems, but offered a similarly positive

outlook. The authors made detailed recommendations for education, streets, infrastructure,

recreation, social administration, industry and transportation, commercial establishments, and

public administration (Izumi and Arnott 1956). [INSERT FIGURE 2 ABOUT HERE]

Yet government regulations and the creation of a central townsite did not prevent the

establishment of dispersed settlements at various mine sites, including Beaverlodge. At a

separate residential area near its mine-mill complex, Eldorado constructed bunkhouses for single

men as well as special housing for technical and managerial staff, which required 'the very best

living conditions' (Gilchrist 1953; Crossley 1950) (Figure 3). For most of the 1950s, nearly 80

per cent of Eldorado's employees lived at 'Eldorado townsite' (Parsons and Barsi 2001),

reflecting the high annual labour turnover characteristic of remote mining enterprises. The

company only launched its housing construction and finance scheme in mid-1954, offering no-

interest, no down-payment loans to employees wishing to locate at Uranium City. Some smaller

mines in the region, such as Rix-Athabasca, also located employees at bunkhouses near mine

sites. At the Gunnar Mine, located 20 miles to the south and unconnected by a year-round road,

the province was forced to relent and allow for a company townsite, including a school and

community centre. Still, in allowing the Gunnar development, the province sought to protect

Uranium City's status as the regional hub for government and retail services, and workers

(Davidson 1955; Brown 1955).

[INSERT FIGURE 3 ABOUT HERE]

Nor did planning prevent fringe settlements and social problems from emerging at

Uranium City and nearby Bushell. Squatting and tent-camping by prospectors and 'vagrants' was

difficult to contain, given the difficult nature of northern travel. The province issued anti-

squatting regulations aimed at confining development to the townsite itself, where housing and

people could be regulated, designating a 'peripheral reserved area' of 1.5 miles around the

surveyed areas of Bushell and Uranium City, and ¼ mile on either side of Uranium Road, within

which any structures had to receive government approval.[iii] Of particular concern were the large

numbers of Cree, Dene and Métis people attracted to the new settlement by the prospects of

seasonal work. Aboriginal people found employment as guides, camp workers, and brush cutters

during the busy prospecting season, and tended to occupy summer camps at the fringes of the

town. In 1953, for instance, so many were attracted to the Uranium City region from Fort

Chipewyan in Alberta that Indian Agent Jack Stewart travelled to Saskatchewan to pay treaty to

Fort Chipewyan Indians (McCormack 1984, 411).

The province had anticipated the presence of Aboriginal migrants as early as 1951

(Young 1951),[iv] but appeared unsure how to deal with them, in part because the CCF's northern

development plans coincided with the government's ambition to improve conditions for northern

Aboriginal people. In many northern communities, the declining fur trade economy and

increased competition from non-Native trappers in the 1930s had strained the already marginal

economies of many Native and Métis groups (Quiring 2004, Heber 2005; Bone et. al. 1973).

Although the region experienced sporadic commercial activities before the 1950s, such as

commercial fishing on Lake Athabasca and the mine at Goldfields, Aboriginal people remained largely sidelined in such ventures. As part of its 'New North' initiative, CCF policies sought the assimilation of Aboriginal communities into the new industrial order, while moderating the unsettling social and cultural effects of rapid modernization. These interventionist policies included inducements to nucleated settlement, improved health and welfare services, and training in industrial labour skills and mores. Premier Douglas spoke of 'walking in the moccasins' of Native and Métis people, but as Laurie Barron notes, 'the CCF perceived the North as a remote hinterland in need of effective colonization; hence, the solutions it imposed there were little more than reflections of the values and agenda of southern society' (Barron 1997, 144; Dobbin 1985).

The substantial presence of Aboriginal 'squatters' at Uranium City seemed to defy the goals of an orderly, modern community, but in fact epitomized their continued marginalization. On the one hand, provincial officials hoped that 'if a commercial and industrial town develops, this indigenous group will be absorbed, and in part at least, assimilated, and into a better environment than would otherwise be the case'(Saskatchewan, Department of Natural Resources, No date a). Yet the government appeared reluctant to absorb Aboriginal settlers attracted to the community, despite nominally allowing 'equal access' to leaseholding in the town. While recognizing the employment the town offered Métis people, provincial officials in 1952 rejected the creation of 'special reserves,' suggesting that 'we should simply form a policy of requiring them to move from areas where they would be particularly in the way, but allow them to camp in some other areas' (Saskatchewan, Department of Natural Resources 1952a). As the problem of peripheral settlements continued to grow, a 1954 report proposed either helping Aboriginal families to purchase lots in town, or banishing the summer camps further from the town (Saskatchewan, Department of Natural Resources 1954). Schoolteacher Ben McIntyre

recalled that a few families, such as the Mercredis, did move into the town (McIntyre 1993, Chapter 16). But by the mid-1950s, an estimated 150 Treaty Indians and 200-300 Métis lived in the vicinity of the town, most occupying fringe camps such as 'SGA Hill,' a site near the town's float plane base that became notorious for declining public health and sanitary conditions as the camp took on an air of permanence (Brown 1954; McIntyre 1993).[v] The major community planning study of Uranium City and district in 1956 again highlighted this problem, but its proposed solutions reinforced the social segregation of the community: it suggested the rigorous enforcement of the development boundary around the town, or the establishment of a permanent 'Indian Community' nearby (Izumi and Arnott 1956, 22). Such discrimination extended to other aspects of community life. For instance, Eldorado operated a school at the Beaverlodge townsite for its professional employees, in part because of the reluctance of these employees to send their children to school with Native and Métis children (Brown 1953).[vi] Similar complaints arose at Uranium City, although the school there remained integrated.

The cyclonic nature of mineral development, with its immense and immediate requirements for capital and skilled labour, also undermined government efforts to promote Aboriginal participation in the new industrial economy. As Barron (1997, 155) notes, 'The development of sub-surface resources, particularly uranium, had the power to outstrip all other forms of wealth in the North, but it was almost exclusively a white man's domain.' In 1949, the provincial government created a special Native Prospectors' Assistance Plan, run by Métis activist and Department of Natural Resources employee Malcolm Norris, that included training in mineral identification, the use of Geiger counters, and mining regulations. This modest program succeeded in training a few prospectors, but most Aboriginal workers remained confined to seasonal jobs such as brush-cutting, road clearance, packing, and hunting for non-

Aboriginal prospectors (Richards 1986, 160-162). Lacking the requisite education and training, Native and Métis people were virtually excluded from underground work. In 1962, Eldorado counted only 8 Treaty Indians or Métis on a payroll of 564 (Buckley et. al. 1963, 19). Eldorado did employ Aboriginal people at its mill site on a casual basis for cleanup and other duties, referring to them as 'temporary Indian labour' (Eldorado Mining and Refining 1965; Dufort 1967).

