Mining the communicative flow: Communication and social learning in the reclamation of the 'Vista Coal Mine' project in Alberta, Canada

by

Cassandra Joanna Copp

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Department of Sociology
University of Alberta

Abstract

In the development and approval of new extractive resource industry projects in or close to communities, it is necessary to explore if and how communication and social networks surrounding these projects offer a platform for collaborative debate and knowledge formation. In doing so, we can better understand how these networks enable or constrain the flow of information, and subsequently deliberative processes, in the context of provincial environmental policy landscapes. Therefore, I ask "how does the flow of communication, surrounding environmental policy, in relation to land reclamation influence the deliberative processes of communities at the grassroots level?". This study focuses on the Vista Coal Mine Project, located in Hinton, Alberta, Canada. This study employs a mixed-methods approach, including a media content analysis of 178 documents, seven key informant and six general public interviews, and 52 completed household surveys to: analyze the processes by which communication occurs between industry, government, and community in the context of provincial and federal environmental policies around natural resource management; examine the role of communication in the facilitation of social learning; and to critically examine how participation and non-participation in deliberative processes affects the flow of communications. Social learning theory, as proposed by Rist et al. (2007), in combination with Communication Infrastructure theory (Kim & Ball-Rokeach, 2006) formed the theoretical framework for this study. This study found that the lack of clarity and incentive provided in both environmental legislation and policy related to the conduct and frequency of public consultations, the outlet, format, and provision of project information to the general public, as well as the company's ability to disregard more effective participation methods in light of economic objectives represent significant barriers to deliberative processes of communities at the grassroots level. Exploring and documenting these communication flows enables a better understanding of how communication can serve as a foundation for improving communication forms related to extractive resource projects, establishing an integrated community voice, and influencing and affecting positive social-environmental change.

Preface

This thesis is an original work by Cassandra Joanna Copp. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name “Mining the communicative flow: Communication and social learning in the reclamation of the ‘Vista Coal Mine’ project in Alberta, Canada”, ID Pro00048149, June 9, 2014.

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Chapter One

Introduction

Canada is well known for its vast expanses of pristine wilderness and abundant natural resources. The presence of such natural resources positions Canada as a major player in the extractive resources industries, participating in the extraction, production, and export of these natural resources both domestically and internationally. In the report *Energy Markets Fact Book, 2013-2014* (Natural Resources Canada, 2013), Canada ranks in the top ten (with the exception of coal production) in the production and export respectively of coal (13^{th}, 7^{th}), natural gas (5^{th}, 4^{th}), crude oil (5^{th}, 5^{th}), uranium (2^{nd}, 2^{nd}), and electricity (6^{th}, 3^{rd}) worldwide. The energy industry accounts for 27.8% of commodities exported by Canada (Natural Resources Canada, 2013). In 2011, the mining sector accounted for 3.9% (or approximately $63 billion) of Canada's total Gross Domestic Product (Natural Resources Canada, 2013 June 13).

The extraction, production and export of energy commodities internationally affect more than the economic bottom-line in Canada. These related industries affect community development, policy decisions, federal legislation, public participation, and most importantly the environment. At the community level, natural resource development is discussed in terms of employment, historical legacy, and economic progress (Bell & York, 2010). Environmental impacts then, are at odds with local, provincial and national socioeconomic imperatives, in that environmental protection means less industrial development and/or more costly investments in technology that minimize environmental impacts. Strategic discourses including sustainable development and communication practices attempt to reconcile this conflict between socioeconomic objectives and environmental protection but also serve to deflect industry criticism while increasing natural resource development (Davidson & MacKendrick, 2004).

Public participation provides an outlet to address this dichotomy through the debate of economic progress related to the extractive resources industry in light of growing environmental concerns. Participation hinges on the redistribution of power and the ability of communities to induce change (Arnstein, 1969). Considering the importance of extractive resource industries to Canada's economy and the frequent undermining of environmental protection for economic gain (Kellert, Mehta, Ebbin, & Lichtenfeld, 2000), developing more robust forms of public participation and deliberation are necessary.

Given the growing focus on the social agenda as an important and relevant component of sustainable development and environmental management, this study addresses the need to understand how communication and policy together inhibit or enhance opportunities available for public deliberation around issues such as mine site reclamation (Cooke & Johnson, 2002; Parkins & Mitchell, 2005; Masuda, McGee, & Garvin, 2008).

Coal Mining and Land Reclamation

Coal is the world's most abundant fossil fuel and a major export commodity for Canada. From 2012-2013 (fiscal year), 53% of all coal produced in Canada was exported (Statistics Canada, 2013a) suggesting the importance of the industry at a global level. Alberta is home to 70% of Canada's coal reserves with 33.3 billion tones yet to be mined (Government of Alberta, 2015). Coal reserves in Alberta are owned by the Alberta Crown, private corporations, the federal government, and Aboriginal communities. The Alberta Crown owns the majority of coal reserves in Alberta today, and 50-60% of the coal produced in Alberta is mined from this land. Coal in Alberta is mined for the purposes of electrical power generation and export to the Asian market. In 2013, Alberta had nine active coal mines, 1216 coal leases (covering over 600,000 ha), and 561 coal lease applications (proposed to cover over 600,000 ha in total).

Most of Canada's coal is extracted using surface mining techniques. These include open pit and strip mining. Both methods are employed when coal seams are located near the surface. In these mines, overburden is removed systematically to get at the subsurface deposits.[1] Once these deposits are extracted, the overburden piles are typically redistributed over the mined areas as a component of reclamation efforts. Open pit mining uses benches (vertical steps into the pit) to mine the deposit, whereas strip mining digs parallel or adjacent shallow rectangular blocks to access the deposits. In open pit mining overburden materials are used at the end of the mine's lifespan, whereas in strip mining overburden is moved laterally to an adjacent empty pit where extraction is completed. Reclamation is a key component of both extraction techniques, and involves the use of overburden to resurface and level mined land.[2]

Coal mining arguably has one of the largest impacts on ecosystems and the effects of its exploitative activities are minimized by self-promoted reclamation goals. Zedler, Doherty and Miller (2013) note that "[a]lthough restoration to earlier, less-degraded conditions is often an ideal goal, the historical state is not always attainable given irreversible changes in abiotic conditions and available biota" (p. 1).[3] The removal of soils, plants and animals by mining irreversibly alters the ecological composition of the landscape which subsequently impacts the ability to return the area to its historical state.

Returning a landscape to a pre-disturbance reference point is not always desirable or attainable, given the changing nature of such ecological systems as a result of both human and natural forces. In their work on channel reconstruction in small streams and rivers, Woelfle-

[1] Overburden refers to the surface materials (rocks, sand, soil, vegetation) that cover the resource being mined.
[2] Remediation is a component of reclamation activities that involves "the removal, reduction, or neutralization of substances, wastes or hazardous material from a site so as to prevent or minimize any adverse effects on the environment" (Powter, 2002, p. 61). Reclamation refers to the functioning of ecosystem processes overall and the return of disturbed land to a state equal to or better than conditions prior to the disturbance (Government of Alberta, 2010).
[3] Abiotic conditions refer to the changes made to the natural landscape in the absence of living organisms such as plants. Biota refers to the ecological composition of a given area (plant and animal life characteristic of an area)

Erskine, Wilcox, and Moore (2012) examine the historical range of variability in channel morphology in relation to water flows and sediment dynamics. The authors, amongst others, conclude that the lack of historical data and the accumulation of land use legacy effects, which are further influenced by public expectations and funding, make ideal goals of restoration virtually unattainable (Woelfle-Erskine et al.; 2012; Zedler et al., 2013; Hobbs, Hallett, Ehrlich, & Mooney, 2011). Industry attempts to minimize the perceived impacts of such extractive activities on the natural landscape through idealized goals of reclamation. Community members, or those residing in close proximity to an industry project, are left uninformed about the long-term impacts of coal mining and the realities of reclamation. As noted by Cooke and Johnson (2002), "it is important that industry, the regulators, and the general public understand the fundamental nature of the science of restoration ecology and what it can and cannot achieve" and that its purpose is not to "legitimize new degradation" (p. 61).

Although reclamation is an important component of industry projects such as new coal mines, reclamation goals are often unrealistic (Zedler et al., 2013), vastly alter the landscape in ways that are not anticipated or foreseen by individuals, and provide validation for new projects.

Public Participation, Communication, and Natural Resource Management

Federal and Provincial governments have attempted to mediate the negative impacts of coal mining including increased regulation through such Acts as the *Environmental Assessment Act,* the *Environmental Enforcement Act*, Alberta's *Environmental Protection and Enhancement Act*, and the *Conservation and Reclamation Act*. Recent policy changes such as the passing of Bill C-38, an omnibus federal budget implementation bill, undermines public participation in natural resource management (NRM). Changes made through Bill C-38 affect the environmental assessment process in relation to what defines "environmental impact", time limits to completing

assessments, who is responsible for decision-making, and most importantly who is allowed to voice concern during these assessments (Gibson, 2012; Salomons & Hoberg, 2014; David Suzuki Foundation, 2012). As a result of Bill C-38, only those directly affected by a proposed project are allowed to participate in the environmental assessment process. In light of such policy changes, the need for developing and improving novel approaches to community participation becomes increasingly important.

In response to related legislation changes government, academia and community groups have used a variety of strategies including community-based resource management (Kothari, Camill & Brown, 2013; Foxwell-Norton, 2013), advisory groups (Luckert, Haley, & Hoberg, 2011; Parkins, 2002), and citizen science (Conrad & Hilchey, 2011; Newman et al., 2012) to involve community members in the design, management, and planning of NRM. Such initiatives are critiqued for their inability to harmonize environmental protection with community interests and economic development (Menon, 2007; Foxwell-Norton, 2013; Kellert, Mehta, Ebbin, & Lichtenfeld, 2010), their limited inclusion of communities in plan implementation and monitoring (Menon, 2007), the impact of knowledge/power relations in such groups (Laurian, 2005; Foxwell-Norton, 2013; Smith, 2008; Kothari, Camill, & Brown, 2013; Parkins, 2002), passive participation due to the uncertainty that proposed actions result in executed actions (Laurian, 2005; Smith, 2008; Beh, Bruyere, & Lolosoli, 2013; Conrad & Hilchey, 2011), the financial and material resource constraints faced by smaller communities (Smith, 2008), the disconnect between research agendas and community priorities (Pandya, 2012), and the complexity of the processes involved in educating, organizing, and facilitating participatory involvement in environmental management (Pandya, 2012; Smith, 2008).

Apart from Federal and Provincial Government's responsibility to encourage and enforce democratic processes around NRM in such Acts as the *Canadian Environmental Assessment Ac*t (CEAA) and *Alberta's Environmental Protection and Enhancement Act*, industry also employs strategies that aim to include the public in discussions about its projects. More recently, industry has included corporate social responsibility (CSR) initiatives as part of their corporate mandates (Luke, 2013). The goals of CSR initiatives are to satisfy the demands of society and local communities in relation to the social and environmental impacts of industrial activities (Prno & Slocombe, 2012). Corporate social responsibility is linked to the notion of 'social licence to operate', which refers to the "perceptions that locally-impacted communities hold about a company's activities and the impact those activities have on local culture, environment, economy and livelihoods" (Owen & Kemp, 2013, p. 31). By engaging communities in the process of NRM, whether through public forums, industry-community newsletters, or sponsorship of community groups, industry increasingly demonstrates its awareness of the potential social impacts of industrial activities (whether negative or positive). As noted by Prno and Slocombe (2012), a "social licence exists when a mining project is seen as having the broad, ongoing approval and acceptance of society to conduct its activities" (p. 346).

Industries such as coal mining, which have devastating impacts on the natural environment, must work harder to communicate with and involve the public in NRM. These industries must convince communities of their social benefits, or risk social impacts on project outcomes.

Research Question and Objectives

In situations where industry is expected to acquire social licence, limited attention to effective communication influences opportunities for successful and meaningful participation. In addition

to the shortcomings of community-based management approaches listed previously, the diversity and number of communication modes available to individuals today makes identifying how best to inform, involve, and work with communities on industry projects increasingly difficult. In the context of provincial and federal environmental legislation such as Bill C-38 and subsequent policies, the outlined critiques of approaches to NRM, and industry's obligation to protect societal interests, I ask "how does the flow of communication surrounding environmental policy, in relation to land reclamation, influence the deliberative processes of communities at the grassroots level?" Related to this question, the primary objectives of my research are to:

a) Analyze the processes by which communication occurs between industry, government, and community in the context of provincial and federal environmental policies around NRM,
b) Expand our understanding of the role of communication in deliberative processes surrounding industry projects and examine its role in the facilitation of social learning, and
c) Critically examine how community participation and non-participation in deliberative processes affects the flow of communications.

To explore these communication flows, I examine reclamation planning and communication in the eastern Rockies' 'Vista Coal Mining Project' in Hinton, Alberta (hereafter referred to as the 'Vista Project'). Still in its infancy, the Vista Project has yet to acquire its formal regulatory approvals.[4] This is an ideal opportunity to explore social licence in terms of

[4] In early 2014, coal prices globally began to drop in response to an over-saturated market. As a result, Coalspur announced in June 2014 its intention to undertake a strategic review process in relation to the Vista Project throughout the remainder of the year and into early 2015. This research began prior to this announcement and to Coalspur receiving final regulatory approval (October 10, 2014) to move forward with the Vista Project.

how the creation, dissemination, and reception of reclamation information at the project outset shape deliberative spaces for debating public concerns.[5]

Coal Mining in Alberta

Coal mining has existed in Alberta since the late 19th century and since then, the coal industry in Alberta has become one of Canada's largest producers (Government of Alberta, 2015). Lethbridge was home to Alberta's first coal mine in the 1860s, while Edmonton saw its first coal mine in 1883. A significant portion of early coal mines operating in Alberta were located in what is today Banff National Park. These mines primarily supplied the railways at the time with coal. Today, central-west Alberta (spanning from Nordegg north to Grande Cache) is home to the majority of coal mines in Alberta, and is referred to as the "Coal Branch". This area primarily consists of bituminous and sub-bituminous coal. Bituminous (or coking) coal makes up most of Canada's coal reserves, and is mined for metallurgical and thermal uses. Sub-bituminous coal is used primarily in the production of thermal electric power generation based on its higher moisture content.

Hinton, Alberta (53.4114°N, 117.5639°W), located 300 km west of Alberta's capital Edmonton (see Figure 1.1), was established in 1928 and has a current population of 9,640. Named after William P. Hinton, a general superintendent of the Grand Trunk Pacific Railway (GTPR), Hinton owes its existence to the rapid westward expansion of the railway in Canada. In the early 1900s, Hinton was known as the "end of the steel" for the GTPR (Hinton Community Profile, 2014). Despite having existed unofficially in 10 locations since 1870, Hinton was not officially recognized as a town by Henderson's Alberta Directory until 1928 (Hart, 1980). Hinton was surrounded by many small villages including Brule, Entrance, Pocahontas, Pedley,

[5] Deliberative spaces are "defined as virtual and real sites where meaningful public dialogue and debate can occur" (Parkins & Mitchell, 2005, p. 529)

and Dalehurst, few of which still exist today. These communities housed a post office, the RCMP, financial services, and telegraph offices. Although small, these communities functioned as major hubs along the rapid westward expansion of the railway.

Figure 1.1. Alberta, Canada
Source: www.rootsweb.ancestry.com

Hinton's origins have rich roots in the extractive resources industries. In 1910, Jack Gregg discovered a coal deposit at the headwaters of the MacLeod River, located to the west of Hinton. After hearing murmurings of such coal deposits in Canada, Christopher Leyland an English businessman dispatched a party including Robert Thornton to explore these rumours. This discovery led to the establishment of Mountain Park and Luscar coal mines (Davies, 2007). The three mines, Yellowhead Pass at Yellowhead, Mountain Park, and Pacific Pass Coal Fields in Lovett, "became the nucleus of the branch line for the other mines that were to follow"

(Davies, 2007, p. 2). These mines amongst others became known as the Coal Branch (see Figure 1.2). The Coal Branch spanned south and west of Edson in two branches: the western or mountain branch ran from Coalspur to Mountain Park, whereas the eastern or Lovett branch ran from Coalspur to Lovett. As noted by Davies (2007), "[t]he two entities, the railroads on one hand and the mines on the other were co-dependent on coal and they came together in a marriage of necessity early in 1911" (p. 2). More recently, Hinton was home to the Cardinal River Mine, the Gregg River Mine, and the Cheviot Mine. Although these are located south on highway 40, their offices and employees reside in Hinton.