While partly attributable to a lack of education, skills, or inclination, the selective inclusion of Aboriginal labour in the mining sector also reflected widespread assumptions about 'Native character.' One 1951 provincial report on northern conditions described 'the Native' as 'confused, degraded, sometimes bitter and dependent like a child in a man's world. One wonders seriously at times if he can ever pick himself up by his own boot straps' (Davidson 1951). The government regarded Aboriginal peoples' 'pre-industrial way of life' as suiting them for such occupations as prospecting, but as undermining their ability to adapt to the time-discipline of shift work at mines and in other industries (Quiring 2004, 177). Nor were mining companies any more active in addressing the problem. Eldorado only launched a Native employment program after the problem of benefits to northerners and Aboriginal people became a focus of the Cluff Lake Board of Inquiry hearings into uranium industry expansion in the mid-1970s (Canada 1992; Goulet 1997; Parsons and Barsi 2001). In contrast to its mining operations, Eldorado's lumber contractors at Wood Buffalo National Park employed considerable numbers of Aboriginal workers from the Fort Chipewyan area during the winter logging seasons. But as Patricia McCormack notes, these employments induced Native people away from traditional economic activities and towards wage labour, creating a precarious new dependency on external forces of commodity markets and labour demands (McCormack 1984, 461-467).

These problems mirrored the larger contradictions of southern Canadian policies towards northern development and Aboriginal people in this period. As noted, the Douglas CCF government deplored the economic hardship and social dislocation suffered by Aboriginal communities, and hoped to remedy these problems in part through industrial development. In practice, however, government policies reinforced the emergent racial geography of the provincial north (Quiring 2004, 58-63, chapter 8). Aboriginal people, although encouraged to settle in nucleated communities, were effectively excluded from living in new industrial settlements such as Uranium City and Creighton, which came to resemble colonies of southern society implanted into the north (Barron 1997, Chapter 5). In a stinging 1961 report for the provincial Centre for Community Studies, British anthropologist P.M. Worsely highlighted the residential segregation of northern Saskatchewan, where the extraction of mineral riches provided little benefit to northern residents. Worsley compared the region's social and economic inequities to the 'tropical slums' of the colonial South Pacific and suggested that, in complex ways, the unequal ethnic geography of the north was tied to the dependence of the region on a staple economy. He portrayed the north as a dependent region in which a colonial elite of whites oversaw the extraction and export of raw materials, with little long-term benefit or opportunity for the indigenous population (Worsley et. al. 1961, Chap. 1). Subsequent reports on Northern Saskatchewan underscored the barriers of class and ethnicity that posed severe limits on class mobility and adjustment to new economic opportunities (Buckley et. al. 1963; Bone et. al. 1973).

As a force for northern colonization, then, cyclonic development could have especially disruptive effects for indigenous cultures and economies. Rapid, disruptive industrial advances affected Native communities across Canada's north: as a 1963 federal Indian Affairs Branch report concluded, 'while progress has been achieved in some areas… much remains to be done

before Indians may be said to share satisfactorily in the life of the general community. This is most serious in areas where hunting and trapping are being disrupted by mining and other developments which do not provide alternate means of livelihood' (Canada 1963, 5; Lotz 1962). Historic uranium development in Aboriginal territories has been linked with a wide variety of negative social and environmental consequences, including elevated addiction rates, out-migration, negative external cultural influences, access roads disrupting hunting and trapping areas, and the erosion of traditional knowledge and practices amongst the young (Heber 2005, 252-253). In spite of hopeful training initiatives, Aboriginal people initially remained at the physical and occupational margins of this new industrial economy—as they did elsewhere in Canada during this period. Although combined with contact-traditional subsistence and trapping activities, wage labour served to orient Aboriginal people towards new settlements, yet they tended to remain 'semi-settled surplus labour living off the land [that] served the needs of industrial capital' (Tough 1996, 284; Morantz 2002, 200). Similarly, the simultaneous inclusion and exclusion of Aboriginal people at Uranium City illustrates the complexity of Aboriginal engagement with northern industrial settlement and economies, but also its fundamental inequality.

Reaping the whirlwind

'Anyone who has seen, as I have, buildings being hauled miles to be used in a new town—buildings from the town of Goldfields on Lake Athabasca, founded in the thirties but abandoned and deserted in the early fifties—cannot forget the sensitivity to external factors that will govern the development of the Northwest,

just as long as mineral exploration has to be the basis of the economy.' (Buck and

Henderson 1962, 115)

Segregated by race and (partly) by class, caught between the priorities of government and

industry, and struggling to live up to the heady promises of its promoters and planners, Uranium

City, by the end of the 1950s, merely awaited the next chapter of its instant-town story: the

turning of the cyclonic gyre that signaled the coming decline. The bust came with a certain

inevitability, but as with the rest of the early history of the Beaverlodge area, the events bore the

mark of the peculiar market forces and regulatory arrangements surrounding uranium, its

founding staple. The USAEC uranium procurement program, which formed the sole market for

this 'strategic mineral,' had proven almost too successful in stimulating exploration and

development in both Canada and the United States. By the 1950s, in addition to northern

Saskatchewan, booming uranium districts had emerged in Northern Ontario and the

Southwestern United States (Gray 1982). However, by 1958, the failure to develop peaceful

nuclear technologies, combined with the leveling off of the U.S. military stockpiling program

and new limits on nuclear testing, resulted in a slackening of demand for uranium, and the

USAEC moved to curtail domestic production and end imports after 1962 (Amundsen 2002).

The collapse of the major market for uranium sent Eldorado and federal trade officials

scrambling to negotiate contract terms in order to cushion the blow to the industry and the

communities that had grown up around it. Under a 'stretch-out' program, deliveries of existing

orders for yellowcake were extended for three years (to 1965), and the government permitted

companies to sell their production contracts, which allowed smaller companies to sell out and

ensured that some producers would survive the initial shock (Bothwell 1984, 422-427). The

longer-term goal was to maintain a viable uranium industry until the hoped-for arrival of a

civilian atomic energy program. The federal government resisted pressure from private uranium companies, mainly based in the Elliot Lake region, to restrict Eldorado's abilities to bid on the remaining uranium contracts, noting that the federal company would be left without contracts beyond 1962 and that 'this, in turn, would leave Uranium City derelict.' Notably, in federal Cabinet discussions, 'special efforts' to keep the Beaverlodge area afloat were justified by the massive public expenditures for establishing the town (Canada, Privy Council Office 1959, 7).

Indeed, the debates over the future of Uranium City reflected the strong sense on all sides of the distinctive role of the state in uranium developments. Reflecting on the political ramifications of the stretch-out policy, Cabinet documents noted that, 'The government was inescapably involved in the future of the uranium industry, and would be blamed, rightly or wrongly, for any misfortunes suffered by any and all producers' (Canada, Privy Council Office 1959, 8). Uranium City workers and residents, as well as the Saskatchewan government, were equally attuned to this circumstance. Appealing to the province for assistance for displaced workers, the Uranium City local of the International Union of Mine, Mill, and Smelter workers suggested the nationalization of the industry 'as a national asset to be owned and operated in the interests of Canada's economy and prosperity' (International Union of Mine, Mill and Smelter Workers, Western District, 1960). An ad-hoc citizens' committee from Uranium City contended that governments bore a special responsibility to help the community through the crisis:

> The further fact that the problems arise, not from activities normally engaged in
> by the citizens, but within the framework of a government induced and sponsored
> industry, and that it was in turn a government decision which has created the
> suddenly altered circumstances of the people involved ... places the government in

the position of definite responsibility to assist in every way possible. (Uranium

City Citizens' Committee 1960).