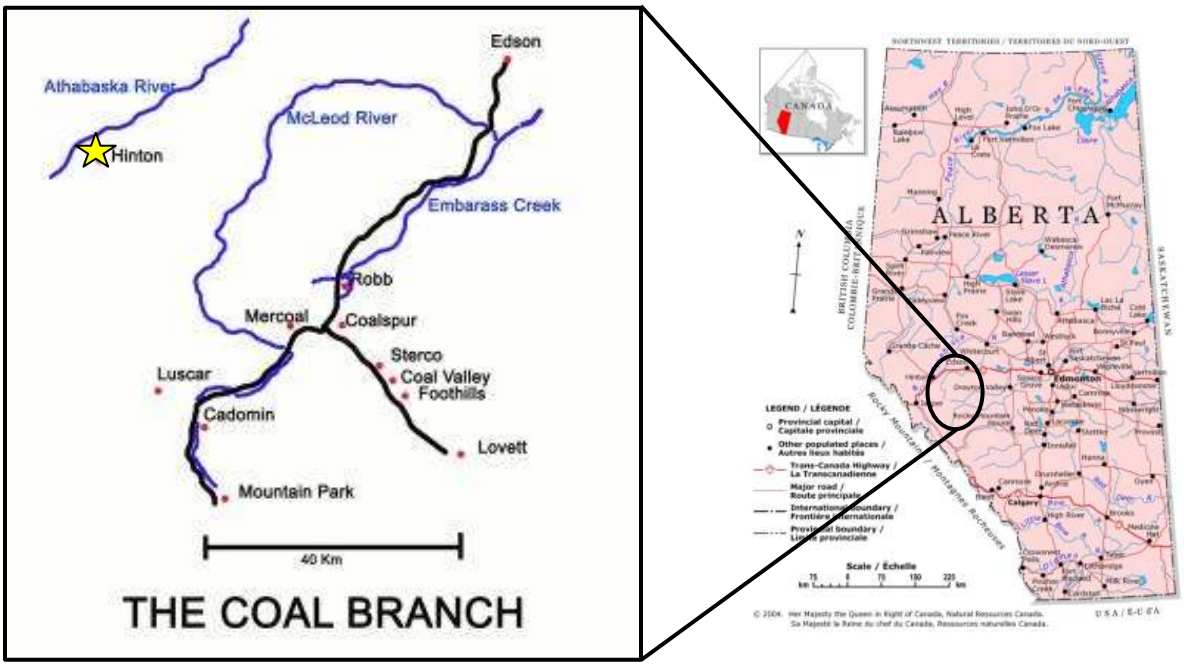

Figure 1.2. The "Coal Branch"
Source: www.geotourismcanada.com

Resource towns are historically linked to drastic population fluctuations, corresponding to the ebbs and flows of industry in the global economy and marketplace. Hinton is no exception, experiencing fluctuations in response to the coal mining industry. Mining was not crucial to the existence of Hinton as a town. Prior to the opening of the coal mine in 1931 by the Hinton

Colleries, residents participated in trapping, ranching, guiding and outfitting to support themselves and their families (Hart, 1980). However, mining's existence in the region and its ties to the expansion of the railway west influenced the growth of the town. The opening of the mine brought with it a massive population explosion. In 1935 Hinton had 1,000 residents but when the mine closed in 1941 the population returned to its typical 150-200 residents (Hart, 1980).

Despite the unpredictability of extractive resource economies, many communities in Alberta rely on such industries. Hinton is home to a pulp and paper mill, and participates in logging, oil and gas extraction, and gravel and coal mining. Today, extractive resource industries still influence Hinton's population and growth. The town has maintained a population just under 10,000 for over 19 years. Between 1996 and 2001, Hinton's population dropped from 9,961 to 9,405 (Statistics Canada, 2012). During this time period, public and appeal hearings for the Cheviot Coal Mine were underway due to strong public opposition.[6] This period also saw the closing of the Cardinal River Mine which resulted in the loss of many jobs for Hinton residents. Fluctuations of the population are attributed to the state of local industries where a poorly functioning industry nationally or internationally results in layoffs and the loss of people to other communities for work. This movement of people in and out of Hinton has occurred since its inception in 1928.

In this regard, Hinton can be viewed as a boom town. A boom town refers to communities "experiencing above average economic and population growth, which results in benefits for the community...but which also places or results in strain on existing community and

[6] Cheviot is a coal mining operation proposed by Cardinal River Coal in 1996, planned to cover approximately 3000 hectares, located three kilometers east of the Jasper National Park boundary and south of Hinton. The mine proposal received enormous opposition from recognized environmental organizations including the Pembina Institute, Nature Canada, and the Sierra Club of Canada. In large part, these oppositions revolved around Jasper National Park's positioning as a UNESCO World Heritage Site, and environmental importance based on the park's universal value and unique biogeographic characteristics and ecological functions (UNESCO, 2014). Cheviot was forced to revisit and revise its environmental assessment and impact reports, which received approval in 2004. The mine opened in 2005 despite widespread and persistent environmental opposition.

societal institutions" (Davenport & Davenport, 1980, p. 43). For example, such industries draw younger individuals to these communities given the type of employment, which subsequently puts pressure on those individuals living on a fixed income such as seniors in that the repercussions of this influx push up housing costs, property taxes, and service costs (Glick & Glick, 1981). To demonstrate, 71% of Hinton's population is between 15-64 years of age, whereas 9% is above 64 years of age. Hinton's top four major employers are all extractive resource industries and include Alstar Oilfield Contractors, Teck Coal Limited, Hinton Pulp, and Hinton Wood Products respectively (Hinton Community Profile, 2014). The diversity of extractive resource industries helps mitigate the effects of downturns in specific resource economies. However, the proposal of new projects places increasing strains on the local community, such as the capacity of local schools and health care services to accommodate more individuals. Most of these industries exist outside the Hinton town limits, but have direct impacts on the local community in such areas as employment, housing, community funding, education, health care, population demographics, and on local businesses.

Vista Coal Mine Project

Coalspur, formerly known as Xenolith, is a thermal coal development company based in Hinton, Alberta, with offices in British Columbia, Canada and Australia. The company participates in extractive resource activities on the eastern slopes of the Canadian Rocky Mountains.

The Vista Project, formerly known as the 'Hinton Coal Project', covers 10,000 hectares on the eastern foothills of the Canadian Rocky Mountains, seven kilometers southeast of Hinton (Coalspur Mines Limited, 2008 December 4) (see Figure 1.3). The Vista Project is planned to include an open pit thermal coal mine for the primary purpose of extraction and export to Asian Pacific Rim countries, such as Japan and China. The coal mine is estimated to yield 313 million

tonnes of marketable reserves over an approximately 30 year mine life-span. The project is located three kilometers south of the Canadian National railway line. This railway line would be accessed as the primary mode of transportation between Hinton and Ridley Port terminal in British Columbia, a deepwater port that enables the export of large, heavy cargo loads by ship.

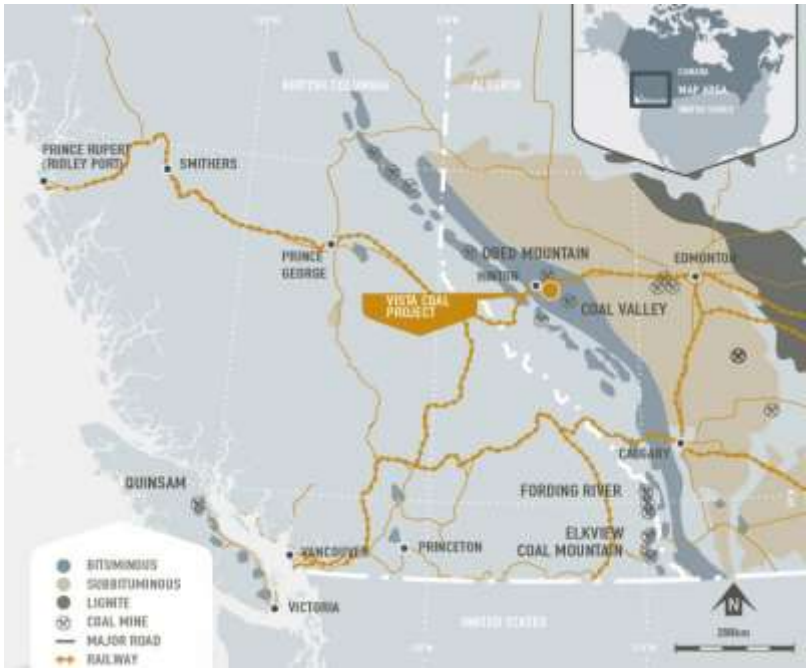

Figure 1.3. Vista Project
Source: epcmworld.com

The Alberta Energy Regulator (AER) granted conditional approval to the Vista Project on February 27, 2014, after being delayed by unsettled community concerns since September 2013. These concerns were primarily of an economic nature, but were also in regard to the environmental and social impacts of the project on First Nations communities. For example, Tourmaline Oil Corporation asked Coalspur to address the mine's overlapping mineral development rights with their own oil and gas development rights (Coalspur Mines Limited, 2013 December 9). The Treaty 6 Ermineskin Cree, Whitefish/Goodfish Lake, and Alexis Nakota Sioux First Nations, on whose traditional territories the mine is proposed voiced concern

regarding community development, infrastructure and business opportunities, and their ability to participate in the reclamation and environmental monitoring of the site (Coalspur Mines Limited, 2013 December 4; Coalspur Mines Limited, 2014 January 9).

In January 2014, Coalspur Mines Ltd. reached agreements with these stakeholder groups and First Nations, allowing the AER to move forward with the coal mine proposal. As part of this approval, Coalspur was instructed to meet requirements and conditions related to its coal-processing plant, mine plan and end-pit lake, geotechnical investigations, fines management, surface water quality, wetlands, wildlife, and noise mitigation (Coalspur Mines Limited, 2014, February 27). On October 10, 2014 Coalspur received a mineral surface lease (MSL) for Phase 1 of the Vista Project (Coalspur Mines Limited, 2014 October 10). This document was the final approval required from the AER in order to commence construction of the Vista Project.

In early 2014, coal prices globally began to drop in response to an over-saturated market. The downturn in global coal markets is attributed to the weakened demand for both metallurgical and thermal coal in emerging markets such as China as a result of slowing economic growth and infrastructure improvements, as well as the increased output from countries such as Australia and South Africa in response to reduced mining costs (Reuters, 2014 March 20; Parker, 2015 January 21). In June 2014 Coalspur indicated its intention to undertake a strategic review process in relation to the Vista Project throughout the remainder of the year and into early 2015. This process reviewed alternatives available to Coalspur, in relation to the Vista Project, that maximize its value for all stakeholders (Coalspur Mines Limited, 2014 June 23). Despite having secured all necessary approvals, Coalspur was unable to move forward with the project due to financial difficulties.[7]

[7] Coalspur's decision to undertake the strategic review process occurred after I proposed and began this study. Survey and interview data were in the midst of being collected at the time of this decision.

On February 24, 2015, Coalspur announced the acquisition of all its shares by KCE and Cline in accordance with a Scheme Implementation Agreement.[8] If the Scheme is approved, Coalspur becomes a subsidiary of KCE (100% ownership).

Natural Resource Management, Communication, and Provincial and Federal Environmental Regulations

Coal mining is an industry with social, economic, and environmental underpinnings, intricately and intimately tied to broader daily life. At the local level, coal mining offers long-term direct and indirect employment opportunities, boosts local economies, and funds community-related projects and groups. As a non-renewable resource however, such long-term opportunities eventually lapse. Legacy effects of extractive resource industries including coal mining, are overshadowed by the immediate benefits of the industry to local, national and international economies (Glick & Glick, 1981). Legacy effects include environmental degradation, social impacts such as the loss of funding for community organizations and the loss of employment, as well as decreases in potential tax revenue among others. Federal and provincial legislation that inform and structure the coal mining industry acknowledge this relationship and attempt to negotiate relations between the economy, society, and the environment.

In Alberta, provincial policies guide the processes identified in environmental legislation aimed at mitigating environmental impact and mediating public concern. Tools implemented in this process include the completion of an Environmental Impact Assessment in accordance with the *Environmental Protection and Enhancement Act*, the completion of applications (permits, licenses, and reclamation schemes) required under the *Coal Conservation Act* for proposed

[8] A scheme implementation agreement is where a bidder and target (KCE and Coalpsur, respectively) set out key terms and conditions on which the bidder agrees to bid for the target. It is one of the steps associated with a commercial takeover.

industry projects, and the 1976 *Coal Development Policy*.[9] Despite these formalized processes, conflicts and disagreements continue to arise around industry projects, for example the Cheviot hearings in the late 1990s. Discontent surrounding such processes illustrates the need for dynamic public participation methods in environmental impact discussions (Parkins & Mitchell, 2005). An examination of the industry must involve a multi-faceted approach aimed at situating the coal mining industry within the corresponding social context(s) including the regulatory environment, as well as understanding how and if these social contexts influence and inform how an industry interacts with communities.

Federally, these discussions take place in accordance with legislation such as the *Canadian Environmental Assessment Act* (CEAA), the *Fisheries Act*, and *Species at Risk Act* (SARA). Prior to 2012, projects triggered a review under CEAA if they fell within federal jurisdiction based on funding or permitting for example (Carpenter, 2012). On June 13 2012, Canadian Parliament passed Bill C-38, an omnibus budget implementation bill. This Bill covered various unrelated topic areas including public services, tax legislation, Aboriginal-specific laws, and the environmental assessment process (Kirchhoff & Tsuji, 2014). CEAA 2012 emerged from this bill, which included changes to projects requiring an environmental assessment and the addition of participation designations in formal reviews (Kirchhoff & Tsuji, 2014). CEAA was one of 70 acts and regulations changed at the federal level through this Bill (Kirchhoff & Tusji, 2014).

The introduction of omnibus bills in light of economic downturns is nothing new to the Government of Canada (Kirchhoff & Tsuji, 2014). These bills prioritize economic growth, and place it at odds with areas such as environmental protection; instructed by the rationale that

[9] The *Coal Development Policy* is currently under review by Alberta Energy to determine if there are opportunities for updates.

environmental protection inhibits or detracts from economic expansion (Kirchhoff & Tsuji, 2014; Gibson, 2012). Bill C-38 appears to prioritize economic growth by making environmental assessment processes more efficient. For example, CEAA 2012 places limitations on who gets to participate in major energy project hearings, identified as "interested parties" (Carpenter, 2012; Salomons & Hoberg, 2014). Carpenter (2012) argues that this move was implemented to "both limit the public debate over matters of federal policy and to avoid hearing stacking" (p. 258). Such stipulations reflect the economic objectives of the current Government and highlight the discretionary power provided to government bodies in assessing the projects that allow Canada to compete economically in a global market place. "The explicit thrust of both the assessment law changes and the overall budget bill (Bill C-38), however, was facilitation of economic growth through more rapid resource exploitation" (Gibson, 2012, p. 180). The economic objectives of the Government hinder important civic opportunities such as public participation with the goal of more timely and efficient processes.

Bill C-38 brought into force a number of key changes that influence public participation including process substitution, a significant decrease in the number of assessed projects, and involvement restrictions (Gibson, 2012; Kirchhoff & Tusji, 2014). These changes also included the increasing decentralization of such state-led items as environmental regulations and policies wherein industry projects more often fall under the purview of provincial and territorial governments (Parkins & Davidson, 2008). A major challenge associated with decentralization includes limitations to participation opportunities as a result of structural constraints. For example, process substitution may limit public participation opportunities by removing the ability of individuals facing financial constraints to apply for participant funding which is only

available for federal EAs (Kirchhoff & Tusji, 2014).[10] In addition, the sheer number of assessed projects has decreased significantly, where approximately 1% of all projects reach the federal assessment stage (Kirchhoff & Tusji, 2014). This decline corresponds to a decrease in opportunities for public participation and contributions to various projects (Gibson, 2012). For those projects which reach federal assessment, most submit detailed project proposals prior to an assessment, further limiting public participation as public discussions are unlikely to contribute to project planning (Gibson, 2012; Kirchhoff & Tusji, 2014).

Economically-centered omnibus bills also lack clarity, use vague language, and leave room for multiple interpretations (Carpenter, 2012; Gibson, 2012). In CEAA 2012, public participation is defined in the main purposes of the act, and discussed under *Section 28: Public Participation*. It states "the responsible authority must ensure that the public is provided with an opportunity to participate in the environmental assessment of a designated project" (CEAA, 2012, p. 15). Similarly, in Alberta's *Environmental Protection and Enhancement Act*, public consultation is described as "the manner in which the proponent intends to implement a program of public consultation in respect of the undertaking of the proposed activity and to present the results of that program" (EPEA, Section 50, 49.l), in relation to the environmental assessment process. There are benefits to less precise wording, such as providing industry flexibility and creativity in approaching such areas as public involvement and participation surrounding discussions about environmental issues and impacts. For example, industry can choose to employ focus groups or hire a consultant specializing in new public engagement techniques rather than rely solely on open houses to reach the public. There are also drawbacks including questions

[10] Process substitution refers to the selection of one jurisdiction (Provincial or Federal) to follow in regards to the environmental assessment process in cases when there is overlap (Kirchhoff & Tusji, 2014). The Minister has discretionary power in determining the appropriate jurisdiction (Kirchhoff & Tusji, 2014; Doelle, 2012; Gibson, 2012).

regarding decision-making and who holds discretionary power in such discussions (Carpenter, 2012). Industry decides how public consultations take place with the approval of the provincial government. This decision allows industry to control how information is shared and to some extent discussed in a community.

In both provincial and federal legislation, the industry in question is responsible for undertaking and completing the public consultation component as part of the environmental assessment process. Various factors faced by industry including financial and time-related constraints may influence creativity, inclusiveness and debate in participation opportunities. Without the guidance of detailed provincial and federal legislation, subsequent environmental policies allow for the prioritization of corporate economic objectives over the creation of successful and meaningful participation opportunities.

Social Learning Theory and Public Participation

Public engagement and participation are key components of any new industry project in Canada. Originating in the discipline of Psychology, through the work of Albert Bandura, social learning theory is described in relation to participation and the enabling of individuals through collaborative knowledge formation (Davidson & Davidson, 2014). Reed et al. (2010) define social learning as a "change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks" (p. 6). Social learning theory describes the process through which community members observe others participating formally and/or informally (such as discussions with family members or co-workers), understand how this participatory process is structured (such as in a formal committee setting), model this action by participating in a meeting, and then be given incentive to continue participating.

Social learning theory has found a home within literature addressing sustainability, environmental governance, and natural resource management (Sinclair, Diduck, & Fitzpatrick, 2008; Sinclair, Kumnerdpet, & Moyer, 2013; Walker, Sinclair, & Spaling, 2014). Here, the theory is described as a dynamic system consisting of five related components including participation, negotiation, integration, systems orientation, and reflection (Hayward, Diduck, & Mitchell, 2007). Key to more recent conceptualizations of social learning is the notion of "transdisciplinarity", which involves the collaboration between multiple stakeholders with varying forms of knowledge and different disciplinary backgrounds in the negotiation process (Rist et al., 2007). Garmendia and Stagl (2010) support this notion, noting that "deliberative approaches that enhance collective learning processes among a diverse group of social actors, with different types of knowledge and perspectives, are…central in the creation of new responses to threats for socio-ecological systems" (p. 1712).