These appeals clearly influenced a Saskatchewan government brief prepared for a provincial

delegation to federal officials in 1960 (Globe and Mail 1960). In it, Premier Douglas argued,

'The uranium industry was established because of a national emergency. People, including not

only prospectors, developers, promoters and financiers but also miners and other workers were

encouraged to run the risk of attaching themselves to this industry to meet that emergency'

(Douglas 1960). While applauding the stretch-out program, the brief suggested compensation for

investment losses, financial assistance for relocation, and measures for alleviating the financial

and tax burden on remaining residents.

In spite of the negotiation of new contracts with Britain and the announcement of

Canadian government stockpiling, the impending end of USAEC deliveries resulted in the severe

contraction of the Canadian industry. After 1962, only four companies survived: two each at

Elliot Lake and Beaverlodge (where Eldorado and Gunnar Mines continued). By 1965, several

smaller mines in Saskatchewan, as well as the Lorado mill and the Gunnar mine-mill complex,

had all closed, leaving only Eldorado standing. In this initial decline at Uranium City, the

cyclonic metaphor finds only partial purchase: the result of these market shifts, however sudden,

was less a total collapse than a kind of suspended animation (Scott 1959). The census population

of Uranium City and District fell to 2,147 in 1966 from a high of 3,636 in 1956 (although

estimated population levels at the height of the boom ran to 5,500) (Statistics Canada 1971, 2-

102). By 1965, Eldorado's payroll had shrunk by over 40 per cent from its high of 935 in 1958,

but mine production and ore development continued at a steady if reduced rate in anticipation of

future requirements. Although the company continued to experience very high annual labour

turnover, annual reports noted that increasing numbers of employees were living in company-financed housing at Uranium City, reflecting the growing numbers of married personnel (Eldorado Mining and Refining 1965). Newspaper reports catalogued the business failures and incipient dereliction of parts of the town in the wake of the bust and the departure of half the town's residents. Still, many remained confident of a recovery once market prospects for uranium—driven by the eternal promise of atomic energy—improved (Gray 1959, 1960; Denhoff 1961; Whelly 1961; Sackmann 1964).

The uranium market did recover, albeit haltingly, in the late 1960s and early 1970s (Cresswell 1972). By the late 1970s uranium production in Saskatchewan once again matched the highs reached in the late 1950s, jolted into recovery by new ore discoveries and improved international markets due to the energy crisis and the lifting of the U.S. ban on uranium imports. At Uranium City, however, rejuvenation was short-lived. Citing declining ore grades, rising production costs, and sagging world prices, in December 1981, with devastating suddenness Eldorado announced the permanent closure of its Beaverlodge operations, throwing 850 employees out of work (Eldorado Nuclear Limited 1981; McIntyre (1993), chapter 55). Although workers received severance and relocation packages, the virtual collapse of the community provoked bitterness in local residents (*Globe and Mail* 1982). As with its birth, Uranium City's swift death stoked the interest of the southern media, which has travelled north from time to time since then to chronicle the gradual abandonment of the community (whose population now numbers in the dozens) (Cleroux 1981, 1982; Bunner 1985; Laird 2002). Replaced by fly-in, fly-out mining operations and company bunkhouses, Uranium City has appeared to many to be Canada's 'last boom town,' a relic of an earlier era of short-lived optimism and misguided faith in state planning and resource development (McInytre 1993; Parsons and Barsi 2001).

Of cyclones and mines

As Gavin Bridge (2004, 241) argues, 'With its capacity for generating both tremendous wealth and intense environmental transformation, mining is a potent metaphor for the energies and contradictions of development.' Shifts in the 'mining imaginary'—society's images of mining as either a positive or destructive force—reflect broader cultural and economic expectations and anxieties that are projected onto the industry. Harold Innis himself, writing in the 1930s, touted mining as the forerunner 'a highly-integrated advanced type of industrial community' (Innis 1936, 403). As Matthew Evenden points out, Innis's northern vision regarded 'mineral development [as] one of the most important staple industries of the twentieth century. In its wake, the Canadian economy would reorient itself along a northern axis; railway links to Hudson Bay would rebalance the transportation economy of the nation' (Evenden 1999, 178; Innis 1930). Yet from the contemporary perspective of concerns over uneven geographical development, resource dependency, environmental impacts, and social justice, the place of mining in the Canadian political economy seems problematic at best (McAllister 2007; Keeling and Sandlos 2009). Recent gyrations of international commodities markets, which have led to record production values and exploration and development investments (Mining Association of Canada 2008), then subsequently to layoffs and mine closures, seem to underscore the continued fragility of the mining economy.

Historical mineral development has produced distinctive landscapes in Canada's hinterland regions, marked by dramatic, often destructive changes to environment and human settlements only partly accounted for in sociological or economic analyses. Following Barnes and Innis, I suggest that the landscapes of Uranium City resulted from a process of dis-ordering

and re-ordering of society, space, and nature that may be usefully conceptualized through the metaphor of cyclonics. The historical geography of Uranium City captures cyclonic development's rapidity and intensity, and also the destructiveness of the shifting winds of economic fortune. The cyclone model may also be used to link these economic and social dynamics to both the development discourses and material processes involved in the production of landscape, factors rarely 'thought together' in examinations of staples-dependent regions.

By grafting environmental perspectives onto the cyclone model, we can better understand the ecological consequences engendered by rapid resource development. Uranium production not only transformed and degraded local environments, but also drew in other spaces and ecologies through its demands for resources, such as wood and energy. At the local scale, although the Eldorado mine was decommissioned and remediated upon closure in 1982, tailings piles, the Gunnar open pit, the Lorado mill site and dozens of other satellite mines in the Beaverlodge region pose physical and chemical hazards only now undergoing remediation (Saskatchewan Research Council 2009). Further afield, at Wood Buffalo National Park, landscapes were transformed through their integration with Uranium City: forests cut, lumber sawn and shipped, riparian ecologies disrupted, and new social and economic arrangements generated. These examples illustrate how, in analysing the historical geography of Canada's resource hinterland, it is important to consider their material effects, not only on communities and economies, but on ecologies and landscapes both proximate and distant.

This attention to the materiality of natural resources also reinforces the necessity of disaggregating the notion of 'staples' by acknowledging the distinctive properties of and markets for individual commodities. As the first new post-war supplier of its strategic product, the Beaverlodge District occupied an important position within the nuclear geographies of Cold War

Canada. Uranium production, processing, and export entailed direct federal involvement through

Eldorado, the federal Crown corporation whose activities were closely monitored by its minister,

C.D. Howe. As part of the Eldorado empire, Uranium City shared with its predecessor, Port

Radium, many institutional arrangements, transportation links, corporate structures, and even

personnel (Bothwell 1984). Uranium City's planned development and ultimate reliance on

uranium exports found echoes in Canada's other major uranium field, Elliot Lake. As in

Saskatchewan, Elliot Lake's career as a uranium producing region was marked by rapid growth,

instability, extensive environmental contamination, and problematic relations with neighbouring

First Nations (Gray 1982; Saarinen 1986; Mawhiney 1999; Stanley 2008). Uranium country's

dependence on its peculiar external market (based as it was on the initially insatiable, yet

ultimately fickle American demand) highlight how its economic crises are better understood as

'whiplash declines' (Bradbury 1984b) more akin to cyclonic development than to the 'normal'

peaks and troughs of a resource cycle. Although little explored in this paper, from an

environmental and health perspective, uranium's distinctive properties of radioactivity have also

posed unique challenges in characterizing, managing and, now, remediating the radiological

hazards produced by mining, beneficiation, and waste-disposal processes.

The intense state involvement in all aspects of uranium development highlights the

complex role of governments in both fostering yet attempting to mitigate instability and

dependency in resource regions. The landscape of Uranium City, as a planned community based

on resource extraction, embodied Canadian post-war faith in northern development and the

political economy of the 'staple state,' both federal and provincial (Clark-Jones 1987). The

state's role is critical, Neil Smith contends, in 'expedit[ing] and arbitrat[ing] the stable expansion

of capitalism,' whether through the suppression of pre-capitalist societies, ensuring access to

natural resources for capital, or managing labour (Smith 2008, 72). As Bradbury suggests in the

case of Quebec, one major function of the provincial state in resource development has been 'to

overcome some of the results of uneven development processes and to alleviate economic

fluctuations and crises at both regional and local levels' (Bradbury 1982, 49). All of these

functions of the state were evident at Uranium City. Postwar Saskatchewan's efforts to create a

'new north' through social and economic planning exemplified the desire to promote

industrialization and redress regional economic disparities; Uranium City was at the heart of

these initiatives. As elsewhere in northern Canada, the combination of hinterland staples

development and an interventionist state in this period produced landscapes reflecting southern

Canadian models of town planning. Yet, as the details of Uranium City's laboured genesis

illustrate, provincial efforts to promote 'rational' planning and to tame the unruly forces of

resource economies were fraught with political and practical difficulties, and tended to

reproduce, rather than mitigate, the problems of uneven development, instability, and inequality

associated with the staples economy.

Finally, the attempts to promote uranium mining as the basis for the industrial

modernization of both people and environment in Saskatchewan's north also exemplify the deep

connections of resource-extractive activities to neo-colonial ideologies. The planning of Uranium

City reflected what Gavin Bridge calls the 'modernist conceit—that preexisting socioecological

relations can be erased and landscape reordered the better to express contemporary

socioeconomic objectives' (Bridge 2001, 2165-66). Provincial officials re-imagined Northern

Saskatchewan as a blank territory for the inscription of Euro-Canadian industrial modernity,

enabling the dispossession of indigenous people in the interests of state-capitalist development

(Harris, C. 2004; Harvey 2003); this process echoed the 'nuclear colonialism' associated with

uranium mining and weapons testing in the U.S. Southwest (Kuletz 1998). Indeed, the CCF's stated ambition to reform the 'pre-industrial way of life' of northern indigenous peoples ultimately produced and reinforced a northern economic and settlement geography separated into Aboriginal and non-Aboriginal zones. In the squatter camps of Uranium City, we can see how 'uneven development is social inequality blazoned into the geographical landscape' (Smith 2008, 206). As original inhabitants rather than sojourners in the region, northern Aboriginal people remained most brutally exposed to the forces of cyclonic development. Resource extraction rapidly overturned long-standing land use and settlement patterns in the region. While the boom period at Uranium City clearly attracted Aboriginal people eager for work and wages, they remained occupationally and residentially segregated, and subject to the changing economic fortunes and priorities of external governments and markets. Facing racism and northern development policies that funneled profits out of the region, Aboriginal people required further rounds of activism and government policy-making to overcome the barriers to participation in mining in the northern Saskatchewan—as they did in so many other instances across the Canadian North in the pre-Berger era (Hipwell et. al. 2002; Notzke 1994). Further research into the experiences of Native and Métis people at Uranium City, possibly through oral history accounts, would enrich our understanding of Aboriginal encounters with cyclonic development, labour, and resettlement in connection with uranium mining.

In sum, the historical geography of Uranium City adds to our stock of cautionary tales of marginal, resource-dependent communities in Canada —tales with strong contemporary echoes. Since the turn of the century, Canadian mining exploration expenditures have hit record highs, as companies fanned out across the Canadian north in search of gold, diamonds, base metals, and uranium, often located in Aboriginal territories. In many cases, mineral exploration has revisited

abandoned mine sites and regions, including around Uranium City, in search of undiscovered or unworked deposits (Lyons 2008). More recently, however, the steep decline in commodity markets beset by the worldwide economic downturn have led to new rounds of layoffs in mining-dependent communities such as Sudbury and Wabush in Labrador. Ultimately, the dereliction of much of Uranium City (and the virtual erasure of both the Eldorado and Gunnar townsites) stands as poignant testimony to the fragility of remote communities based around mine development, a fragility echoed at other shattered monuments to resource town planning across the Canadian north.

Acknowledgements

References

AMUNDSON, M.A. 2002 *Yellowcake Towns: Uranium Mining Communities in the American West* (Boulder: University of Colorado Press)

ANDERSON, R.J. 1955 'Uranium City takes on a more permanent air' *Regina Leader-Post*, 16 November, 1

ANDREWS, T.G. 2008 *Killing for Coal: America's Deadliest Labor War* (Cambridge, Mass: Harvard University Press)

ASCHMANN, H. 1970 'The Natural History of a Mine' *Economic Geography* 46, 172-189

ATTON, F. M. 1958 Letter fromProvincial Biologist, to G.E. Couldwell, Director of Fisheries, 4 September, in SAB, NR 1/5 Department of Natural Resources, File I.143 (821) Eldorado Mining and Refining

BAKKER, K., BRIDGE, G. 2006 'Material Worlds? Resource Geographies and the "Matter of Nature"' *Progress in Human Geography* 30, 5-27

BARNES, T. 1996 *Logics of Dislocation: Models, Metaphors, and Meanings of Economic Space* (New York: Guilford Press)

——. 2005 'Borderline Communities: Canadian Single Industry Towns, Staples, and Harold Innis' in *B/ordering Space*, ed. H. Van Houtum, O. Kramsch, and W. Zierhofer (Burlington, VT: Ashgate Publishing), 109-122

BARNES, T., HAYTER, R., HAY, E. 2001 'Stormy Weather: Cyclones, Harold Innis, and Port Alberni, BC.' *Environment and Planning A* 33, 2127-2147

BARRON, F. L. 1997 *Walking in Indian Moccasins: The Native Policies of Tommy Douglas and the CCF* (Vancouver: UBC Press)

BENNETT, W. J. 1951a 'Address of W.J. Bennett, President, Eldorado Mining & Refining (1944) Ltd., at the Annual Convention, Prospectors & Developers Association and Fourth Annual Meeting, Geological Association of Canada, Toronto, March 6,' in Library and Archives Canada, RG 22 Indian and Northern Affairs Series A-1-a Acc. 1995-96/693, Box 10 File 40-3-31 Eldorado Mining & Refining Ltd.