In natural resource management, decision-making has shifted toward collective decision-making processes that focus on collaborative discussions between citizens and public agencies (Rist et al., 2007; Garmendia & Stagl, 2010). This conceptualization of social learning reflects Habermas' notion of the public sphere, wherein individuals come together to collaborate and debate relevant issues that concern their everyday lives (Habermas, 1991; Parkins, 2002). It is important to note that in this process, public participation is "not an end in itself but a means to facilitate processes of deliberation…between different categories of actors, who collectively use and broaden public spaces, based on the principles of fairness and empathy and aiming at both structural and personal transformation" (Rist et al., 2007, p. 25). Participation is one element in the creation of 'public spheres', and alone cannot bring about social learning in natural resource management.

Participation has the ability to facilitate the social learning process through communicative action, or the creation of deliberative spaces wherein an issue is engaged by multiple actors (Rist et al., 2007). Communicative action involves the opening of public spaces for discussion with the goal of achieving unforced consensus through shared understanding and comprehensive agreement (Habermas, 1984; Habermas, 1998; Rist et al., 2007; Kemmis & McTaggart, 2005). Developing and implementing successful and meaningful public participation involves "knowing how people think about public participation and knowing what people want from public participation" (Webler & Tuler, 2006, p. 700). Meaningful participation, which is early, inclusive, deliberative, transparent and empowering, is a key element to enabling the social learning process (Sinclair et al., 2008; Webler & Tuler, 2006). This learning occurs under opportune conditions including the availability of accurate and complete information, public forums, and procedural certainty or the systematic evaluation of arguments within an open and inclusive environment (Diduck et al., 2012; Sinclair et al., 2008).[11] Therefore, expanding spaces in which deliberation, negotiation and coordination take place bring together various perspectives with the potential for developing into a collective understanding (Rist et al., 2007).[12]

Employing and/or creating appropriate public spheres for discussions require an approach that understands the dynamics of public participation. This is important when considering how equitable individual contributions are within these deliberative spaces based on socially, historically, and politically shaped conditions (Rist et al., 2007). Even though participation is only a component of social learning, involving various individuals throughout project

[11] Transformative learning is an extension of social learning, and refers to "fundamental or profound learning experiences, such as changes to normative values guiding aspirations and changes to basic socio-cultural presuppositions" (Diduck et al., 2012, p. 1312).

[12] Collective understanding, and social learning more generally, do not necessarily result in or mean consensus amongst stakeholder groups, but can refer instead to more informed and empowered groups where resistance or acceptance are both possible, as opposed to acquiescence of a population.

discussions regarding environmental impacts enables the development and implementation of successful and meaningful participation processes, which in turn facilitate the individual steps necessary for behaviour change, and social learning more broadly. Current provincial and federal legislation appear at odds with these participation objectives. Efficiencies in the environmental assessment process constrain the flexibility public participation and deliberation require. The absence of various factors, such as adequate information or participation opportunities related to new industry projects influences the translation of social learning from theory to practice.

Despite its wide use, social learning theory has been criticized for a lack of conceptual rigour, and is characterized by loose definitions of the concept (Reed et al., 2010). Common critiques that arise in relation to how the term is conceptualized include: a) the facilitation and outcomes of social learning are more intricate than the concept suggests and b) the concept fails to address differences between individual and broader social learning (Reed et al., 2010). Social learning is also limited by the social and political setting within which individuals, and especially communities, attempt to examine it. These limitations include the requirement and commitment of time and resources (financial and labour) to maintaining the process, the framework's susceptibility to self-serving interests and stakeholders, and the institutional structures that limit the involvement of external actors in the deliberative processes (Rist et al., 2007). Regardless, participation has the potential to involve collective and communicative learning, which may contribute to collaboration and various social outcomes at the grassroots level (Muro & Jeffrey, 2008). These critiques offer incentive to explore social learning further, while its limitations provide justification for examining the sociocultural context within which participation opportunities take place.

Communication, Deliberative Processes, and Natural Resource Management

Communication is an important aspect of daily life. It informs our relationships with others and our perception of reality. It is described as a process involving two entities, wherein the creation and dissemination of a message by a sender is subsequently interpreted by a recipient (Nwagbara & Brown, 2014). It involves the transfer or flow of information from one source to another using various and different methods such as social media, mass media, face-to-face conversations, newspaper advertisements, and even body language. In the area of environmental studies, communication is studied in relation, but not limited to, environmental organizations (Kim, Chun, Kwak, & Nam, 2014), public participation (Kastberg, 2015), and social networks (Adams & Gynnild, 2013; Buzov, 2014) with a focus on methods, types, and structures.

Communication is more than a conversation between two individuals, and involves a network of communication called "communication ecology" (Broad et al., 2013). This notion calls attention to the structures and social contexts that inform communication around industry projects such as historical ties to an industry, the availability of information resources, or community belonging and transience. Communication bridges the gap between stakeholders and environmental issues, and has the ability to engage publics in discussions regarding industry projects (Ongare et al., 2013). Examining the mechanisms that structure communication provides insight into deliberative processes at the grassroots level.

The rise of new technologies, the increasing size and concentration of media corporations, the breakdown in traditional institutions such as the family, and globalization change the way communication occurs today (Ball-Rokeach, 1985; Ball-Rokeach & DeFleur, 1976; Kim & Ball-Rokeach, 2006). Ball-Rokeach and DeFluer (1976), using Media System Dependency theory (MSD), argue that this change is characterized by the interplay between

society, audience, and the media and the shifting relationship between the individual and the mass media.

Individuals increasingly rely on the mass media as their information sources. This results from the inability of interpersonal relationships to provide the information necessary to attain goals such as political awareness (Ball-Rokeach, 1985). Dependency arises from the inability to access alternative information resources. Interpersonal networks provide limited information as a result of numerous factors including geographical and social location which magnifies these media dependencies. To illustrate, the nature of the mass media and its relation to power networks limits the interaction of these networks with those who hold more indirect relations with the media such as the general public (Ball-Rokeach, 1998). Because the general public is involved less often in content creation and in decisions regarding dissemination, interaction is limited to media consumption. Asymmetric relationships reflect the changing social environment surrounding communication networks, and point to a shift in the control of information resources (Ball-Rokeach, 1985). The consequence of this shift is the reinforcement and legitimation of particular ideologies and power structures over others, such as economic growth over environmental protection (Ball-Rokeach, 1985). Therefore, it is not enough to simply examine how the media is used by individuals, but to also acknowledge the macro relations that structure and inform the centrality of these media systems (Ball-Rokeach, 1998).

Communication resources such as mass media represent the point wherein individuals and communities most often come to know about environmental issues (Allan, Adam, & Carter, 2000). Expanding on MSD theory, Communication Infrastructure theory (CIT) examines differences in communication structures and processes within specified social environments and how these influence civic outcomes (Kim & Ball-Rokeach, 2006). Understanding the

communication ecology surrounding industry projects then, requires exploring the "interplay between communication environments, individuals, and communities" (Kim & Ball-Rokeach, 2006, p. 175). This includes exploring the communication resources available to local communities, and their ability to engage and encourage community building and promote collective action towards common goals (Kim & Ball-Rokeach, 2006; Broad et al., 2013). Rather than focus on the spaces created for deliberative discussions, CIT identifies communication resources as the key to communicative action. Understanding how social environments constrain communication resources is essential to providing public spheres that enable shared understanding, debate and comprehensive agreement.

The communication resources employed by an industry are as important as the integration of these resources into community networks. Broad et al. (2013) argue that "individuals are situated within an ecology of communication resources…and that they draw from resources within these networks of communication to construct knowledge and achieve goals" (p. 328). The quality of a communication environment is measured by the level of integration of the various connections, including specifically the local media, community organizations, and residents (Kim & Ball-Rokeach, 2006). A community's ability to construct knowledge and achieve goals is largely dictated by the integration of its communication networks, which includes the availability of information resources. The diversity of the environment and the availability of physical spaces within the community (physical and/or digital) are equally as important (Broad et al., 2013). Therefore, engaging a variety of communication methods and modes promotes better integration, and may promote more inclusive and informed participation (Mitchell & Parkins, 2005).

The media reflects and reinforces the structure of the society within which it exists by creating and providing the information resources necessary to legitimate specific ideologies and social systems (Ball-Rokeach, 1985). Social media complicates this process by providing users with the ability to engage individuals and corporations through user-generated content and discussions. The internet has evolved into a space where individuals educate themselves on various issues that lack fit with more traditional media such as newspapers or offer immediate information not available through formal education (Adams & Gynnild, 2013). Social media such as Twitter or Facebook are recognized as communication methods which enable two-way flows of information (Lyon & Montgomery, 2013). For members of the public, this corresponds to their ability to hold accountable political figures or large corporations, as well as participate in discussions without geographical limitations generated by themselves or their peers (Lyon & Montgomery, 2031). Social media "have the potential to both enhance and redefine the flow of information between corporations and consumers" (Lyon & Montgomery, 2013, p. 750), and represent dynamic communication platforms which align more readily with the objectives of meaningful and successful participation.

Participation in these communication environments is a key component of how integrated a communication network is surrounding an industry project. Creating participation opportunities which involve collaboration and deliberation is challenging in light of current provincial and federal environmental legislation. The structural factors characterizing a specific communication network such as homeownership or socio-economic status also affect participation and thus integration in community networks (Kim & Ball-Rokeach, 2006). Participation and communication are intricately tied to the quality of a communication environment (Kim & Ball-Rokeach, 2006). Examining communication as a structural constraint to participation contributes

to a better understanding of the facilitation of the social learning process as a whole (Parkins & Davidson, 2008).

Social Licence to Operate, Social Learning, and Communication

The notion of 'social licence to operate' and its growing prevalence in industry activities and accountability create an opportunity to revisit the possibilities of social learning in relation to environmental policy. 'Social licence to operate' brings together Reed at al.'s (2010) conceptualization of social learning and Habermas' theory of communicative action, wherein industry must negotiate social relations through deliberative processes that draw on the knowledge of multiple stakeholders from various backgrounds. The use of community-based management techniques assists in negotiating these relations (Kemmis & McTaggart, 2005). Communication is pivotal to this process and includes educating individuals on technical components, providing access to trusted information resources such as community groups and key decision-makers, and the efficient use of various communication channels (Ongare et al., 2013). Sinclair et al. (2008) support this notion, arguing that in addition to the mechanisms through which participation takes place (such as public open houses or local newspapers), education in the form of non-formal (traditional knowledge) or informal (experiential) learning contribute significantly to the learning outcomes.

The combination of participation methods and communication modes establish integrated "communicative spaces" for these deliberative processes to take place. Well designed public participation opportunities, according to Mitchell and Parkins (2005), are representative, inclusive, provide information in various forms and through a variety of communication modes, and incorporate alternative information, experiences and knowledge. Since these spaces arise in response to questions about an industry's legitimacy, 'social licence to operate' makes industry

accountable to shared understanding in the form of accessible information resources that prioritize all stakeholder perspectives, comprehensive agreement through open discussions and debates, and unforced consensus as achieved through integrated communication environments (Kemmis & McTaggart, 2005, Habermas,1984; Kim & Ball-Rokeach, 2006).

I explore communication flows and how they facilitate or constrain opportunities for social learning using the Vista Project as a case study. By understanding how communication travels, government and industry can work towards improving communication practices. In turn, improving these practices may contribute towards increasing community understanding about industry projects, and assist in the formulation of methods that allow for more effective and meaningful communication techniques and participation opportunities.

Summary of Chapters

Chapter 2: Methods and Content Analysis

This Chapter provides a detailed overview of the mixed methods approach employed in this study. I examine each of the three methods used (the survey tool, interviews, and the content analysis), in relation to how each is employed, how the data is collected and analyzed, as well as the challenges faced. Information is summarized from this chapter in the remainder of the thesis.

Chapter 3: Mining the Medium - Communication Infrastructure Theory, Participation, and Reclamation Planning in the 'Vista Coal Mine Project'

Communication today takes on many diverse and unique forms. This diversity makes identifying how best to communicate and exchange information with communities on industry projects increasingly difficult. Government and industry alike have developed strategies to mitigate gaps in communication. For government, these arise in legislation, and subsequent policies, surrounding the disclosure of information as well as opportunities for public consultations in project discussions. For industry, corporate social responsibility initiatives and internal corporate

policies are at the forefront of active communication with stakeholders and local communities. The coal mining industry specifically, relies primarily on centralized forms of communication for information distribution. In an increasingly mediated world, individuals frequently rely on such resources for information regarding industry projects. Guided by the research question "how does the use of various communication channels influence participation in the planning of industry projects", this paper explores reclamation planning and communication around the Vista Project in Hinton, Alberta.

Using a mixed methods approach, I a) identify the channels through which community members receive information about coal mining activities and reclamation, b) statistically analyze the relationship between communication mode and participation in activities related to the Vista Project, and c) critically analyze the use of these sources in the context of federal and provincial environmental legislation around natural resource management. Ball-Rokeach's Communication Infrastructure theory in combination with Rist et al.'s (2007) conceptualization of social learning theory guide my paper.

Findings suggest that the type of source accessed is an important indicator of how respondents feel about participation activities, when considering the topic of land reclamation. The types of information available through these sources make the method important. In comparing the sources Coalspur used to share information, the only significant difference is in the depth and detail of information provided. And last, the more pro-ecological a respondent's views are, the less satisfied they are with the participation opportunities available and the more inclined they are to access resources outside those provided by the company itself. Coalspur's choice to isolate all of the information regarding the Vista Project to resources generated in-house, in combination with the use of more traditional media forms, limit their ability to reach

other audiences who may find more detailed information useful, informative, and perhaps transparent.

Chapter Four: "Projects that impact communities should have dialogue in the community" - A Communication Network Analysis of the Vista Coal Mine Project in Hinton, Alberta

Public participation has become an essential component of the environmental assessment process in Canada at both the federal and provincial level. Successful participation however, extends beyond the provision of suggested methods and tools. This understanding requires acknowledging the context within which participation takes place, and how participation reflects the social, political, economic, and cultural perspectives that characterize community perceptions towards new industry projects, their environmental impacts, and benefits to a community. Planning for public participation requires flexibility, and the application of various tools that enable the dialogue to evolve throughout its many stages in light of unique community characteristics (Webler & Tuler, 2006). However, recent changes made to federal environmental legislation influence the types of participation opportunities facilitated by industry. Limitations evident in this legislation are perpetuated in federal and provincial environmental policies which subsequently influence areas related to inclusive and collaborative debate.

In light of recent legislation changes and the need to understand how these as well as existing environmental policies influence communication, this paper explores the characteristics, composition, and integration of the communication network surrounding the Vista Project in Hinton, Alberta. I focus on community members, industry representatives, and government officials as the three key stakeholder groups or actors. I ask: What groups and/or individuals compose the communication network surrounding new industry projects? Is communication characterized by one- or two-way communication flows? How often do these interactions take place? Do these characteristics influence the integration of the communication network, and if so

how? And how does the integration of this communication network influence participation at the grassroots level? The goal of this analysis is to critically examine how communication networks influence participation, and to provide suggestions on improving these networks through a better understanding of the communication ecology surrounding such industry projects (Broad et al., 2013).

The communication network surrounding the Vista Project is characterized by infrequent, one- and two-way communication flows, with minimal integration across the network. The lack of defined guidelines related to the frequency of community involvement in Alberta's environmental policy and the influence of the area's historical ties to natural resource extraction industries contributes to the use of communication strategies and techniques by companies that are at odds with the notion of deliberative debate. Therefore, environmental policy should aim to offer more clarity around public participation related to the frequency with which it should take place, and the types of opportunities that constitute participation.

Chapter 5: Conclusion

In this research I asked "how does the flow of communication, surrounding environmental policy, in relation to land reclamation influence the deliberative processes of communities at the grassroots level?". To answer this question, I explored the social learning process in the Vista Project in Hinton, Alberta through the framework of Communication Infrastructure theory. In the first paper 'Chapter 3: Mining the Medium', it was apparent that individuals utilize mediated resources in the acquisition of project and land reclamation information. The limitations of these resources in terms of encouraging collaboration and facilitating deliberative discussions were evident, drawing attention to the construction of current environmental policies and their lack of

clarity and incentive toward the use of more dynamic communication methods on the part of industry.

In ‘Chapter 4: “Projects that impact communities should have dialogue in the community”’, I explored the nature of interpersonal communication surrounding the Vista Project. This chapter examined the characteristics of these communication flows, and how the frequency and type of communication influenced perceptions around participation. Documenting these relationships is important to understanding if specific forms of communication inhibit or enhance opportunities for deliberative debate around natural resource management. Current environmental policies restrict the flow of information and generate poorly integrated communication networks, which subsequently disrupt opportunities for deliberative debate around industry projects.

This study is valuable to various stakeholders, but is targeted primarily at community groups and members of the general public who wish to improve and/or change relations with companies operating in or close to their communities, practitioners in industry-related occupations interested in developing and implementing effective communication strategies and meaningful public engagement, government officials working with rural communities tied to natural resource industries, as well as environmental policy makers.

Exploring and documenting these communication flows enables a better understanding of how communication can serve as a foundation for establishing an integrated community voice, and influence social change.

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Chapter Two

Methods and Content Analysis

Research in the social sciences is characterized by two distinct approaches or paradigms: qualitative and quantitative. These approaches differ in regards to philosophical assumptions, data collection, methods, and ways of understanding validity. Ridenour and Newman (2008) describe qualitative research as "holistic, uncontrolled, exploratory, and carried out for purposes of understanding meaning" (p. 1), whereas quantitative is described as using "measured variables to test hypothesized relationships in more controlled situations" (p. 1). More recently, a third paradigm referred to as the "pragmatic paradigm" (Pearce, 2012; Creswell, 2003) or mixed methods approach has gained momentum in the social sciences. This approach, as indicated by its name, involves the mixing of methods drawn from quantitative and qualitative approaches in which either can be used as beginning points for "test[ing] hypothesized relationships within [a] culture" (Ridenour & Newman, 2008, p. 10).

The use of mixed methods has been around since the early 20th century. It took form during the transition from a qualitative to quantitative focus in the social sciences stemming from the rise of positivism following the Second World War (Pearce, 2012; Denzin, 2010). In the 1980s, the social sciences experienced a war of paradigms between the quantitative and qualitative approaches (Pearce, 2012; Bryman, 2014; Denzin, 2010). These tensions arose out of the discrediting of positivism and the ongoing debate surrounding the value of each paradigm (Denzin, 2010; Pearce, 2012). More specifically, a strong tension existed "between those in support of the deep, rich data approach and those professing the superiority of hard, generalizable data" (Sieber, 1973 as cited by Pearce, 2012, p. 831). The suggestion to combine multiple methods unique to either qualitative or quantitative approaches generated backlash

related to the violation of methodological and paradigmatic assumptions (Denzin, 2010; Bryman, 2014).

The backlash towards the mixed methods approach was grounded in notions of "paradigm superiority" and the argument that "quantitative and qualitative methods…cannot be combined due to the differences between their underlying paradigm assumptions" (Denzin, 2010, p. 422). With the rise of pragmatism in the 1990s, researchers suggested that these once dichotomous paradigms are compatible (Denzin, 2010). Regardless, the mixed methods approach still endures criticisms related to terminology, usefulness, cognitive framework, design, ability to make inferences, and the coordination of methods (Tashakkori and Teddlie, 2003 as cited by Onwuegbuuzie, Johnson & Collins, 2011). In an attempt to mitigate such limitations, Onwuegbuuzie, Johnson and Collins' (2011) employ Tashakkori and Teddlie's (2003) notion of legitimation, or the ability to assess the quality of an interpretation. Drawing on Greene's (2006) typology of the processes that characterize a methodology/paradigm (referred to as domains), the authors delineate types of legitimation within each domain. Their goal in undertaking the creation of this typology was to position mixed methods legitimation as a process that serves to reinforce and lend credibility to the methodology itself (Onwuegbuuzie, Johnson & Collins, 2011). Similarly, Ridenour and Newman (2008) argue that in order to achieve validity in a mixed methods approach, consistency among the research purpose, question, and design is essential. Legitimation and validity are possible in a mixed methods approach following similar outlines to those which guide qualitative and quantitative approaches; they however require a more fluid, iterative, and interactive process (Onwuegbuuzie, Johnson & Collins, 2011).

The mixed methods approach draws together qualitative and quantitative approaches in an attempt to gain a broader and deeper understanding of social realities and questions

(Onwuegbuuzie, Johnson, & Collins, 2011). Pearce (2012) identifies three characteristics of a mixed methods approach: the constant movement between induction and deduction in theory development and data analysis, fluidity between subjective and objectives lenses, and the ability of its data to contribute to arguments beyond the study context. Mixed methods research involves the careful and appropriate selection and alignment of methods with a research question and purpose (Pearce, 2012; Ridenour & Newman, 2008; Plowright, 2011). As noted by Onwuegbuuzie, Johnson and Collins (2011), "each individual component must fit and operate together in order to enable justifiable data collection, analysis, and interpretation for a given study" (p. 1254). The appropriate alignment of methodologies in a study enables the researcher to identify weaknesses and draw on additional methods to strengthen the research (Ridenour & Newman, 2008). As argued by Brannen (cited by Bryman, 2014) and as demonstrated above, philosophical assumptions and stances are one factor, albeit essential, in the determination of research methods. However, the above outlined characteristics in combination with continuous reflection between the methodology, research question, design, and process suggests the dynamic nature and usefulness of the mixed methods approach to social science research.

The dynamic nature of mixed methods research lends nicely to the study of environmental and social issues. Together, environmental data, which is often quantitative, with sociological study, which is often qualitative, contribute well to a mixed methods approach. Environmental sociologists have employed mixed methods in the examination of such diverse areas as social capital (Dhakal, 2014), environmental perceptions, attitudes and beliefs (Stoddart, Tindall & Greenfield, 2012; Brownlee et al., 2013), natural resource management (Nuno, Bunnefeld, & Milner-Gulland, 2014; Bennett, Dearden, Murray, & Kadfak, 2014), issues related to public participation (Silva & Mosimane, 2013; Smith, Leahy, Anderson, & Davenport, 2013;

Brennan & Dodd, 2009), and social networks (Chang, Allen, Dawson, & Madsen, 2012), to state but a few. These studies demonstrate the increasing use of and potential for mixed methods research in the study of environmental and social phenomenon. The breadth of literature surrounding mixed methods provides a well-informed methodological background that guides the researcher. Given the dynamic nature of mixed methods, the researcher may draw on and combine various methods based on their own research design, question, and philosophical stances. The integration of these "building blocks" encourages the researcher to engage in critical reflection regarding coherence in research design, methods, and execution (Pearce, 2012).

Data Collection and Analysis

I employed a mixed methods approach to undertake my research. This study combined surveys with data from a content analysis and semi-structured interviews with community members and key informants. For Ridenour and Newman (2008), mixed methods research involves the careful and appropriate selection and alignment of methods with a research question and purpose. I combined these methods for a more holistic understanding of how communication flows between the stakeholder groups involved in the Vista Coal Mine Project (hereafter referred to as the 'Vista Project'), and how these affect opportunities for public deliberation and social learning at the grassroots level. I aligned these methods to "address different components of the same study" (Ridenour & Newman, 2008, p. 65). This notion reflects triangulation as described by Maxwell (2013), where I used information "from a diverse range of individuals and settings, using a variety of methods" (p. 128). This approach allowed me to draw on additional methods to strengthen my study and fill gaps appropriately and provide a deeper understanding.

In order to achieve validity in my mixed methods approach, I prescribed to Ridenour and Newman's (2008) notion of consistency. I chose a mixed methods approach based on my

research question "how does the flow of communication surrounding environmental policy, in relation to land reclamation, influence the deliberative processes of communities at the grassroots level?" From this question, I analyzed two key areas: communication flows and deliberative processes. These areas are reflected in my research objectives and in the theoretical underpinnings of this study: social learning theory, communicative action, and social network analysis. I also used additional mid-level social communication theories (Media System Dependency and Communication Infrastructure theory) to address the social structures and environments within which communication takes place. To ensure consistency, I continually assessed the alignment of my research question, purpose, and methods for fit and coherence.

Content Analysis

A content analysis is a research method used to investigate observed communication phenomena (Hocking, Stacks, & McDermott, 2003). It allows for an in-depth examination of publicly-circulated messages, as they pertain to specific topics. They also provide insight regarding what messages are included or excluded by specific outlets and sources. In this study, I employ content analysis at the qualitative level, wherein the goal is to understand the latent content of the analyzed documents (Hocking et al., 2003). I used this analysis as a preliminary mode of investigation, in which I used emerging themes to corroborate my survey and interview findings.

From April 2014 to August 2014, I undertook a content analysis of digital and print resources used in the dissemination of information related to environmental legislation and land reclamation surrounding coal mines. This entailed an exhaustive search of all documents and websites from 1993 to 2014.

On September 1, 1993 the *Environmental Protection and Enhancement Act* came into force in Alberta. This Act amended key components from the 1973 *Land Surface Conservation*

and Reclamation Act, including conservation and reclamation. In light of this, I limited my sample to documents from or after 1993 under the assumption that environmental legislation and land reclamation as topics pertaining to industrial activities should be increasingly prevalent. This time frame also encompassed the initial land acquisition process by Coalspur Mines Ltd. (February 2009) up to the regulatory approval from the Alberta Energy Regulator (AER) for the Vista Project (January 2014).

My sample contained 178 documents composed of periodicals, industry documents, and government documents. I used Canadian Newsstand Complete, available through the University of Alberta's database to collect these documents. I employed a keyword search using the words "coal", "coal mining", "reclamation", and "land reclamation". The search returned 151 applicable articles, from 18 different periodicals. I accessed archived versions of the two Hinton community newspapers, the Hinton Parklander and The Hinton Voice, from the Hinton Municipal Library. This library holds the sole copies of these two periodicals. I used a microfilm machine to access issues of the Hinton Parklander printed prior to 1996 at the library. I viewed the hard copy format of those printed after 1996, in addition to all copies of The Hinton Voice. I applied the same keyword search when accessing the Hinton Parklander and The Hinton Voice.

As part of the content analysis, periodicals serve an important function. Periodicals include any newspaper or magazine published at regular intervals. These provide both an historical overview and current snapshot of the social landscape and narratives circulating locally, provincially, and nationally regarding the topic of coal mining and land reclamation (Earl, Martin, McCarthy & Soule, 2004). Editorial articles and reader polls were excluded from the sample based on the inherently biased nature of such sources (Creswell, 2009; McCarthy, McPhail, Smith & Crishock, 1999).

In addition, I reviewed Government websites (Alberta Energy, Alberta Environment and Sustainable Resource Development, and Natural Resources Canada), Coalspur Mines Ltd.'s website and community newsletter, industry-related websites (Coal Association of Canada), and regulatory-body websites (AER) for documents and information related to coal mining and land reclamation. I compiled 27 documents from this search (see Figure 2.1 for a detailed composition of the content analysis by document type).

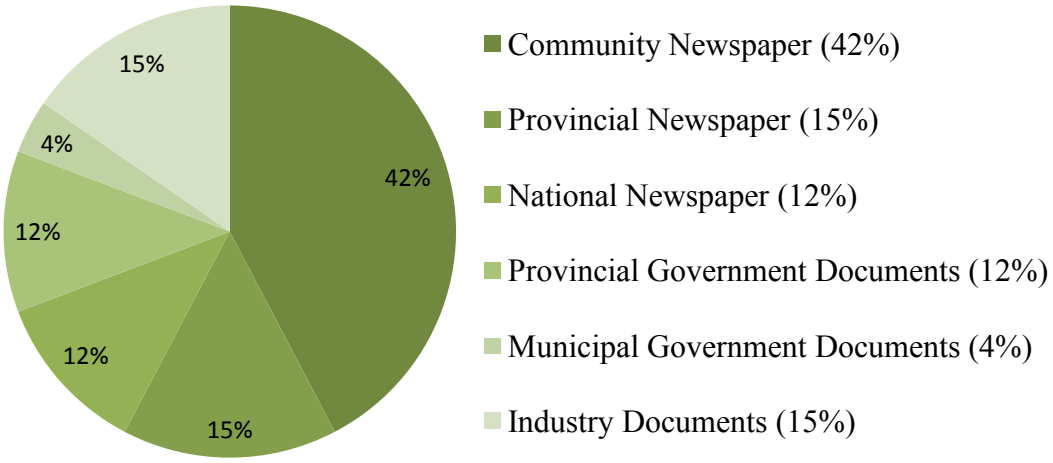

Figure 2.1. Content Analysis Composition

These resources provide information on industry-focused narratives related to the regulatory environment and social landscape within which they operate. Web-based resources are transitory in nature, which may limit accessibility to historical resources. In cases where I required the historical resource I used Wayback Machine, an internet archiving service, to access historical snapshots of web-based resources. For example, companies remove various documents from their websites daily that they deem unimportant, no longer relevant, or potentially politically and economically contentious, including press releases and corporate announcements. I scanned these historical snapshots to ensure nothing of potential value was overlooked. This search however, did not guarantee the availability and accessibility of all historical documents

such as PDFs because often such services as Wayback Machine only take snapshots of websites, rather than archive uploaded and attached content.

During document collection, I organized all documents chronologically in binders, recording the date, author, and publication of each document in a Microsoft excel spreadsheet. Manual open coding took place from August 2014 to October 2014. I employed thematic coding in the analysis of these documents, focusing on reclamation and how it is discussed (Gibbs, 2007). I created and used a codebook to record and adapt these themes as necessary. Once I reached thematic saturation, I finalized my codebook. The codebook includes the following themes:

Expertise ("Borrowing the Land") is divided into two sub-themes, reclamation experience/compliance and reclamation promises/goals. Both speak to how industry and governments discuss extractive resource projects. This includes, but is not limited to, industry success stories, awards, ideological language, and years of experience.

Reclamation Stories ("Backyard Stories") refers to stories shared about reclamation on behalf of the public or community organizations. This includes opposition and support for projects as it relates to land reclamation, through the perspective of experiences with and interpretations of reclamation activities.

Operational/Legislated Processes and Expectations refers to the use of technical language to explain the coal mining process. This theme focuses on land reclamation from the pre-mine approvals to post-mining operations.

Innovation arose out of two areas, reporting done on novel solutions to reclamation issues (such as viable/suitable planting substrates through the repurposing of city waste or improved

machinery), and innovation in reclamation policy. This theme focuses on how technology and governments advance reclamation efforts.

Limitations and Challenges speaks to the acknowledged challenges and limitations to reclamation. It references industry decisions regarding reclamation costs and methods, the enforcement of government legislation, and the sharing of information between industry counterparts.

I assigned codes within each document in accordance with the codebook. Information I collected from the content analysis was triangulated with the information I collected through interviews and surveys. This process addresses issues such as selection and/or description bias typically associated with such documents, and positions the above findings as supporting documentation for ideas that emerge from the other methods (Fuller, 2014).

Survey

I conducted a survey in response to Hinton's population of 9,640 and resource limitations such as my time availability as a Master's student. Taking into consideration appropriate sampling techniques and a large sample size, this method enables me to extend the results obtained from a reasonable sample to the entire community. As noted by Danielson, Tuler, Santos, Webler and Chess (2013), surveys "are the most effective tool for getting input from a broad cross section of members of the general public" (p. 104). In addition, from a participant point of view surveys are characterized by low time commitment and knowledge demands than an interview or focus-group (Danielson et al., 2013).

Field Pre-Test: A field pre-test of the survey tool took place on June 23, 2014 in Hinton at the residence of a community member. The pre-test was done to assess the instrument under realistic conditions (Fowler, 2014; Czaja & Blair, 2005). The pre-test included eight participants

(one male, seven females) who live and work in the town. Seven of the participants work as teachers in the community, and one is a retired millwright. All participants are long-time residents of the community (>1 year). The pre-test took approximately two hours to conduct. Six participants completed hard copies and two participants completed the online version. I used the comments from the pre-test audio-recording and my field notes to adjust the survey tool as necessary. The pre-test took place in three parts (Fowler, 2014; Czaja & Blair, 2005):

1) Participants completed the survey to the best of their ability.
2) Participants were then asked to make comments about questions that were unclear, caused confusion, or to which they had no answer.
3) Participants and I discussed the suggestions and comments, for integration into the survey tool.

I recorded the names and addresses of those who participated in the pre-test to ensure that during the actual survey distribution, these individuals were not approached for inclusion in the main sample. I chose not to include these individuals due to bias and the priming effect, as a result of the pre-test (Fowler, 2014; Dillman, Smyth & Christian, 2009). As a result of participation in the pre-test these participants may be more inclined to seek out additional information about the Vista Project. Inadvertently, this makes them more informed than if they had not participated in the pre-test.

Sampling Strategy: I drew on the study conducted by Kennedy, Krogman and Krahn (2013) to design my sampling strategy. Their study distributed and collected surveys door-to-door as detailed by Dillman, Smyth and Christian (2009), using major thoroughfares and natural areas to geographically limit the study area. My sampling strategy involved surveying one out of every eight houses based on 4,266 Hinton residences (this number includes suburban service,

general delivery and lock boxes) which are subdivided into seven geographical areas, as per Canada Post's mail delivery service (Appendix A). To create efficiencies, I pre-selected houses using Hinton's civic address map, from www.hinton.ca (Appendix B). This sample excluded individuals under the age of 18, multiple family members unless a multi-family dwelling, non-permanent residents (individuals living in Hinton for <1 year), and individuals living in institutions without access to public resources or information such as nursing homes. My sample does not discriminate based on gender.

Table 2.1: Survey Distribution Using an Area Probability Sampling Distribution

Section Number	Number of Residences	% of Total Residences	Number of Respondents/Section	Rate of Housing Unit
SS 0001	964	22.81	114	1/8
SS 0002	502	11.88	59	1/8
SS 0003	714	16.90	85	1/8
SS 0004	735	17.39	87	1/8
SS 0005	283	6.70	34	1/8
SS 0006	540	12.78	64	1/8
SS 0007	488	11.55	58	1/8
Totals	**4,226**	**100**	**500**	

I distributed surveys door-to-door to 434 households between July 2014 and October 2014 using an area probability sampling method (Fowler, 2014) (Table 2.1). The remaining 66 residences (of the 500 sample size) included individuals in apartment buildings, as well as apartments above stores in either of the two downtown cores (Routes 5 & 6). I posted information about the survey in seven apartment buildings with the permission of the property managers. All of the apartment buildings had locked access, making door-to-door distribution difficult without this permission. I developed survey codes to ensure that only one individual

from each single-dwelling household responded and to coordinate follow-ups. In the case of multi-family dwellings, I provided one individual from each family the opportunity to participate.

Design: The survey contained 33 questions including both open- and closed-ended questions, and was available online or via hard copy format. The survey took approximately 15-20 minutes to complete depending on the respondent's answers. I constructed the online survey using Fluid Surveys (www.fluidsurveys.com), a web-based survey software and distribution site, and Microsoft Word 2010 to construct the hard copy. I employed both types of surveys to ensure accessibility to all members of the community. These distribution methods are relatively comparable in terms of data reliability, validity and quality (Boyer, Olson, Calantone & Jackson, 2002). Differences between the two distribution methods arose primarily in the amount of time dedicated to the tool's construction, where the online survey required more based on familiarization with software, coding of the questions, and inserting question and page logic (Boyer et al., 2002). However, online or electronic surveys also result in fewer missing responses (Boyer et al., 2002). Therefore, my sample size and the associated low response rates with survey research made using both methods desirable.

I posted the survey link on www.communicativeflow.wordpress.ca (Appendix C). I used Wordpress, a free web hosting software, to develop this website. I used this website to provide more information about the study in the form of posts, and to offer credibility to the project.

Survey design is a critical step in study design, and requires an understanding of the population being sampled (Fowler, 2014). I was attentive to the use of neutral, unbiased language in the creation of questions given the nature of the community as a resource town. The survey questions addressed: who individuals spoke with regarding the project (from the general

public, government, and industry); what information sources participants access; involvement in participation opportunities related to the project planning (Griffin-Ives, 2011); environmental views and opinions drawing on the New Ecological Paradigm (NEP) (Dunlap, Van Liere, Mertig, & Jones, 2000); and questions about the socio-demographic characteristics of the survey respondents.