——. 1951b Memorandum to E.B. Gillanders, 8 March, in Library and Archives Canada, RG 134 Eldorado Nuclear Fonds, Vol. 75 file BL – Housing and Townsite

——. 1951c Memorandum to E.B. Gillanders, 15 March, in Library and Archives Canada, RG 134 Eldorado Nuclear Fonds, Vol. 77 file BL – Planning

——. 1952 Letter to C.A.L. Hogg, Deputy Minister of Natural Resources, 13 March, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 Uranium City 1949-52

BERESKIN, A.I., 1949 Memorandum to C.A.L. Hogg, Deputy Minister of Natural Resources, 19 January, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 Uranium City 1949-52

BEREZOWSKY, W. J. 1951 Letter from Supervisor of Staff Training to J.W. Churchman Assistant Deputy Minister, 7 September, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235-1 (Uranium City General 1953-54)

BERLAND, J. 1999 'Space at the Margins: Critical Theory and Colonial Space after Innis' in *Harold Innis in the New Century*, eds. C.R. Acland and W.J. Buxton (Montreal and Kingston: McGill-Queen's University Press), 281-308

BONE, R.M., SHANNON, E.N., RABY, S. 1973 *The Chipewyan of the Stony Rapids Region* (Saskatoon: Institute for Northern Studies)

BORROWS, J. 1997 'Living Between Water and Rocks: First Nations, Environmental Planning and Democracy' *University of Toronto Law Journal* 47, 417-468

BOTHWELL, R. 1984 *Eldorado: Canada's National Uranium Company* (Toronto: University of Toronto Press)

BOWLES, R.T. 1992 'Single-Industry Resource Communities in Canada's North' in *Rural Sociology in Canada*, eds. D.A. Hay and G.S. Basran (Toronto: Oxford University Press), 63-83

BRADBURY, J.H. 1979 'Towards an Alternative Theory of Resource-Based Town Development in Canada' *Economic Geography* 55, 147-166

——. 1982 'State Corporations and Resource Based Development in Quebec, Canada: 1960-1980' *Economic* Geography 58, 45-61.

——. 1984a 'Declining Single-Industry Communities in Quebec-Labrador, 1979-1983' *Journal of Canadian Studies* 19 125-139

——. 1984b 'The Impact of Industrial Cycles in the Mining Sector: The Case of the Quebec-Labrador Region in Canada' *International Journal of Urban and Regional Research* 8, 311-331

BRAZIER, F.H. 1977 'Short History of Uranium Development in Saskatchewan' Cluff Lake Board of Inquiry Exhibit CLB-7-1 (Regina: Cluff Lake Board of Inquiry)

BRECHIN, G. 1999 *Imperial San Francisco: Urban Power, Earthly Ruin* (Berkeley: University of California Press)

BRIDGE, G. 2001 'Resource Triumphalism: Postindustrial Narratives of Primary Commodity Production' *Environment and Planning A* 33, 2149-2173

——. 2004 'Contested Terrain: Mining and the Environment' *Annual Reviews -- Environment and Resources* 29, 205-259

BROCKELBANK, J.H. 1953 Letter from Minister of Natural Resources to C.D. Howe, Minister of Trade and Commerce, 14 February, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81, File 235-1 Uranium City General

BROSNAN, K.A. 2002 *Uniting Mountain and Plain: Cities, Law and Environment along the Front Range* (Albuquerque: University of New Mexico Press)

BROWN, C. S. 1953 Memorandum, Northern Administrator to J.W. Churchman, Assistant Deputy Minister of Natural Resources, 19 February, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81, File 235-1 Uranium City General

——. 1954 Memorandum to J.W. Churchman, Assistant Deputy Minister of Natural Resources, 2 February, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 Uranium City 1952-1954

——. 1955 Memorandum to J.F. Irwin, Manager, Nesbitt-Labine Uranium Mines Ltd., 21 September, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 82 File 235 Uranium City (3) [1955-56]

——. 1957 Memorandum to A.T. Davidson, Assistant Deputy Minister, 6 November, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 82 File 231B Uranium City [General]

BUCK , W.K., HENDERSON, J.F. 1962 'The Role of Mineral Resources in the Development and Colonization of Northern Canada' in *Canadian Population and Northern Colonization,* ed. Bladen, V.W. (Toronto: University of Toronto Press)

BUCKLEY, H., KEW, J.E.M., HAWLEY, J.B. 1963 *The Indians and Métis of Northern Saskatchewan: A Report on Economic and Social Development* (Saskatoon: Centre for Community Studies)

BUNNER, P. 1985 'Ghost town in waiting' *Saskatoon Star-Pheonix*, 15 June, E1

CALDER, R. 1957 *Men Against the Frozen North* (London: George Allen and Unwin)

CANADA. 1992 *A Brief Historical Review of the Beaverlodge Mining Area of Northern Saskatchewan* (Ottawa: Joint Federal/Provincial Panel on Uranium Mining Developments in Northern Saskatchewan)

CANADA. DEPARTMENT OF CITIZENSHIP AND IMMIGRATION. 1963 *Report of Indian Affairs Branch for Fiscal Year Ended March 31, 1963* (Ottawa: Queen's Printer)

CANADA. PRIVY COUNCIL OFFICE. 1959 'Cabinet Conclusions' in Library and Archives Canada, RG 2 Privy Council Office, Series A-5-a, vol. 2745, 3 December

CHURCHMAN, J.W. 1953 Letter from Assistant Deputy Minister to mining companies and public officials, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 Uranium City 1952-1954

CLAPP, R.A. 1998 'The Resource Cycle in Forestry and Fishing' *Canadian Geographer* 42, 129-144

CLARK-JONES, M. 1987 *A Staple State: Canadian Industrial Resources in Cold War* (Toronto: University of Toronto Press)

CLEMENT, W. 1997 *Understanding Canada: Building on the New Canadian Political Economy* (Kingston: McGill-Queen's University Press)

CLEROUX, R. 1981 'Uranium City angry, defiant' *Globe and Mail*, 5 December, 11

——. 1982 'Dusty roads, vacant streets mark closing of mining town' *Globe and Mail*, 30 June, 1

COATES, K. 1985 *Canada's Colonies: A History of the Yukon and Northwest Territories* (Toronto: James Lorimer and Co.)