To construct the survey, I relied on existing research and measurement scales.[1] I designed questions 7-23 (see Appendix D) to assess community networks involving both individuals and information sources (Garcia-Amado et al., 2012; Anglim & Waters, 2007). In questions 25-27, I adapted existing scales designed to assess participation and ecological views to align with the case study (Parkins, Beckley, Comeau & Stedman, 2012; Griffin-Ives, 2011; Dunlap et al., 2000 respectively). I altered question 23k from the NEP scale "The earth is like a spaceship with very limited room and resources" to "The earth is like a lifeboat with very limited room and resources". The lifeboat metaphor originated in 1974, presented by Garrett Hardin, an American ecologist. The metaphor references population growth and the Tragedy of the Commons (Næss, 2004; Hardin, 1974). This change does not alter the core concept being measured by the question: limits to growth. I made the change from spaceship to lifeboat because it provides a more culturally relevant depiction of limited resources. In question 26 I drew on the indicators of meaningful citizen participation Griffin-Ives (2011) outlines in her 42 question survey. Space limitations and concern for respondent fatigue resulted in the use of select questions from each of her categories: Broad Public Participation (a,b), Issue and Process Framing (c), Deliberation (d,e), Credibility (f,g), and Tangible Results (h). All of the above questions, aside from the NEP scale, asked participants to respond in relation to Coalspur's Vista Project.

[1] Questions 1-3, 28-32 of the survey tool measure demographic characteristics. I use questions 4-6 to assess a respondent's awareness of the Vista Coal Mine project and Coalspur Mining Ltd., as well as their community group affiliation.

Promotion and Advertising: Promotion and advertising are key elements in the recruitment of survey participants. There are various ways to effectively reach a population including face-to-face interactions (Davies, 2011; Mendez-Luck et al., 2010), associations with community organizations (Mendez-Luck et al., 2010), and through the use of social media sites and networks (O'Connor, Jackson, Goldsmith & Skirton, 2014; Fenner et al., n.d.; Arcia, 2014). Often, the survey method selected is indicative of the population being sampled (Fowler, 2014).

The promotion of this study involved a multifaceted approach given the size and geographical spread of the town. Hinton is divided into two town sites: Old Drinnan Town (Valley District) and New Hinton (Hill District). Accessing the local newspapers was key to advertising my research broadly (Appendix E). I posted advertisements in the Hinton Parklander on August 11, 2014 and September 29, 2014. The Hinton Parklander was chosen over The Hinton Voice based on circulation numbers. The Hinton Parklander circulates 4,078 copies, whereas The Hinton Voice circulates only 1,584 (Newspapers Canada, 2014). However, The Hinton Voice printed a story on October 16, 2014 about the research project which included contact information and where to complete the survey. I also provided information about the project on Shaw TV Hinton starting August 11, 2014, posted information multiple times on Hinton's two Facebook pages (Hinton Online and Hinton Info Board), posted information on Hinton's event calendar (www.hinton.ca), and hosted a booth at Hinton's 14th Annual Information and Registration Fair on September 3, 2014. I placed posters advertising the project in local businesses including Freson Brothers, the Dr. Duncan Murray Recreation Centre, King Drug and Home Healthcare Store, Walmart, Safeway, Tim Horton's, Canadian Tire, Home Hardware, Shopper's Drugmart, and the Daily Grind (Appendix E). I monitored these posters monthly and reposted as necessary.

I used neutral language in the creation of all advertising and promotional materials given Hinton's natural resource dependency. The advertising messages closely aligned with the survey content, which is an important element in effective advertising (Batterham, 2014).

Distribution: Three field assistants and I distributed surveys door-to-door during weekdays and weekends, between 10:00 am and 6:00 pm depending on the route and day. During distribution, there were always two individuals completing a route to ensure personal safety. I developed a spreadsheet to monitor completion, non-interest, not at home, general notes, and to record emails (Appendix F). The research team carried these spreadsheets with them while in the field, as well as business cards related to the research project. We employed survey codes to avoid duplication and unnecessary follow-ups based on non-interest or completion. We also collected emails from those respondents who wished to disclose that information. In general, individuals were not receptive to this technique, and preferred taking the information card.

I used survey cards to reiterate and distribute information about my research (Appendix G). The development of this tool was motivated by the need to reach individuals who were not at home during survey distribution. This card provided community members with all the necessary information to partake in the research project, including a description of the study, the individual's survey code (unique to each household), contact information, and ethics approval information. The use of the University of Alberta logo on the cards allowed it to also promote the authenticity and legitimacy of the project. Survey distribution covered approximately 33km and took 74.5 hours over 17 days (First Round = 45 hours, Second Round = 29.5 hours) (Table 2.2). The second round (or follow-up) took less time as a result of fewer houses to approach given 56 "Not Interested" responses and 24 "Completed" surveys (Table 2.3).

Table 2.2: Survey Response Rates by Survey Route (prior to conducting follow-ups)

Level of Completion	Route							Totals
	1	2	3	4	5	6	7	
Not Interested	9	4	11	13	4	4	11	56
Completed	5	5	3	9	0	0	2	24
No Face-Face	61	42	47	52	7	17	21	247
TOTAL HOMES	99	59	74	93	16	39	54	434

Table 2.3: Survey Response Rates by Survey Route (post-follow-ups)

Level of Completion	Route							Totals
	1	2	3	4	5	6	7	
Not Interested	15	10	25	19	7	4	13	93
Completed	14	6	5	18	2	1	6	52
No Face-Face	40	35	30	43	2	24	32	206
TOTAL HOMES	99	59	74	93	16	39	54	434

In the administration of interview surveys, I continually reiterated the participant's answers to them to ensure accuracy. In the hard copy format, I gave participants the opportunity to review their survey at the end. I was present for the completion of most hard copy surveys, and was able to answer questions as they arose. In the online format, participant responses are piped into proceeding questions.[2] If inaccurate, participants were able to return to previous questions in the survey to correct their error.

Response Rate and Sampling Error: According to Hazel and Clark (2013), door-to-door survey distribution is a negotiation process affected by various factors both within a researchers control (such as introductions, how researchers attract attention, and how a researcher presents themselves), as well as factors beyond their control. Therefore, recruitment requires a flexible

[2] In online survey tools, piping refers to a survey logic function in which answers submitted by respondents are inputted by the computer into specific proceeding questions. Its purpose is to minimize user error and aid in more efficient survey completion.

approach on the part of the researcher to address participants individually, and acknowledgement of factors impacting response rate that a researcher is unable to address (Hazel & Clark, 2013).

I received 52 completed surveys, including 15 hard copies (one survey interview), and 37 online versions. Respondents not approached during the door-to-door distribution account for 10 of the completed surveys. To avoid duplication and place these respondents within the appropriate survey route, I categorized these survey responses using an address rather than a survey code. In lieu of a survey code, the online survey requests an address from the respondent.

The survey had a final response rate of 11.98%. I conducted follow-ups to improve the initial response rate, which increased from 5.52%. Regardless of this improvement, the probability of sampling error increases as the sample size decreases. Additional contributors to sampling error included fenced yards, dogs on the premises, the inability to access all apartment buildings on the survey route, and limits to internet availability in the mobile estates. I used a broad and encompassing advertising and promotion strategy in an attempt to minimize the above factors. Sampling error associated to non-response may be a result of the mine's current state, community perceptions toward researchers, political positioning of community members, and community ties to extractive resource industries. I used neutral, unbiased language in my advertising, promotion, interactions with community members, as well as in the development of the survey tool to assist in mitigating these factors.

Follow-Ups and Interviews: I conducted 378 door-to-door follow-ups after the initial survey distribution. Of the 52 survey respondents, nine (seven online, two door-to-door) provided a contact email indicating their interest in participating in a follow-up interview. I used this information to contact these individuals by email, in addition to the follow-up. Prior to sending out emails to these participants, one participant did agree to an interview during the

survey distribution. Of the remaining eight respondents, none responded to emails regarding a follow-up interview.

Data Analysis: Social network analysis (SNA) is founded on the idea that "social life is created primarily and most importantly by relations and the patterns formed by these relations" (Marin & Wellman, 2011, p. 11). As denoted by its name, life is composed of social networks that include various actors and the relations between these actors are what link them together. A network consists of various components, including the actor and the relational ties or linkages. In network analysis, "the unit of analysis…is not the individual, but an entity consisting of a collection of individuals and the linkages among them" (Wasserman & Faust, 1994, p. 5). These units "focus on dyads (two actors and their ties), triads (three actors and their ties), or larger systems (subgroups of individuals, or entire networks)" (Wasserman & Faust, 1994, p. 5). Multiple response sets were included in the survey tool (questions 7-23) to assess the integration of communication environments based on community networks involving both individuals and information sources. I used observed attributes including years residing in Hinton to contextualize patterns that present themselves amongst relational ties (Wasserman & Faust, 1994).

I used IBM SPSS Statistics 22 to perform statistical analysis on my survey results. I employed SNA using Visone 2.10 (http://visone.info/) to guide my analysis of communication flows and more specifically, to map our understanding of how federal and provincial legislation changes influence communication flows in the contemporary public sphere.

Interviews

Interviews offer valuable data, and assist in contextualizing opinions and responses provided through other data collection methods such as surveys. According to Danielson et al. (2013), surveys alone provide "the least depth of understanding of rationales behind opinions" (p. 105). Interviews, in contrast, contribute to validity in relation to triangulation. They help contextualize the survey results and content analysis findings (Maxwell, 2013). Therefore, I conducted semi-structured interviews with both key informants and general public between July 2014 and December 2014 (Appendix H). According to Gilchrist and Williams (1999), key informant interviews rarely stand alone and often provide supplementary data. Interviews with the general public add depth to the survey results, and provide a deeper understanding of the questions asked. I used a semi-structured interview format to ensure that the questions I chose as a researcher did not impede further lines of questioning and exploration. I conducted 12 interviews with key informants and the general public.

Between September 2014 and December 2014 I conducted key informant interviews. Although not excluded from completing the survey, interviews represent the primary mode of data collection for this group. In comparison to interviews, Danielson et al. (2013) argue that a survey tool is less effective when dealing with key stakeholders such as government officials due to difficulties in acquiring large enough samples for meaningful statistical analysis. Key informants include municipal and provincial government representatives (n=5), as well as industry representatives (n=2). In small communities, key informants are often limited due to lack of government offices and smaller satellite offices for industry. Seven key informants reflects saturation in my sampling of these individuals. I used purposive sampling to obtain these interviewees. I compiled a list through an exhaustive search of key individuals involved in

discussions about the Vista Project, and mining projects more generally. I contacted each individual first by phone (based on availability of a contact number). In most cases, I had difficulties reaching these individuals by phone. I left voicemails followed by an email with my contact information and additional information about the study. Six of these interviews were conducted in-person, and one by email. In-person interviews were conducted in a public setting, such as an office.

Between July 2014 and October 2014 I conducted interviews with members from the general public. Six individuals participated in these interviews (n=6), one of which I did not audio-record due to the interviewee's preference, and two of these individuals resided in the same household. Three of these interviewees had not been approached to participate in the survey, and were acquired using snowball sampling. I coordinated interviews with members of the general public via email and/or phone, and I conducted these in the interviewee's personal residence.

Interview transcription took place between October 2014 and January 2015. I reviewed the transcripts to remove any identifying information, including names (if they can be used to identify the interviewee) and where the individual works. I forwarded transcripts to the corresponding interviewee by email for final review and approval. I gave interviewees 10 business days to request changes and/or revoke their transcript from the study. As stated in the consent form and in the email to interviewees containing the transcript, not responding to the email within the 10 days designated an approval of the transcript without changes.

Field Notes

Field notes are an essential component to qualitative and quantitative research. They provide context and allow the researcher to think through, express, and/or describe their situational

surroundings in the form of questions, findings, and daily logs (Tjora, 2006). I used field notes in four ways: 1) to record my daily activities related to survey distribution, interviews, and my content analysis, 2) to write about and elaborate on items that caught my attention such as common words used to describe reclamation activities or trends across newspapers, 3) to record my post-interview notes describing the setting, location, interesting points made, and how interviews related to other aspects of the study, and 4) to reflect on my own perceptual lens towards this study. I used my field notes to contextualize my interviews, and give depth to my survey results.

Ethics

I submitted an ethics application on May 5, 2014 to the University of Alberta's Human Research Ethics Board. My ethics application was approved on June 9, 2014. In accordance with the University of Alberta's Human Research Ethics, I developed an informed consent form for both the survey tool (Appendix I) and the interview process (Appendix J).

Setting up the survey and interviews appropriately is an important task in acquiring informed consent from participants (Gubrium & Holstein, 2001). The survey embedded the consent form into the introduction section. The consent form educated participants on the project goals and purposes, drew attention to their ability to withdraw at anytime, and highlighted the confidentiality and anonymity of the survey results. The online survey required participants to read and check a box indicating their willingness to participate. The hard copy employed implied consent, on the basis of: a) anonymity and confidentiality, b) minimal associated risk with participation in the survey, and c) respondents can reassess their participation in the survey prior to answering a question (Fowler, 2014).

Prior to conducting the interview, I emailed interview participants directly with the consent form and a one-page project information sheet. I used a consent form requiring a participant's signature, because interviews require a larger commitment in terms of opinions and perspectives. The consent form outlined the expectations and roles of the participant and the researcher during the interview. It also asked participants to read and check yes/no boxes related to their willingness to participate, their desire to be identified in the interview transcript and to receive a digital copy of the transcribed interview, as well as their willingness to be contacted for a follow-up if necessary. I only planned to conduct one interview with each individual. I briefly reviewed the consent form with the participant prior to beginning the interview, highlighting the project goals and purposes, their ability to withdraw at anytime, and the confidentiality and anonymity of the interview data.

I informed all survey and interview participants that the findings from this research may be used in written publications and/or oral presentations for academic, government, or public audiences. To ensure confidentiality and anonymity, this study will present all results from the surveys and interviews as aggregates.

Conclusion

This study employs a mixed-methods approach using surveys, a content analysis, and interviews. Each element serves a unique function in the research design, data collection, and in answering the research question. These methods intertwine through an iterative process, wherein support for one method is found in another. This chapter serves as a more detailed account of the methods used in this Master's thesis, and functions as a basis for informing the subsequent chapters. Using the data collected, the next chapter will explore how the types and variety of sources accessed by community members influence participation related to the Vista Project.

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Chapter Three

Mining the Medium: Communication Infrastructure Theory, Participation, and Reclamation Planning in the 'Vista Coal Mine Project'

Communication today takes on many diverse and unique forms. Over the last 10-15 years the internet has rapidly expanded to approximately 2.8 billion internet users worldwide and with it social networking sites and digital communication. Digital platforms, including social media, offer new outlets through which companies and individuals gain greater autonomy and control over the messages being disseminated. This expansion has drawbacks including the inundation of society with information and the breakdown of interpersonal networks (Ball-Rokeach, 1985; Kim & Ball-Rokeach, 2006).

In the context of extractive resource industry projects, the diversity of communication modes available today makes identifying how best to communicate and exchange information with communities increasingly difficult. If choosing to engage less formalized modes of communication such as social media, messages can receive intense scrutiny related to legitimacy and authenticity (Lyon & Montgomery, 2013). Arguably, it is the openness of such communication tools to public engagement that largely dissuades the resource industry from the incorporation of these into communication strategies (Birse, 2013). Gaps in communication are also attributed to a lack of resources and dedicated professional communication personnel, as well as the prioritization of communications with internal stakeholders (Miller & Horsley, 2009).

Provincial governments and industry alike developed strategies to address the issue of communication and public consultation. For government, these processes are outlined in legislation and subsequent policies surrounding the disclosure of information and public consultation processes. For industry, corporate social responsibility initiatives are at the forefront of active communication with stakeholders (Prno & Slocombe, 2012). Communication tools

including mass and social media enable the resource industry to educate its followers and the larger global community about how the industry works, and more specifically how it addresses growing environmental and social concerns (Birse, 2013). Industry has discretionary power over how information is communicated to stakeholders (Lyon & Montgomery, 2013). Despite the provision of guidelines by provincial governments, the flexibility provided within such legislation influence opportunities for collaborative discussions (Kirchoff & Tsuji, 2014).

The mining industry primarily utilizes centralized forms of communication such as corporate websites, internal newsletters, newspaper reporting, and email subscriptions. The extractive resource industry defines communication through the notion of "sensegiving", where the goal is to inform the public and build a positive image within the community (Morsing & Schultz, 2006). The construction and control over dissemination of media messages is accessible to a select few, leading to non-participatory models of communication (Herman & Chomsky, 2002). In light of the industry's higher levels of environmental risks, defining communication in this way and the use of more traditional media helps build and promote its legitimacy (Lyon & Montgomery, 2013). Nwagbara and Brown (2014) describe effective communication as an integrative and shared process that "transcends organisational goal[s]s by incorporating collective gain and objectives" (p. 19).This perspective is actively explored by some coal mining companies who engage new two-way communication tools, such as the use of Twitter by Rio Tinto and Teck Resources Limited. Planning and implementing effective and collaborative communication strategies come with steep financial costs in areas including development, monitoring and maintenance, making it easier for established companies with more capital to explore these routes (Macnamara & Zerfass, 2012). Therefore, factors such as cost, control, and

social context may constrain the use and integration of communication tools into corporate communication strategies.

Given the growing focus on the social agenda as an important and relevant component of sustainable development and environmental management, this research addresses the need to understand how communication inhibits or enhances opportunities available for public deliberation around issues such as mine site reclamation (Parkins, & Mitchell, 2005; Masuda, McGee & Garvin, 2008).

Guided by the research question "how does the use of various communication channels influence participation in the planning of industry projects", I explore reclamation planning and communication around the 'Vista Coal Mine Project' in Hinton, Alberta (hereafter referred to as the 'Vista Project'). Using a mixed methods approach, I:

a) identify the channels through which community members receive information about coal mining activities and reclamation;

b) statistically analyze the relationship between communication mode and participation in activities related to the Vista Project; and

c) critically analyze the use of these sources in the context of provincial and federal environmental legislation around natural resource management.

Ball-Rokeach's Communication Infrastructure theory (CIT), in combination with Social Learning Theory (Rist, Chidambar, Escobar, Weismann, & Zimmermann, 2007), guide my paper. Understanding how community members are involved in discussions about industry activities, in the context of environmental legislation, enables us to explore how and if

deliberative spaces are created using various communication tools and if they are utilized for specific learning outcomes.[1]

Theoretical Framework and Literature Review

Today, factors such as the increasing size and concentration of media corporations, the breakdown in traditional institutions, and globalization amongst others change the way communication occurs (Kim & Ball-Rokeach, 2006). Communities rely on the mass media for information regarding industry projects (Ball-Rokeach, 1985). It is through such communication tools that civic society comes to know the world outside direct experience (Allan, Adam, & Carter, 2000). Nwagbara and Brown (2014) argue that in this exchange, communication and information are distinctly different in terms of their goals wherein communication is based on mutuality while information is not. This notion of communication reflects Habermas' conception of communicative action, which involves the opening of public spaces for discussion with the goal of achieving unforced consensus through shared understanding and comprehensive agreement (Habermas, 1987; Kemmis & McTaggart, 2005).

The distinction between communication and information is important when examining the dialogue between industry and communities, in that it indicates whether the communication process is interest-focused or integrative (Nwagbara & Brown, 2014). For participation to be meaningful, it should provide adequate notice and relevant information, be inclusive, open, and involve multiple interactive methods (Stewart & Sinclair, 2007). Moreover, it lends integrity and accountability to the process of communication between industry and community (Stewart & Sinclair, 2007). In the context of social learning theory, key to the process of collaborative

[1] Bill C-38 was passed on June 13, 2012, and is an omnibus federal budget implementation bill. The Bill altered the environmental assessment process in Canada by limiting participation in formal reviews to those directly impacted, decreasing the number of assessed projects, and placing time limits on the completion of assessments.

knowledge formation between multiple stakeholders is communicative action (Rist et al., 2007), and thus meaningful participation

It is not enough to simply examine how media is used by individuals but, to also acknowledge the macro relations that structure and inform the centrality of these media systems (Ball-Rokeach, 1998). The contemporary communication landscape depicts a "relationship in which the capacity of individuals to attain their goals is contingent upon the information resources of the media system" (Ball-Rokeach, 1985, p. 487). This relationship reflects the changing social environment and points to a shift in the control of information resources (Ball-Rokeach, 1985). By virtue of requiring these resources to partake as a citizen such individual media dependencies are dictated by how and what media are used (Ball-Rokeach, 1985).

At the grassroots level, access to local media resources is often limited in scope. Community members must rely on their own interpersonal and associational ties, as well as more removed media such as provincial, national and/or online resources for information. The local environment and social context offer different levels of information resources which influence specific interactions, processes, and relations between the media, individuals and communities (Kim & Ball-Rokeach, 2006). It is necessary then, to explore the communication resources available to local communities and their ability to engage and encourage community building and promote collective action towards common goals (Kim & Ball-Rokeach, 2006).

Situating communication processes within the community where industry projects take place allows for an individualized understanding of community goals and values. This approach takes Habermas' initial conception of the public sphere, and focuses it on a specific geographic region and issue environment called the "communication action context" (Kim & Ball-Rokeach, 2006). Understanding a community's 'communication action context' contributes to the

development of communication processes and strategies focused on and created for communities such as Hinton, and allows for a collaborative approach to communication. The identification, availability, and use of a diverse range of methods and tools encourages, includes, and promotes participation from various stakeholders with varying degrees of knowledge and experience (Rist et al., 2007). By focusing on specific communities and the issues they face, these communication ecologies "can be leveraged by practitioners in order to strengthen a neighbourhood communication infrastructure and encourage social change" (Broad et al., 2013, p. 327).

Communication and communication environments play an important role in the deliberative processes of communities at the grassroots level. They may also serve as a structural constraint to participation opportunities (Parkins & Davidson, 2008). The increasing reliance on more traditional media tools in both the dissemination and reception of information on industry projects suggests that opportunities for community dialogue aside from those mediated relations are not utilized. In combination with limited community resources, media dependencies may constrain the communication environments and deliberative processes that exist today in communities. Therefore, a community's communication networks, in relation to integration and involvement of various stakeholders, may limit the translation of social learning from theory to practice.

Research Design, Sampling, and Analysis

Research Context

Hinton is a community built around the extractive resources industry, from wood products to coal mining. The community is located 15 minutes east of Jasper National Park situating it only 80 kilometers from a UNESCO World Heritage Site (Figure 3.1). Coal mining is one of the Town's six major industries and employs 350 people directly (Hinton Community Profile, 2014).

Natural resources whether for tourism or extraction are an important part of the community, economically and socially.

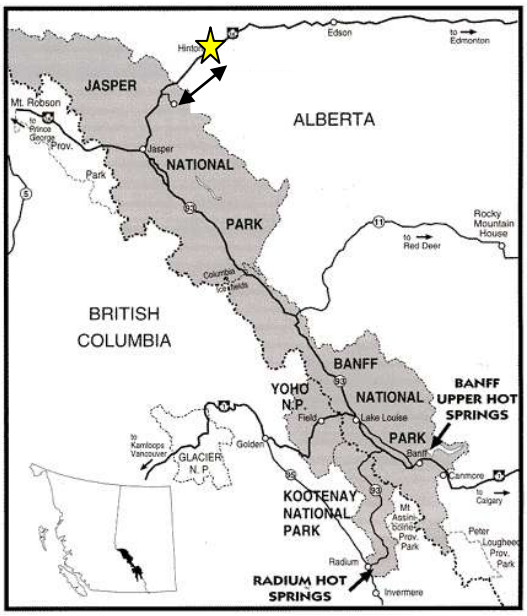

Figure 3.1. Jasper National Park in relation to Hinton, Alberta
Source: www.albertawow.com

Hinton, Alberta has a total population of 9,640, with a median age of 36, 71% of whom are between 15-64 years of age (Hinton Community Profile, 2014). Of these residents 4,980 are female and 4,665 are male. Hinton has four local communication resources. These include the Hinton Voice and the Hinton Parklander (newspapers), the Eagle 97.5 CFXH-FM (radio), and Shaw Cable 10 (television). Additional provincial, national and international resources are available via the internet, television, and mail.

The Vista Project covers 10,000 hectares on the eastern foothills of the Canadian Rocky Mountains, seven kilometers southeast of Hinton (Coalspur Mines Limited, 2008 December 4). The Vista Project is planned to include an open pit thermal coal mine for the primary purpose of extraction and export to Asian Pacific Rim countries. The coal mine is estimated to yield 313 million tonnes of marketable reserves over an approximately 30 year mine life-span. Coalspur

initiated public consultations in 2010 and since then has undertaken four formal open houses, held informal meetings with community members, published community newsletters for distribution within Hinton and surrounding areas, and set up a corporate website (Technical Report, 2014 March 28).

Methods

The data for this study was collected using a household survey, key informant and general public interviews, and a media content analysis.

Data Collection

Survey: I distributed surveys door-to-door to 434 households between July 2014 and October 2014 using an area probability sampling method. I surveyed one out of every eight houses based on 4,266 Hinton residences. The survey took approximately 15-20 minutes to complete depending on the respondent's answers. It was available online (www.communicativeflow.wordpress.com) or via hard copy format. Participants included respondents aged 18 years or older who had lived in Hinton for one or more years. The resulting sample contained a total of 52 respondents.

Interviews: I conducted key informant interviews between September 2014 and December 2014 with individuals involved in discussions about the Vista Project, and mining projects more generally. Key informants included municipal and provincial government representatives (n=5), and industry representatives (n=2). I used purposive sampling to obtain these interviewees. I conducted interviews with members from the general public (n=6) between July 2014 and October 2014. I obtained these participants through snowball sampling or survey follow-ups.

Content Analysis: From April 2014 to August 2014, I undertook a content analysis of digital and print resources used in the dissemination of information related to land reclamation and coal mining. I compiled 178 articles composed of periodicals, and industry and government publications through an exhaustive search of documents and websites from 1993 to 2014.

Data Analysis

Linear regression and ANOVA were used to conduct analysis of the data and test for significance. An ANOVA analysis with Type III error was used in the linear regression models in response to unbalanced data. Linearity, normality, and homogeneity were validated using SPSS. I used a significance level of 0.05 to assess the significance of each model.

Research Questions

This study focuses on how the types and quantity of information resources accessed regarding reclamation information influence participation in civic engagement opportunities and perceptions towards meaningful participation opportunities. I am interested in whether a relationship exists between participation and the source(s) respondents' accessed. To this regard, I pose the following questions:

Q_1: Do the types of information resources accessed by respondents influence civic participation?

Q_2: Do the types of information resources accessed by respondents influence meaningful participation?

Often, it is not the lack of information provided around such projects, rather the effectiveness of the communication strategies employed by these industries (Adams & Gynnild, 2013). These questions help identify the tools used and understand how they contribute to participation.

Q_3: Are the number of information resources accessed by respondents associated with civic participation?

Q_4: Are the number of information resources accessed by respondents associated with meaningful participation?

Effective communication requires an integrated approach that draws on various methods and tools to reach various audiences (Mitchell & Parkins, 2005). These questions explore if communication tools in combination contribute to participation.

Measurement

Measuring the Types of Information Sources Accessed

I derived the Source Type variables from survey question #19 (Table 3.1). Respondents were asked to identify up to five different sources from which they heard and/or read about reclaiming the Vista coal mine site. I created five categories from the provided responses including: Local Media, Provincial/National Media, Internet/Social Media, Coalspur Resources, and Other. From these, I created five dummy variables associated with each information source. I used "Internet/Social Media" as the reference group in the regression analysis. If a respondent identified two sources that fall within the same category, I counted it as one response so as not to give weight to the category. I included these as primary predictor variables based on society's increasing reliance on media for local, national, and global information (Ball-Rokeach, 1985).

Measuring the Number of Information Sources Accessed

I derived the Source Variety variable from survey question #19 (Table 3.1). For this variable respondents received a score between one and five (a score of five indicates that a respondent listed five different sources). On average, respondents access 1.74 (sd=1.26) information sources containing information on the Vista Project's planned reclamation activities. I included this as a

primary predictor variable in that using a variety of communication modes is linked to effective public participation (Mitchell & Parkins, 2005).

Table 3.1: List of Select Survey Questions regarding the Reclamation of the Vista Project

#	Question
19	Please identify up to 5 information sources from which you have heard or read about reclaiming the Vista coal mine (persons, organizations, print/digital media, etc.). For each information source you identified, please indicate what kind of source this is?
20a	In general, how often do you use/access this information source? *(Daily / Weekly / Monthly / 2-3 Times/ Year / Only Once)*
20b	How often did this information source discuss reclaiming the land of the Vista coal mine? *(Never / Seldom / Often / Always)*
20c	How useful has this source been in providing information about reclaiming the land of the Vista coal mine? *(Not Useful / Neutral / Very Useful)*
20d	In general, how useful has this information source been in providing information about the Vista Project? *(Not Useful / Neutral / Very Useful)*
21	In the last twelve months, which information source did you turn to most often for information on the Vista Project?
22a	Of the 5 information sources you identified regarding the Vista Project, did you share any of these with others? *(Yes / No)*
22b	If yes, with whom did you share these information sources? *(Community Member / Government Representative / Coalspur Representative)*
23a	Of the 5 information sources you identified regarding the Vista Project, did anyone share these sources with you? *(Yes / No)*
23b	If yes, who shared these information sources with you? *(Community Member / Government Representative / Coalspur Representative)*
24	Of the 5 information sources you identified, what kinds of information helped you best understand the reclaiming of the Vista coal mine site?

Notes. These question numbers are not necessarily sequential because specific questions were designed for use in my statistical analysis, whereas others provided demographic information for example.

Measuring Length of Residence in Hinton

The variable Living in Hinton is a measure of length of residence in Hinton. The average length of residence reported was 26.52 years (sd=16.46), and ranges from 1 to 58 years. I included this

as a control variable using the enter method[2], based on the notion of integration. Previous studies argue that the longer an individual lives in a community the more integrated their social networks which may result in access to more diverse information resources (Sampson, 1988).

Measuring Ecological Views

I measured Ecological Views using the New Ecological Paradigm (NEP), a 15-item index, developed by Dunlap, Van Liere, Mertig, and Jones (2000). Each question asked participants to indicate their level of agreement with each statement (1=Strongly Disagree and 5=Strongly Agree). Survey questions 27B, 27D, 27F, 27H, 27J, 27L, and 27N were reverse coded (5=Strongly Disagree and 1=Strongly Agree) in accordance with the NEP scale, where disagreement indicates a pro-ecological view (Dunlap et al., 2000). Scores were calculated by summing each statements associated scores for level of agreement, taking into consideration the reverse-coded questions. Possible scores using this index range from 15 to 75, where higher scores indicate a stronger pro-ecological view. The average score reported is 50.62 (sd=10.13), with scores ranging from 27 to 75. I included ecological views as a control variable using the enter method. Based on its use as a component for predicting environmental behaviours, ecological views may play a role in motivating individuals to seek out specific information resources related to industrial projects (Dunlap, 2008).

The control variables Living in Hinton and NEP Score may be causally effective and correlated with the type and number of information resources accessed. The addition of these to the model controls for their confounding effect (if one exists) on Source Type and Variety to achieve a more accurate idea of the effect of these variables on participation.

[2] The Enter Method is the default method in regression statistical procedure for SPSS, and entails the entering of all variables at the same time in the model.

Dependent Variables

Measuring Civic Participation

Civic Participation is measured using a 14-item index based on various activities respondents had engaged in since hearing about the Vista Project (Parkins, Beckley, Comeau, & Stedman, 2012).[3] Responses to each question include "Have done it", "Have not, but willing", and "Have not, not willing". These responses were recoded using a 0 to 2 scale (0="Have not, not willing" and 2="Have done it"). I performed an exploratory factor analysis to assess the fit of the index using Varimax rotation. Two types of civic participation were identified:

Table 3.2: List of Items Composing Public Sphere Participation and Distribution of Responses

Item	Question	Response	%
1	Attended an information meeting	Have Not, Unlikely	34.6
		Have Not, But Willing	26.9
		Have Done It	21.2
2	Shared information with family and friends	Have Not, Unlikely	11.5
		Have Not, But Willing	13.5
		Have Done It	59.6
3	Signed a petition	Have Not, Unlikely	53.8
		Have Not, But Willing	25.0
		Have Done It	3.8
4	Voted for a particular politician	Have Not, Unlikely	42.3
		Have Not, But Willing	15.4
		Have Done It	25.0
5	Participated in public surveys such as this one	Have Not, Unlikely	25.0
		Have Not, But Willing	34.6
		Have Done It	21.2
		N = 43*	

Notes. Sub-sample sizes are slightly smaller/larger for each question, because of small amounts of non-response.

[3] Question 25.13 "Gave a presentation in formal public" was removed from the index because it had zero variance.

a) Public Sphere Participation – This index measures participation in activities that take place in the public sphere or are a collective activity (Parkins et al., 2012). All items loaded >0.70 except item #4 which loaded at 0.51 (Table 3.2). I conducted a reliability analysis to determine if it was necessary to delete this item. The index returned a Cronbach Alpha of 0.72. By deleting item #4, the gain is minimal (Cronbach Alpha of 0.75 if deleted), therefore I decided to keep this item in the index.

b) Private Sphere Participation – This index measures participation in activities that take place in the private sphere or are an individual activity (Parkins et al., 2012). All items loaded >0.60 (Table 3.3). I conducted a reliability analysis to determine internal consistency. The index returned a Cronbach Alpha of 0.76.

Table 3.3: List of Items Composing Private Sphere Participation and Distribution of Responses

Item	Question	Response	%
1	Written to a politician	Have Not, Unlikely	69.2
		Have Not, But Willing	13.5
		Have Done It	0.0
2	Written a letter to the editor	Have Not, Unlikely	75.0
		Have Not, But Willing	5.8
		Have Done It	0.0
3	Written online comments in response to media stories	Have Not, Unlikely	69.2
		Have Not, But Willing	7.7
		Have Done It	5.8
4	Made a post on Facebook, Twitter, blogged or other social media about the Vista Project	Have Not, Unlikely	69.2
		Have Not, But Willing	9.6
		Have Done It	3.8
5	Used a toll-free telephone number to register my point of view	Have Not, Unlikely	63.5
		Have Not, But Willing	17.3
		Have Done It	1.9
		N = 43*	

Notes. Sub-sample sizes are slightly smaller for each question, because of small amounts of non-response.

I computed the new variable *Civic Participation* using these two factors. Scores range from 0 to 1.40, with a mean of 0.55 (sd=0.36).

Measuring Meaningful Participation

Table 3.4: List of Items Composing Meaningful Participation

Item	Question	Response	%
1	It was easy to find out about participation opportunities	Strongly Disagree	5.8
		Mildly Disagree	9.6
		Neutral	30.8
		Mildly Agree	28.8
		Strongly Agree	7.7
2	Coalspur sufficiently educated me on the Vista Project	Strongly Disagree	11.5
		Mildly Disagree	15.4
		Neutral	15.4
		Mildly Agree	28.8
		Strongly Agree	11.5
3	Deliberation was encouraged in participation activities	Strongly Disagree	5.8
		Mildly Disagree	7.7
		Neutral	44.2
		Mildly Agree	17.3
		Strongly Agree	5.8
4	Coalspur was receptive to alternative solutions proposed by community members	Strongly Disagree	3.8
		Mildly Disagree	9.6
		Neutral	48.1
		Mildly Agree	15.4
		Strongly Agree	5.8
5	Coalspur follows up with community members on the results of participation	Strongly Disagree	5.8
		Mildly Disagree	1.9
		Neutral	50.0
		Mildly Agree	17.3
		Strongly Agree	7.7
		N = 43*	

Notes. Sub-sample sizes are slightly smaller for each question, because of small amounts of non-response.