CRESSWELL, D. 1972 'Uranium City: Boom times vanish a second time.' *Saskatoon Star-Pheonix*, 28 August, 3

CRONON, W. 1992 'Kennecott Journey: The Paths out of Town' in *Under an Open Sky: Rethinking America's Western Past*, eds. W. Cronon, G. Miles, J. Gitlin (New York: W.W. Norton)

CROSSLEY, A. 1950 'Recommendations for Proposed Town Site at Beaverlodge, Sask.,' 9 November, in Library and Archives Canada, RG 134 Eldorado Nuclear Limited Fonds, vol. 77, file BL – Planning

——. 1951 Untitled report, 18 December, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235-1 Uranium City General

DAVIDSON, A. T. 1951 'General Resource Conditions in the North – The Bases for Native Re-establishment' Department of Natural Resources report, in Saskatchewan Archives Board, F400 Robert Doucette Fonds, File 562

——. 1955 Memoradum from Planning Officer to J.W. Churchman, Assistant Deputy Minister, 23 August, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 82 File 235 Uranium City (3) [1955-56]

DENHOFF, J. 1961 'Uranium City wonders about its future prospects' *Saskatoon Star-Pheonix*, 18 April, 17

DESBIENS, C. 2004 'Producing North and South: A Political Geography of Hydro Development in Quebec' *The Canadian Geographer* 48, 101-118

DOBBIN, M. 1985 'Prairie Colonialism: The CCF in Northern Saskatchewan' *Studies in Political Economy* 16, 7-40

DOUGLAS, T.C. 1960 Letter from Premier of Saskatchewan to Prime Minister J.G. Diefenbaker, 18 April, in Saskatchewan Archives Board, R-58 Minister of Natural Resources, File 44

DRACHE, D. 1995 'Celebrating Innis: The Man, the Legacy, and Our Future' in Harold A. Innis, *Staples, Markets, and Cultural Change: Selected essays*, ed. Daniel Drache (Montreal and Kingston: McGill-Queen's University Press)

DUFORT, R.J. 1967 'Re: Causal labourers – hourly' 17 March, in Library and Archives Canada, RG 134, Eldorado Nuclear Fonds, Acc. 1983-84, Box 42, Personnel file

EGGLESTON, W. 1965 *Canada's Nuclear Story* (Toronto: Clarke Irwin and Co.)

ELDORADO MINING AND REFINING LIMITED. 1965 *Annual Report – 1965* in Library and Archives Canada, RG 134, Eldorado Nuclear Fonds, Acc. 1983-84, Box 11

ELDORADO NUCLEAR LIMITED. 1981 'Closure Notice' 3 December, in Library and Archives Canada, RG 134, Acc. no. 1983-84-211, Box 15

EVENDEN, M. 1999 'The Northern Vision of Harold Innis' *Journal of Canadian Studies* 34, 162-186

FRANCAVIGLIA, R.V. 1991 *Hard Places: Reading the Landscapes of America's Historic Mining Districts* (Iowa City: University of Iowa Press)

FREUDENBERG, W.R. 1992. 'Addictive Economies: Extractive Industries and Vulnerable Localities in a Changing World Economy' *Rural Sociology* 57, 305-332

FRICKEL, S., FREUDENBURG, W.R. 1996 'Mining the Past: Historical Context and the Changing Implications of Natural Resource Extraction' *Social Problems* 43, 444-466

GARBUTT, G.C. 1964 *Uranium in Canada* (Ottawa: Eldorado Mining and Refining Ltd.)

GILCHRIST, W. 1953 Letter from Assistant Manager, Eldorado Beaverlodge Mine, to C.S. Brown, Northern Adminstrator, 19 February, in Saskatchewan Archives Board SAB, NR 1/4 Department of Natural Resources, GS68, File 235 Uranium City 1952-1954

GLOBE AND MAIL. 1954 'Atom power eyed by uranium town' 13 July, 13

——. 1982 'Federal compensation package welcomed by Eldorado workers' 19 January, 10

——. 1964 'Regina denies peril at uranium site' 14 November, 11

——. 1960 'Saskatchewan seeks aid for Uranium City' 12 July, 21

GOIN, P., RAYMOND, E.C. 2004 *Changing Mines in America* (Santa Fe, NM: Center for American Places)

GOULET, K. 1997 'Participation of Northerners and Aboriginal People in Uranium Development in Saskatchewan' *Proceedings, The Uranium Institute Twenty Second Annual International Symposium* (World Nuclear Association) (Available at: http://www.world-nuclear.org/sym/1997/goulet.htm, accessed March 2009)

GRANT, S. 1989 'Northern Nationalists: Visions of a New North, 1940-1950' in *For Purposes of Dominion: Essays in Honour of Morris Zaslow*, eds. K.R. Coates and W.R. Morrison (North York, ON: Captus University Publications)

GRAY, E. 1982 *The Great Uranium Cartel* (Toronto: McClelland and Stewart)

GRAY, W. 1959 'Uranium City sheds winter gloom' *Globe and Mail*, 1 April, 13

——. 1960 'Uranium cities fight to live' *Globe and Mail*, 27 January, 7

——. 1963 'Curb sought for uranium shutdowns' *Globe and Mail*, 18 June, B1

HARRIS, C. 2004 'How Did Colonialism Dispossess? Comments from an Edge of Empire' *Annals of the Association of American Geographers* 94, 165-182

HARRIS, R. 2004 *Creeping Conformity: How Canada Became Suburban, 1900*-1960 (Toronto: University of Toronto Press)

HARVEY, D. 2003 'Accumulation by Dispossession' in *The New Imperialism* (Oxford: Oxford University Press), 137-182.

HEBER, R. 2005 'Indigenous Knowledge, Resources Use, and the Dene of Northern Saskatchewan' *Canadian Journal of Development Studies* 26, 247-256

HIPWELL, W., MAMEN, K., WEITZNER, V., WHITEMAN, G. 2002 *Aboriginal Peoples and Mining in Canada: Consultation, Participation, and Prospects for Change*, North-South Institute Working Discussion Paper (Available at: www.nsi-ins.ca/english/pdf/syncanadareport.pdf, accessed July 2009)

HODGE, G. 2001 *Planning Canadian Regions* (Vancouver: UBC Press)

HOGG, C.A.L. 1951a Memorandum from Deputy Minister of Natural Resources to A.I. Bereskin, 1 June, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 Uranium City 1949-52

——. 1951b 'Notice' 25 July, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 Uranium City 1949-52

IEC BEAK CONSULTANTS LTD, ENVIRONMENT CANADA, ATOMIC ENERGY CONTROL BOARD OF CANADA. 1986 *An Assessment of the Radiological Impact of Uranium Mining in Northern Saskatchewan* (Ottawa: Environment Canada)

INNIS, H.A. 1930 'The Canadian North' *University of Toronto Monthly* 30, 163-168

——. 1936 *Settlement and the Mining Frontier* (Toronto: MacMillan)

——. 1943 'Liquidity Preference and the Specialization of Production in North America and the Pacific' in Harold A. Innis, *Staples, Markets, and Cultural Change: Selected essays*, ed. Daniel Drache (Montreal and Kingston: McGill-Queen's University Press, 1995), 88-119

——. 1946 'The Political Implications of Ununsed Capacity in Frontier Economies' in Harold A. Innis, *Staples, Markets, and Cultural Change: Selected essays*, ed. Daniel Drache (Montreal and Kingston: McGill-Queen's University Press), 24-34

INTERNATIONAL UNION OF MINE, MILL AND SMELTER WORKERS, WESTERN DISTRICT. 1960 Brief to Cabinet of Saskatchewan, 7 April, in Saskatchewan Archives Board, R-58 Minister of Natural Resources, File 44