Meaningful Participation was measured using an eight-item index based on respondent's feelings towards the availability and conduct of participation opportunities related to the Vista Project. This index draws on five indicators of meaningful citizen participation outlined by Griffin-Ives (2011) (Table 3.4). For each of the questions, responses were coded using a Likert scale (1=Strongly Disagree and 5=Strongly Agree). The items were recoded using a 0 to 4 scale. An exploratory factor analysis indicated that this index measures two different components. On Factor 1, questions 26.1 and 26.6 loaded <0.60 and question 26.5 loaded <0.30 in the opposite direction. These questions were removed from the index. The factor analysis was re-run and all items loaded >0.70 on the factor. A reliability analysis returned a Cronbach Alpha of 0.89. The factor has scores ranging from 0 to 3.80, with a mean score of 2.19 (sd=0.83).

Results

Descriptive Statistics

Respondents identified the Hinton Parklander and Hinton Voice most often as sources that contained reclamation information related to the Vista Project (Figure 3.2).

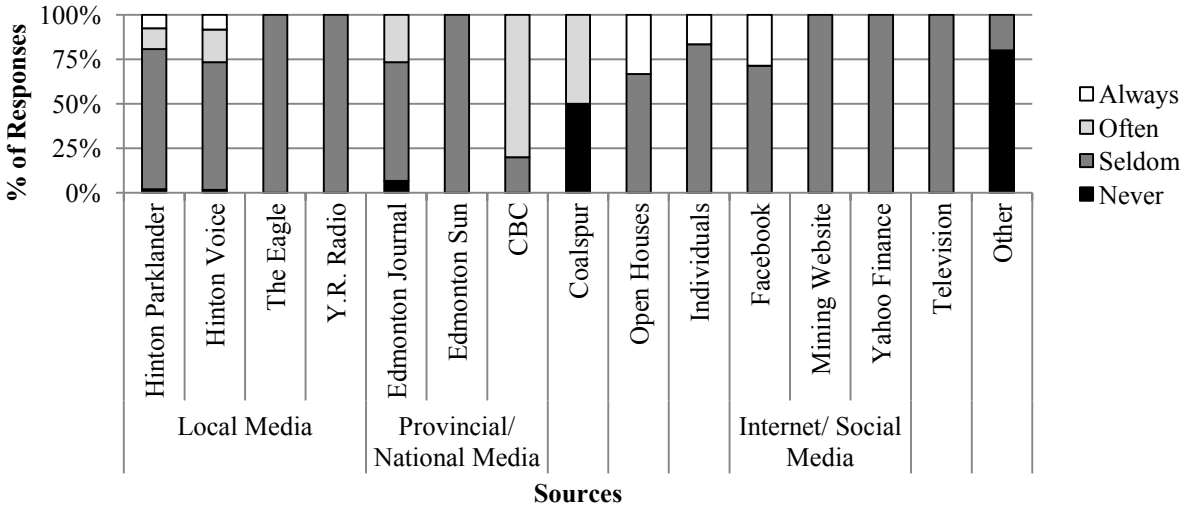

Figure 3.2: Source by Mention of Reclamation Information, n = 35

The Hinton Parklander was mentioned 23 times, the Hinton Voice 29 times, and all other sources were mentioned fewer than five times. Respondents reported weekly to daily usage for 12 out of the 15 sources. Figure 3.2 demonstrates that the majority of sources identified seldom mention reclamation. Coalspur resources and CBC more frequently mention reclamation information and activities.

Figure 3.3 illustrates that in 10 of the 15 sources, 50% or more of the respondents had neutral feelings about the usefulness of the provided reclamation information. For sources wherein respondents felt reclamation information appeared more frequently, respondents were divided on the usefulness of this information. Fifty percent of respondents were neutral about the usefulness of information provided by Coalspur, and 75% felt more strongly about the usefulness of the reclamation information provided by CBC.

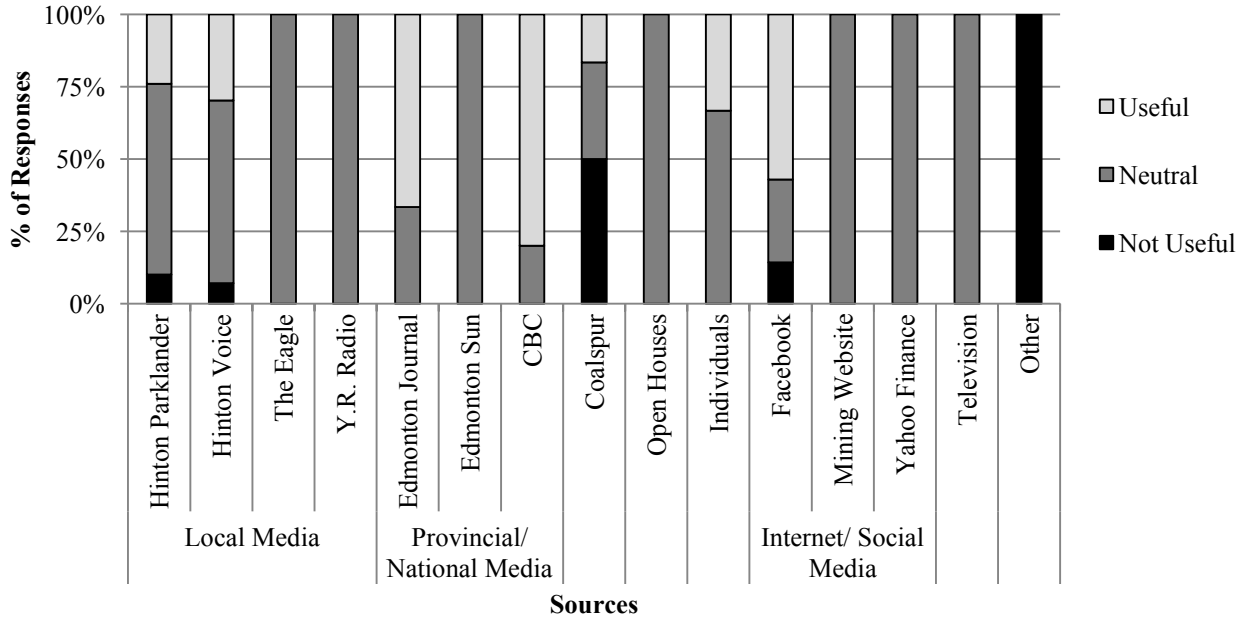

Figure 3.3: Source by Provision of Useful Reclamation Information, n = 35

Bivariate Analysis

In Table 3.5, I conducted a bivariate analysis to explore the relationships between the predictor variables Source Variety and Source Type (Local Media, Provincial/National News, Coalspur Resources, Social Media / Internet, and Other Resources) and the dependent variables Civic and Meaningful Participation. There are no significant relationships between Civic Participation and any of the predictor variables. There are however, significant relationships between Meaningful Participation and Source Variety and Coalspur Resources.

Table 3.5: Bivariate Analysis of Predictor Variables on Civic and Meaningful Participation

Predictor Variables	**Civic Participation**	**Meaningful Participation**
	r	r
Source Variety	0.30	0.33*
Local Media	0.13	0.14
Provincial/National News	0.22	0.24
Coalspur Resources	0.05	0.33*
Social Media / Internet	0.28	-0.09
Other Resources	0.01	-0.06

Notes. Coefficient is statistically significant ($p<0.05$) for Two-Tailed test

I conducted a multivariate analysis to explore these relationships further. As a result of collinearity (tolerance <0.4, Linneman, 2014), I conducted separate analyses of Source Variety and Source Type.[4]

Multivariate Analysis

Civic and Meaningful Participation by Type of Information Source Accessed

Model A tests the relationship between Civic Participation and Source Type variables. In this model, there are weak and statistically insignificant positive relationships between Civic Participation and the predictor variables (Table 3.6). This model is not a significant predictor of Civic Participation ($p=0.68$).

[4] An analysis run without all predictor variables may bias coefficient estimates of the remaining predictor variables (Linneman, 2014). The relationship between Source Variety and Source Type requires further testing involving a larger sample size.

Model B adds the control variables Living in Hinton and NEP Scores to Model A (Table 3.6). Living in Hinton and NEP Score also have weak and statistically insignificant positive relationships with Civic Participation. The effect of Source Type is not confounded by the effect of Living in Hinton and NEP Score. Model B is not a significant predictor of Civic Participation (p=0.82).

Table 3.6: Linear Regression of Civic Participation and Meaningful Participation on Type of Information Sources Accessed, Residency in Hinton, and Ecological Views Variables

	Civic Participation				**Meaningful Participation**			
	Model A		Model B		Model C		Model D	
Predictor Variable	β	r	β	r	β	r	β	r
Local Media*	0.07	0.08	0.04	0.05	0.10	0.06	0. 17	0.11
Provincial/National News*	0.23	0.21	0.24	0.21	0.67	0.27	0.37	0.17
Coalspur Resources *	0.08	0.07	0.09	0.08	0.96	0.38**	0.84	0.37**
Other Resources*	0.04	0.03	-0.06	-0.04	-0.33	-0.11	-0.33	-0.12
Living in Hinton	-	-	0.00	0.13	-	-	0.01	0.13
NEP Score	-	-	0.00	0.07	-	-	- 0.03	-0.40**
Adjusted R^2	-	-0.04	-	-0.09	-	0.11	-	0.24
F Ratio	-	0.58	-	0.48	-	2.31	-	3.06***

Notes. The reference group is "Internet/Social Media"

Coefficient is statistically significant ($p<0.05$) for Two-Tailed test

F value is statistically significant ($p<0.05$)

Partial correlations were used to assess the relationship between two variables, while controlling for the effect of others in the model.

Model C tests the relationship between Meaningful Participation and Source Type variables. In this model, Meaningful Participation has a weak and statistically insignificant positive relationship with Local Media and Provincial/National News (Table 3.6). There is a weak and statistically insignificant negative relationship between Meaningful Participation and Other Resources. Model C also reports a moderate and significant positive relationship between

Coalspur Resources and Meaningful Participation (p=0.02). Therefore, Meaningful Participation is 0.96 units greater for those who access Coalspur Resources than for those who access Internet/Social Media resources. Overall, Model C reports an adjusted R Square of 0.11 and an F Ratio of 2.31. This model is not a significant predictor of meaningful participation (p=0.08).

Model D adds the control variables Living in Hinton and NEP Score to Model C (Table 3.6). In this model, Coalspur Resources remains significant (p=0.03). In addition, the effect of NEP Score on Meaningful Participation is significant (p=0.02). The coefficient for Coalspur Resources changes very slightly. Model D accounts for 24% of the variance in Meaningful Participation, a change of 13% in the adjusted R Square from Model C. The effect of Source Type is confounded by the effect of Living in Hinton and NEP Score. This model is a significant predictor of Meaningful Participation (p=0.02).

Civic and Meaningful Participation by Number of Information Sources Accessed

Model A tests the relationship between Civic Participation and Source Variety. In this model, there is a moderate and statistically insignificant positive relationship between Source Variety and Civic Participation (Table 3.5 & 3.7). This model reports an adjusted R Square of 0.07 and an F ratio of 3.94. This model is not a significant predictor of Civic Participation (p=0.05).

Model B adds the variables Living in Hinton and NEP Score to Model A (Table 3.7). Living in Hinton and NEP Score show weak and statistically insignificant positive relationships with Civic Participation. This model reports an adjusted R Square of 0.04 and an F ratio of 1.50. This model is not a significant predictor of Civic Participation (p=0.23). The effect of Source Variety is not confounded by the effect of Living in Hinton and NEP Score.

Model C tests the relationship between Meaningful Participation and Source Variety. In this model, there is a moderate and statistically significant positive relationship between these

two variables (p=0.03) (Table 3.7). As Source Variety increases there is 0.17 unit increase in Meaningful Participation. This model reports an adjusted R Square of 0.09 and an F Ratio of 4.80. Source Variety explains 8.5 % of the variance in Meaningful Participation. Model C is a significant predictor of Meaningful Participation.

Table 3.7: Linear Regression of Civic Participation and Meaningful Participation on Number of Information Sources Accessed, Residency in Hinton, and Ecological Views Variables

	Civic Participation				**Meaningful Participation**			
	Model A		Model B		Model C		Model D	
Predictor Variable	β	r	β	r	β	r	β	r
Source Variety	0.09	0.30	0.09	0.30	0.21	0.33*	0.17	0.29
Living in Hinton	-	-	0.00	0.10	-	-	0.01	0.14
NEP Score	-	-	0.00	0.03	-	-	-0.03	- 0.41*
Adjusted R^2	-	0.07	-	0.04	-	0.09	-	0.23
F Value	-	3.94	-	1.50	-	4.80**	-	4.90**

Notes. Coefficient is statistically significant (p<0.05) for Two-Tailed test

F value is statistically significant (p<0.05)

Partial correlations were used to assess the relationship between two variables, while controlling for the effect of others in the model.

Model D adds the variables Living in Hinton and NEP Score to Model C (Table 3.7). In this model, there is a weak and statistically insignificant positive relationship between Living in Hinton and Meaningful Participation, and a moderate and statistically significant negative relationship between NEP Score and Meaningful Participation (p=0.01). Meaningful Participation decreases by 0.03 units for every increase in NEP Score. In this model, Source Variety is not significant (p=0.08). Overall, Model D reports an adjusted R Square of 0.23 and an F Ratio of 4.90. This model explains 22.6% of the variance in Meaningful Participation. The effect of Source Variety is slightly confounded by the effect of Living in Hinton and NEP Score. This model is a significant predictor of meaningful participation (p=0.01).

Discussion

The findings suggest that Coalspur promoted an integrated approach to engaging community stakeholders in discussions about the Vista Project and land reclamation. The predominant use of more traditional media tools in both the dissemination and reception of information in combination with the provincial government's flexible requirements pertaining to information distribution suggests that opportunities for community dialogue aside from those mediated relations are not utilized. This results in an unbalanced communication network where areas such as interpersonal relations are constrained.

Communication Action Context

The planning stages of the Vista Project were guided by provincial legislation. In Alberta, protocols for the public consultation component of the Environmental Impact Assessment (EIA) process are outlined in the *Environmental Protection and Enhancement Act* (EPEA), in addition to the Rules of Practice stipulated by Alberta's *Responsible Energy Development Act* (REDA).[5] Under the EPEA, Sections 40(d) and 49(1) state that the public must be involved in the review of the proposed project activities, and that the company must disclose the implementation of the consultation process. While the company has a responsibility to involve the public, the methods through which these take place remain flexible. The REDA offers guidelines and recommendations on structuring such communications. REDA's Rules of Practice outline the necessary information for public notices (a description of the energy resource, the timeline for filing statements of concern, and where information about the resource activity may be obtained), and distribution recommendations for these public notices (on the company's website, in the local/regional newspaper, and through other electronic media). Companies, however, are

[5] REDA was brought in on June 17, 2013, a year after Bill C-38 and the Canadian Environmental Assessment Act (2012) were implemented. It is the guiding document for the Alberta Energy Regulator (AER), outlining its mandate, structure, powers, and functions.

only advised to select one method from the proposed list. Therefore, how information is distributed is at the discretion of the company, within the relatively flexible boundaries set forth by the EPEA.

Communication Networks surrounding the Vista Project

In the examination of the information sources accessed by community members that discuss reclamation activities associated with the Vista Project, there are a variety of communication channels employed. Respondents identified 15 different sources that mentioned reclamation information. These sources included local newspapers (Hinton Parklander, Hinton Voice), local radio stations (the Eagle, Y.R. Radio), provincial newspapers (Edmonton Journal, Edmonton Sun), National news (CBC), social media (Facebook), individuals (biologist), Coalspur Mining Ltd. resources, and Yahoo Finance. Sources identified also included generic responses including mining websites, open houses, and television. The majority of sources identified are more traditional methods of communication. 76.7% of respondents indicated that of the information resources they access, local media most often discussed reclaiming the Vista Project. Provincial Newspapers (6%) and Coalspur Mining Resources Ltd. documents (6%) are the second most accessed sources for reclamation information. This finding is reflected in the content analysis, wherein the majority of information related to coal mining and reclamation are made available through newspapers (69%), government publications (16%), and industry documents (15%) (Appendix K).

Traditional media is widely acknowledged as "both a reflection and arbiter of legitimacy" (Lyon & Montgomery, 2013, p. 750). For a junior mining company, building legitimacy within local communities is essential not only to their social licence, but also to the planning process:

> approvals are an absolutely essential part of the success of a junior mining company… those companies who can say they have all of the regulatory approvals in hand, the value of their asset all of a sudden stands above all others that don't. (Interview Participant #5, line 9-15)

Here, public engagement is important in the context of timing around regulatory approvals. Coalspur may have engaged more traditional media as a form of legitimacy building, not only within the community but also towards external stakeholders such as investors. Lyon and Montgomery (2013) note that the improper use of social media can have detrimental impacts on the financial performance of a company. The reliance on mass media alone is problematic as it generates awareness and interest whereas interpersonal communication is more readily linked to engagement (Anderson-Wilk, 2009). Thus, tradeoffs exist between legitimacy, economic success, and public engagement through diverse media.

In an integrated communication network, the availability of platforms through which stakeholders can engage others is essential to collaboration (Rist et al., 2007; Broad et al., 2013). In the project outset, Coalspur was recognized for reaching out to the community and various stakeholders early in the planning process showing support for local events such as the Wild Mountain Music Festival and meeting people face-to-face:

> One of their evident directions was to be a sponsor, be a supporter of certain things in the community. Let the community know that they were here and they were real and they were going to support social and economic and environmental initiatives. (Interview Participant #10, lines 284-287)

Most of the project information was concentrated on the Coalspur website (www.coalspur.com), provided through direct contact with industry representatives, or distributed through external

resources such as local newspapers. In the first three open houses, 61 statements of concern regarding reclamation were recorded (EIA, 2012). These demonstrate some diversity and attention to interpersonal communication during the project planning stages and help explain why accessing Coalspur resources demonstrates a significant association with meaningful participation ($p=0.02$) (Table 3.6).