ISENBERG, A.C. 2005 *Mining California: An Ecological History* (New York: Hill & Wang)

IZUMI, K., ARNOTT, G.R. 1956 *Uranium City and District: A Guide for Development* (Regina: Community Planning Branch)

KEELING, A., SANDLOS, J. 2009 'Environmental Justice Goes Underground? Historical Notes from Canada's Northern Mining Frontier' *Environmental Justice* 2, 1-9

KILGOUR, R.J. 1953 Memorandum, Chief Inspector of Mines, to C.A.L. Hogg, 19 May, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81, File 235-1 Uranium City General

KULETZ, V.L. 1998 *The Tainted Desert: Environmental Ruin in the American West* (New York: Routledge)

KUPSCH, W.O. 1978 'From Erzgebirge to Cluff Lake—A Scientific Journey Through Time' *The Musk-Ox* 23, 7-87

——. 1985 'Surveying the Geology of a Vast, Empty, Cold Country' in *Geologists and Ideas: A History of North American geology*, eds. E. Drake and W. Jordan (Boulder, Col.: Geological Society of North America), 287-299

LATHA, E. 1939 *North Again for Gold* (New York: Frederick A. Stokes)

LAIRD, G. 2002 *Power: Journeys Across an Energy Nation* (Toronto: Penguin)

LeCAPELIN, C. K. 1956 Memorandum Re: Timber Berth No. 253, Wood Buffalo Park, Eldorado Mining and Refining, 21 December, in Library and Archives Canada, RG 134 Eldorado Nuclear Ltd., Vol. 87 File 2-5-P Part 3

LOTZ, J.R. 1962 'Northern Settlements and the Squatter Problem' *Habitat* 5, 2-7

LUCAS, R.A. 1971 *Minetown, Milltown, Railtown: Life in Canadian Communities of Single Industry* (Toronto: University of Toronto Press)

LYONS, M. 2008 'Uranium City. Renewed interest in gold and uranium is putting the old boom town back on the map' *Saskatoon Star-Pheonix,*1 March

MAWHINEY, A. 1999 *Boom-town Blues: Elliot Lake, Collapse and Revival in a Single Industry Community* (Toronto: Dundurn Group)

MCALLISTER, M.L. 2007 'Shifting Foundations in a Mature Staples Industry: A Political Economic History of Canadian Mineral Policy' *Canadian Political Science Review* 1, 73-90

MCCANN, L.D. 1978 'The Changing Internal Structure of Canadian Resource Towns' *Plan Canada* 18, 46-59

MCCORMACK, P.A. 1984 'How the (North) West Was Won: Development and underdevelopment in the Fort Chipewyan Region' PhD dissertation, University of Alberta

MCCUTCHEON, M.K, YOUNG, R.G. 1954 'The Development of Uranium City' *The Canadian Geographer* 4, 57-62

MCINTYRE, B. 1993 *Uranium City—The Last Boom Town* (Mill Bay, B.C.: Driftwood)

MACDONALD, A.H. 1951 Memorandum from Director of Fisheries to J.W. Churchman, Assistant Deuputy Minister, 27 December, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box File 441D Pollution

MINING ASSOCIATION OF CANADA. 2008 *Facts and Figures 2008: A report on the state of the mining industry* (Ottawa: Mining Association of Canada)

MOGREN, E.W. 2002 *Warm Sands: Uranium Mill Tailings Policy in the Atomic West* (Albuquerque: University of New Mexico Press)

MOON, R. 1953 'Uranium City born in test tube, raised by men from many lands' *Regina Leader-Post*, 6 June, 3

MORANTZ, T. 2002 *The White Man's Gonna Getcha: The Colonial Challenge to the Crees in Quebec* (Montreal and Kingston: McGill-Queen's University Press)

MORSE, K. 2003 *The Nature of Gold: An Environmental History of the Gold Rush* (Seattle: University of Washington Press)

NORCLIFFE, G. 1999 'Jon Cabot's Legacy in Newfoundland: Resource Depletion and the Resource Cycle' *Geography* 84, 97-109

NOTZKE, C. 1994 *Aboriginal Peoples and Natural Resources in Canada* (North York, ON: Captus University Publications)

PARSONS, G, BARSI, R. 2001 'Uranium Mining in Northern Saskatchewan: A Public-Private Transition' in *Large Mines and the Community: Socioeconomic and Environmental Effects in Latin America, Canada, and Spain*, eds. G. McMahon and F. Remy (Ottawa: IDRC/World Bank), 263-332

PHILLIPS, R. 1952 'Cheechakos and sourdoughs share Uranium City hardships' *Regina Leader-Post*, 12 August, 3

PIPER, L. 2009 *The Industrial Transformation of Subarctic Canada* (Vancouver: UBC Press)

——. 2007 'Subterranean Bodies: Mining the Large Lakes of North-west Canada, 1921-1960' *Environment and History* 13, 155-86

PORTEOUS, J.D. 1970 'Gold River: An Instant Town in British Columbia' *Geography* 55, 317-322, quoted in HALSETH, G., SULLIVAN, L. 2002 *Building Community in an Instant Town: A Social Geography of Mackenzie and Tumbler Ridge* (Prince George: UNBC Press), 19.

POTYONDI, B. 1981 *Dual Allegiance: The History of Wood Buffalo National Park, 1929-1965* Microfiche Report 104 (Ottawa: Parks Canada)

QUIRING, D.M. 2004 *CCF Colonialism in Northern Saskatchewan: Battling Parish Priests, Bootleggers, and Fur Sharks* (Vancouver: UBC Press)

RANDALL, J.E., IRONSIDE, R.G. 1996 'Communities on the Edge: An Economic Geography of Resource-Dependent Communities in Canada' *The Canadian Geographer* 40, 17-35

REA, K.J. 1968 *The Political Economy of the Canadian North* (Toronto: University of Toronto Press)

REED, M.G., PRUDHAM, W.S. 2001 'Looking to Oregon: Forest Policy Reform and Sustainability in British Columbia and the US Pacific Northwest' *BC Studies* 130, 5-40

REGINA LEADER-POST. 1957 'Uranium City has mushroomed to bustling town in five years' 21 October, 2

RICHARDS, B. 1986 *Gold and Other Stories as Told to Berry Richards: Prospecting and Mining in Northern Saskatchewan* (Regina: Saskatchewan Mining Association)

ROBERTSON, R.G. 1958 Letter from Deputy Minister of Northern Affairs and Natural Resources to W.J. Bennett, President Eldorado Mining and Refining Ltd., 11 April, and attached contract, in Library and Archives Canada, RG 134 Eldorado Nuclear Ltd., Vol 87 File 2-5-P Parts 3-4

ROBINSON, I.M. 1962 *New Industrial Towns on Canada's Resource Frontier* (Chicago: University of Chicago)

SAARINEN, O.W. 1986 'Single-Sector Communities in Northern Ontario: The Creation and Planning of Dependent Towns' in *Power and Place: Canadian Urban Development in the North American Context*, eds. G.A. Stelter and A.F.J. Artibise (Vancouver: UBC Press), 219-264

SACKMANN, A. 1964 'Only optimists stay at Uranium City' *Regina Leader-Post*, 29 June, 19

SASKATCHEWAN, DEPARTMENT OF NATURAL RESOURCES. No date a 'Policy re: Local Development Areas – Uranium City' in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 Uranium City General 1953-54

——. No date b 'Uranium City – From Mineral Resources' fact sheet, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 (Uranium City 1952-1954)

——. 1948 *The New North: Saskatchewan's Northern Development Plan, 1945-1948* (Regina: Department of Natural Resources)

——. 1951a 'Topographical and Ground Report, Uranium City' 19 October, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235-1 Uranium City General

——. 1951b 'Townsite Planning Notes' in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 Uranium City 1949-52

——. 1952a 'Discussion on Development Problems at Uranium City,' 31 July, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235-1 Uranium City General

——. 1952b Memorandum, 29 April, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235 Uranium City 1952-1954

——. 1954 'Uranium City' (internal department report), February, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235-1 Uranium City General

——. 1955 'Report on a Study of the Beaverlodge Area,' 15 June, in in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 165-G Beaverlodge LDA

SASKATCHEWAN RESEARCH COUNCIL. 2009 'CLEANS (Cleanup of Abandoned Northern Sites)' (Available at: www.saskcleans.ca, accessed July 2009)

SASKATOON STAR-PHEONIX. 1953a 'Eyes of mining world on northwest where uranium production to begin' 9 April, 16

——. 1953b 'No roaring Klondike but Uranium City booming along' 6 April, 6

SCOTT, J. 1959 'Job loss smaller than estimated' *Globe and Mail*, 16 November, 26

SHANNON, E.N. 1952 Memorandum from Conservation Officer to C.L. MacLean, Northern Administrator, 7 April, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235-1 Uranium City General

——. 1954 Memorandum to C.S. Brown, Northern Administrator, 26 August, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box File 441D Pollution

SHERIDAN, D.J. 1960 Memorandum from Chief Mining Recorder to A.I. Bereskin, Controller of Surveys, 19 August, in Saskatchewan Archives Board, NR 1/5 Department of Natural Resources, file I.143 (821) Eldorado Mining and Refining

SIMS, G.H.E. 1981 *A History of the Atomic Energy Board of Canada* (Ottawa: Ministry of Supply and Services)

SLUYTER, A. 2002 *Colonialism and Landscape: Postcolonial Theory and Applications* (Lanham, MD: Rowman and Littlefield)

SMITH, N. 2008 *Uneven Development: Nature, Capital, and the Production of Space*, 3rd edition (Athens: University of Georgia Press)

STANLEY, A. 2008 'Citizenship and the Production of Landscape and Knowledge in Contemporary Canadian Nuclear Fuel Waste Management' *The Canadian Geographer* 52, 64-82

STATISTICS CANADA. 1971 *1971 Census of Canada. Population: Census Subdivisions (Historical)*. Ottawa: Statistics Canada.

STENSON, R. 2006 'Regulating Idle Uranium Mines in Canada' in *Uranium in the Environment: Mining Impact and Consequences*, eds. B.J. Merkel and A. Hasche-Berger (Berlin: Springer)

STELTER, G.A., ARTIBISE, A.F.J. 1978 'Canadian Resource Towns in Historical Perspective' *Plan Canada* 18, 7-16

THE URANIUM TIMES. 1954 Extract, 24 April, cited in Saskatchewan Archvies Board NR 1/4 Department of Natural Resources, GS 68, Box 82 File 235 Uranium City 1954-56

TIMONEY, K. 1996a 'The Logging of a World Heritage Site: Wood Buffalo National Park, Canada' *The Forestry Chronicle* 72, 485-490

——. 1996b 'Failure of Natural Regeneration after Clearcut Logging in Wood Buffalo National Park, Canada' *Forest Ecology and Management* 87, 89-105

TOWNSLEY, B.F. 1935 *Mine-Finders: The History and Romance of Canadian Mineral Discoveries* (Toronto: Saturday Night Press)

TOUGH, F. 1996 *'As Their Natural Resources Fail': Native Peoples and the Economic History of Northern Manitoba, 1870-1930* (Vancouver: University of British Columbia Press)

URANIUM CITY CITIZENS' COMMITTEE. 1960 Brief to Cabinet of Saskatchewan, in Saskatchewan Archives Board, R-58 Minister of Natural Resources, File 44

WATKINS, M., GRANT, H.M.K., WOLFE, D. 2006 *Staples and Beyond: Selected Writings of Mel Watkins* (Montreal: McGill-Queen's University Press)

WATSON, A. 2006 *Marginal Man: The Dark Vision of Harold Innis* (Toronto: University of Toronto Press)

WHELLY, J. 1961 'Uranium City residents fight ghost town future' *Regina Leader-Post*, 7 August, 2

WHITE, N. 2004 'Creating Community: Industrial Paternalism and Town Planning in Corner Brook, Newfoundland, 1923-1955' *Urban History Review/Revue d'histoire urbaine* 32, 45-59

WILLEMS-BRAUN, B. 1997 'Buried Epistemologies: The Politics of Nature in (Post)colonial British Columbia' *Annals of the Association of American Geographers* 82, 3-31

WILSON, L. 2004 'Riding the Resource Roller Coaster: Understanding Socioeconomic Differences Between Mining Communities' *Rural Sociology* 69, 261-281

WORSLEY, P.M., BUCKLEY, H.L., DAVIS, A.K. 1961 *Economic and Social Survey of Northern Saskatchewan: Interim Report no. 1* (Saskatoon: Center for Community Studies)

YOUNG, R.G. 1951 Memorandum, Administrative Analyst to J.W. Churchman, 26 July, in Saskatchewan Archives Board, NR 1/4 Department of Natural Resources, GS 68, Box 81 File 235-1

ZASLOW, M. 1988 *The Northward Expansion of Canada, 1914-1967* (Toronto: McClelland and Stewart)

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[i] Eldorado Gold Mines Ltd. was renamed Eldorado Mining and Refining.

[ii] The name was chosen by Hogg from a list of suggestions including 'Brockelbank' (to honour the Saskatchewan Minister of Natural Resources) and 'Uraniumfields,' as well as nine Cree names, including 'Kewotinok' ('to the North') and 'Kistapiskaw' ('rocky'). Hogg tersely noted in his memo: 'We are not interested in Cree names' (Hogg 1951a).

[iii] This may be the origin of the perceived 'exclusion zone' for Native settlers cited in Quiring (2004, 64) and Dobbin (1985, 25).

iv After a consultation with two McGill University professors on the subject of town planning, Administrative Analyst R.G. Young noted 'we will likely have a fairly large native population gathering outside the town' (Young 1951).

v The problem persisted at least into the late 1950s: see Brown (1957) and various memos in this file.

vi Northern Administrator C.S. Brown (1953) recounted a conversation with Eldorado mine manager W.A. Gilchrist regarding the construction of the school at Beaverlodge Lake. Gilchrist insisted that '[the company's] experience has been that employees of the calibre necessary would not reconcile themselves to send their children to school along with metis and indian [sic] children.' See also Kilgour (1953), which repeats the sentiment.