Resources such as social media that provide dynamic and collaborative environments for debating such topics were not formally employed by Coalspur. The use of additional communication methods outside those suggested by environmental policies is at the discretion of the company. As noted by two participants, "[i]n the context of applicants, social media utilization would be at a company's own discretion" (Interview Participants #9 & #13). Lyon and Montgomery (2013) refer to this communication strategy as "stakeholder response", which involves asymmetric two-way communication wherein the company asks stakeholders for feedback which may or may not inform the revision of corporate documents and reports. Further, the open houses offered by Coalspur have the goal of informing and gathering feedback, rather than collaboration (EIA, 2012). Collaboration, in its ideal form, involves a process of negotiation and debate between various stakeholders with differing perspectives, experiences and disciplinary backgrounds (Rist et al., 2007; Garmendia & Stagl, 2010). Informing and gathering information implies that Coalspur controls the conversation, whereas collaboration refers to an open space for the discussion and debate of specific topics. There is limited incentive or motivation to diversify communication strategies beyond the number of communication methods recommended, especially when a company has limited resources to allocate to such strategies.

Meaningful Participation in the Planning Stages of the Vista Project

In CIT, integrated communication networks embody community-specific public spheres wherein discussions and information is generated by all members (Broad et al., 2013). In addition to the method of communication, the types of information available through these sources are also important and include public perspectives. Most respondents identified local newspapers as the primary source through which they read or heard about the Vista Project's reclamation activities. In the content analysis, reclamation stories contributed by the public appeared in only 17% of the articles and depicted community members using information provided by industry representatives to arrive at a decision about the quality and benefits of reclamation activities (see Appendix K). It should be noted that traditional media are known for their political and economic allegiances, thus making it difficult for them to accurately reflect or engage the various stakeholder perspectives (Broad et al., 2013). Therefore, the lack of a significant association between local media sources and meaningful participation suggest that the local media has limitations as a source for collaborative dialogue formation.

The accessibility of information creates media dependencies as a result of limited access to in-depth and adequate information surrounding such issues as reclamation. Although information is provided through accessible media such as local newspapers and radio, these sources did not contain the information all respondents were looking for. As noted by one participant, "I go out of my road to find it, some of it is put into the Voice and the Parklander…But not the in depth portion I am looking for" (Interview Participant #7, line 201-202). This suggests that reclamation information in part is provided through the local media, but that more detailed information exists elsewhere. In addition, Coalspur's public engagement methods required initiative on the part of residents for access to project information. The lack of

adequate information about reclamation activities across the various sources accessed by respondents is evident. 58.3% of respondents were neutral regarding the usefulness of the information provided about reclamation activities, and 68.9% identified that of the sources identified, they seldom provided reclamation information.

Community members are at a disadvantage when understanding new energy projects, in that limited access to project information makes it difficult to evaluate and verify claims made by companies (Shriver, Adams, & Messer, 2014). Provincial legislation reinforces this narrative in the disclosure of information to the public. Under the EPEA (2000), Section 35(1) states that "the following documents and information in the possession of the Department that are provided to the Department in the administration of this Act must be disclosed to the public in the form and manner provided for in the regulations" (p. 33). All of the necessary information about the project is made available to communities, but in forms that provide minimal information, require certain efforts to access, an understanding of reclamation, and/or interpretation by industry professionals.

The quality of the information provided to communities is important. If all available sources contain limited information, then accessing multiple sources would likely have no effect on meaningful participation. Coalspur resources including community newsletters, website, staff members and open houses may leave respondents with more positive feelings about the participation opportunities available because these resources offered more detailed information and allowed participants to engage in face-to-face discussions with industry representatives. Resources such as technical reports and the environmental impact assessment were only available through outlets created by Coalspur including their corporate website. Therefore, industry and government alike reinforce the development of unbalanced communication

networks around new energy projects by placing constraints on the accessibility of project information through other sources. Communication has the ability to bring people together through collaborative means, but employing the appropriate combination of strategies and tools at specific phases is important (FAO, 2011; Stewart & Sinclair, 2007).

Structural Factors and Communication Networks

Additionally, a respondent's ecological views were significantly associated with perceptions of participation opportunities offered by Coalspur (Table 3.6). Those who accessed Coalspur resources reported lower NEP scores, indicating a more anthropocentric view of the environment. Dunlap et al. (2000) note that the NEP scale reflects not only the experiences of individuals, but also the information received by individuals pertaining to environmental problems. In Hinton, the coal mining industry has strong historical and ideological ties in the region, and narratives that infuse the community relate to corporate successes and benefits, environmental success such as the bighorn sheep and end pit lakes, and cultural ties (see for example, Bell & York, 2010). The Cheviot Coal Mine hearings that spanned 1996 to 2005 stand as a recent reminder of the perceived importance of natural resource development in the area. During the Cheviot hearings, the mine proposed by Cardinal River Coal received enormous opposition regarding the company's inadequate assessment of cumulative effects from recognized environmental organizations including the Pembina Institute and the Sierra Club of Canada. In contrast, the local community was largely supportive of the mine arguing for its economic benefits (Gadd, 2005). Gaventa (1980) describes this as an "occupational community", where the "interrelationships between workplace and community life are thought to lead to a degree of solidarity" (p. 150). If respondents already prescribe to the ideological messaging surrounding the Vista Project's necessity in the region, accessing Coalspur resources may

correspond to support for the company rather than contribute to greater critical awareness arising from the type and detail of information provided by the company.

Conversely, these findings suggest that individuals with higher NEP scores (pro-ecological view) felt that the participation opportunities available were insufficient, discouraged deliberation, and did not provide feedback or results to the community, and as such accessed other resources than those provided by Coalspur. As noted earlier, sources such as the local media offer less integrated communication networks that tend not to focus on individuals or groups making efforts for change, which may influence the perceived effectiveness of available participation opportunities (Broad et al., 2013). Therefore, the method in which industry chooses to communicate with stakeholders is important as it may influence community perception and engagement around industry projects.

Limitations

This study had limitations resulting from sample size, social environment, and the political climate. The study concluded with a 12% response rate. As a result, I was unable to achieve a representative sample of the population and can thus only infer any findings to my sample rather than the community of Hinton. This also restricted the number of predictors I was able to bring into each model (Tabachnick & Fidell, 2013). Home ownership, socio-economic status, gender, occupation, and ethnicity are additional structural factors that may influence the integration of communication networks and civic engagement in a community (Kim & Ball-Rokeach, 2006).

Economics and politics also play a role in dictating community attention to particular areas, and may influence the reception of such studies. The coal mining industry has existed in and around the community since the early 1900s, and continues to provide financial and economic support in the form of funding and jobs. Individuals may have decided not to

participate in my research given the long-standing existence of the industry in the community, and the uncertainty surrounding the Vista Project. This may have resulted in selection bias however, my sampling method, use of unbiased and neutral language, and advertising strategy aimed to minimize this effect.

In addition, regional by-elections were approaching during the field season. This may have impacted the willingness of Town Council members to participate in the study. As noted by one participant "when there is an economic downturn, social and environmental effects matter less, and when things are going good you can really ask about environmental and social well-being" (Interview Participant #10, line 344-346). This study may have received better reception if the mine was going forward as planned.

Conclusion

Companies today have access to various communication tools that allow for the development of communication strategies based on the social context within which an industry operates. A desirable communication ecology involves the combination of inter-personal communication, involvement in community organizations, and the presence of local media (Broad et al., 2013). The integration and collaboration of these networks, corresponds to the facilitation of the social learning process around natural resource governance (Rist et al., 2007).

The findings from this study suggest that the type of source accessed is an important indicator of how respondents feel about participation activities, when considering a specific topic such as land reclamation. The types of information available through these sources make the method of communication important. In comparing the sources Coalspur used to share information, the only significant difference is in the depth and detail of information provided. And last, the more pro-ecological a respondent's views are, the less satisfied they are with the

participation opportunities available and the more inclined they are to access resources outside those provided by the company itself.

By choosing to engage less dynamic and structured communication tools, companies limit their ability to reach other audiences and promote collaborative discussions around new projects. Coalspur's position as a junior mining company influences its ability to develop a communication strategy involving a more diverse approach to the sharing of information. Provincial environmental legislation reinforces the use of more traditional communication methods, while providing flexibility for companies to explore alternative media at their discretion. In combination, these serve to minimize opportunities for community dialogue and collaborative discussions around the Vista Project.

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Chapter Four

"Projects that impact communities should have dialogue in the community": A Communication Network Analysis of the Vista Coal Mine Project in Hinton, Alberta

For Canada, public participation is an essential component of the environmental assessment process at both the federal and provincial level. The process is designed to generate dialogue within communities, with the goal of informing and protecting communities from unnecessary social and environmental impacts as a result of extractive resource industry projects. In 1973, the Environmental Assessment and Review Process (EARP) guidelines identified limited avenues for the review of industrial projects by the public and public consultation was considered optional (VanNijnatten, 1999). From the 1980s through to the 1990s, public involvement in the decision-making process gained greater attention in Canadian environmental policymaking (VanNijnatten, 1999). Public participation was formalized as part of the environmental assessment process in 1992 in the *Canadian Environmental Assessment Act*, which evolved out of the EARP (VanNijnatten, 1999). Policy making in Canada over the last 40 years has played an important role in structuring the availability and opportunities for participation in industry projects with environmental impacts.

Successful participation extends beyond the provision of suggested methods and tools in environmental policy. It involves the consideration and negotiation of local perspectives in the process of planning and implementing participatory opportunities. Arnstein (1969) acknowledges this process, defining participation as the "redistribution of power that enables the have-not citizens, presently excluded from the political and economic process, to be deliberately included in the future" (p. 216). Sinclair, Diduck and Fitzpatrick (2008) extend this definition, defining meaningful participation as the development of early and inclusive opportunities that are "deliberative, transparent, and empowering" in nature (p. 417). Key to creating and

implementing meaningful public participation opportunities effectively, is to also understand how community members think about participation and what they want from these opportunities (Webler & Tuler, 2006). This approach involves assessing the tools and infrastructure available for "building and maintaining civic communities" (Kim & Ball-Rokeach, 2006, p. 175). This understanding requires acknowledging the context within which participation takes place, and how participation reflects on the social, political, economic, and cultural perspectives that characterize community perceptions towards new industry projects, their environmental impacts, and benefits to a community.

The use of traditional and/or online information resources contribute to participation (Ognyanova et al., 2013). Those information resources which involve interpersonal communication show stronger connections to engagement and participation in comparison to local media when reporting on local issues (Ognyanova et al., 2013). Rist et al.'s (2007) notion of transdisciplinarity extends this idea to include collaboration, wherein the construction of knowledge in areas such as natural resource management is a more active process that involves debate. Planning for public participation then, requires flexibility, adaptability, and the application of various tools that enable the dialogue to evolve throughout its many stages in light of unique community characteristics (Webler & Tuler, 2006).

Recent changes made to Canadian federal environmental legislation through Bill C-38 affect public participation in terms of fewer opportunities for participation, socio-economic limitations to participation, and the transfer of responsibility to provincially regulated bodies (Gibson, 2012; Kirchhoff & Tusji, 2014).[1] Federal budget cuts prompt these changes to legislation, and result in the restructuring of various areas through the creation of more efficient

[1] Bill C-38 is an omnibus federal budget implementation bill that was passed on June 13, 2012. The Bill altered the environmental assessment process in Canada by limiting participation in formal reviews to those directly impacted, decreasing the number of assessed projects, and placing time limits on the completion of assessments.

processes. With respect to environmental legislation, these efficiencies include the implementation of strict assessment timelines and the transfer of federal responsibilities to provincial governments and/or municipalities (Kirchhoff & Tusji, 2014; VanNijnatten, 1999). As a result, the types of participation opportunities facilitated by industry perpetuate the limitations evident in federal and provincial environmental legislation such as tight timeframes and their effects on such areas as inclusive and collaborative debate. Vague and sometimes under-developed provincial environmental policies used to guide the implementation of legislated requirements exacerbate these limitations. As noted by Perdue and McCarty (2015), "the sharing of resources, information, and members reduces the limitations of individual groups and generates collaborative advantage" (p. 38). If the dissemination of such resources and information is limited or the process constrained by current environmental policies, initiating collaborative debate becomes increasingly difficult.

Participation in natural resource management involves the negotiation of industry objectives, provincial environmental legislation and policies, as well as community needs and perspectives. Provincial environmental legislation including the *Environmental Protection and Enhancement Act* in Alberta, Canada requires these negotiations, and offer formal outlets for such discussions to take place. Community acceptance of industrial projects however, occurs more informally and implicitly. Owen and Kemp (2013) describe this negotiation as 'social licence', wherein companies acquire informal consent from local communities through the promotion of minimized risk and impact of their activities on "culture, environment, economy, and livelihoods" (p. 31). The coal industry in Alberta faces unique challenges in undertaking such negotiations. Alberta is home to 70% of Canada's coal reserves, the world's most abundant fossil fuel and a major export commodity for Canada. The industry has existed in Alberta since

the 19th century, and has historical ties to many communities along the eastern slopes of the Canadian Rocky Mountains. Additionally, coal mining arguably has some of the greatest impacts on ecosystems as a result of its surface mining techniques. Together, such characteristics inform how individuals and communities think about and perceive new industry projects (Owen & Kemp, 2013). By engaging communities in the process of natural resource management, whether through public forums and/or industry-community newsletters, the industry increasingly demonstrates its awareness of the potential social, economic, and environmental impacts of industrial activities.

In the development and approval of new industry projects in or close to communities, it is necessary to explore if and how social networks surrounding these projects offer a platform for collaborative debate and knowledge formation. In doing so, we can better understand how these networks enable or constrain the flow of information in the context of provincial environmental policy landscapes.

Research Questions & Objectives

Public participation in extractive resource industry projects requires the creation and maintenance of effective communication channels which negotiate a community's underlying social, economic and historical ties to such industries, and existing environmental policy. In light of recent legislation changes in Canada, and the need to understand how such changes influence communication surrounding industry projects, I ask the following questions: What groups and/or individuals comprise the communication network surrounding new industry projects? Are these interactions characterized by one- or two-way communication flows? How often do these interactions take place? How do these characteristics influence the integration of a communication network and does integration influence participation at the grassroots level?

I examine the 'Vista Coal Mine Project' (hereafter referred to as the 'Vista Project') in Hinton, Alberta (Canada) with regards to the above outlined questions. I use social network analysis (SNA) to explore the characteristics, composition, and integration of the communication network surrounding the Vista Project as a whole.[2] Using this analysis, I critically examine if and how the communication network surrounding the Vista Project influences participation in discussions about the Vista Project. I focus my network analysis around three key stakeholder groups or actors: community members; industry representatives; and government officials. Utilizing Communication Infrastructure theory (CIT) and Social Learning theory, I examine more broadly the communication ecology surrounding industry projects in an attempt to provide suggestions on improving community communication networks (Broad et al., 2013).

Literature Review & Theoretical Framework

Social Learning, Public Participation, and Alberta's Environmental Policy Landscape

Coal mining, like many other extractive resource industries, has significant environmental impacts in areas such as air quality, water quality, wildlife habitat, and migration corridors. Coal mining arguably has one of the largest impacts on ecosystems (Zedler, Doherty, & Miller, 2013). Concerns around environmental impacts however, did not always exist. For example, mine site reclamation initially focused on dismantling and removing the physical components of the operation such as buildings and infrastructure (Powter et al., 2012). Since the introduction of Alberta's *Surface Reclamation Act* in 1963, the first legislation of its kind in Canada, land reclamation in practice evolved away from focusing solely on the physical removal of mine infrastructure to the return of ecological function of a reclaimed mine site in what is now called

[2] Reclamation is a significant component of the environmental assessment process in areas such as water quality and recreational access to the land to state a few. Public consultations are conducted to review the environmental impact assessment report compiled by the company. Therefore, I make the assumption that the communication network focused on the project as a whole is similar to one focused on reclamation, or at least includes interactions related to reclamation.

the *Environmental Protection and Enhancement Act* (EPEA) (Powter et al., 2012). Today, the Environmental Impact Assessment (EIA) process guides the implementation of such Acts, with the primary purposes of gathering information, public involvement, and the support of sustainable development (Alberta Environment and Sustainable Resource Development, 2013).

In natural resource management decision-making also evolved, shifting toward a more collective process that focuses on collaborative discussions between citizens and public agencies (Rist et al., 2007; Garmendia & Stagl, 2010). Public consultations and participation opportunities changed alongside the regulatory process surrounding land reclamation (Powter et al., 2012). Public consultation is now an important component of the EPEA and EIA process, and received considerable attention in the early years of the legislation in areas such as discussing reclamation expectations, organizing site visits for the public during the reclamation certification process, and providing the public with opportunities to review and appeal applications (Powter et al., 2012). The ebbs and flows of the coal economy determine the extent to which reclamation takes place as well as the involvement of community members and tourists in such activities as mine tours (Powter et al., 2012; Blanchard & Matthews, 2006). In addition, concerns related to environmental impacts focus on sectors of the economy in the media spotlight such as the oil and gas industry in Canada (Gandy, 1982). This may subsequently deflect public attention locally and globally from the coal industry and decrease social pressures to prioritize reclamation and public involvement. Ultimately, the EIA is a dynamic document that evolves with the project for which it is developed, making these areas susceptible to unanticipated forces. Public involvement is contingent upon both the policies put in place by provincial and federal governments, as well as the state of global economies.

Following the institutionalization of public participation in the policy landscape, participation also experienced a shift from the use of formal tools such as presentations, to more informal tools including focus groups (Walker, 2007). This shift acknowledges the need for expanding collaborative spaces within which individuals and groups with various perspectives come together (Rist et al., 2007). Collaboration, according to Walker (2007) involves both dialogue and deliberation wherein "dialogue fosters learning, learning generates shared understanding, and shared understanding supports deliberation" (p. 101). Communication networks that demonstrate two-way flows between the various stakeholder groups suggest that dialogue takes place and thus have the potential to support deliberation. In social network analysis, this is described as network integration which corresponds to its overarching idea; that network structures influence relationships and social outcomes such as the success of social movements (Perdue & McCarty, 2015). Therefore, better integration of social networks at the community level corresponds to greater potential for collaborative dialogue, debate, and social learning in participation opportunities.

Social Networks and Communication

The local well being of resource-dependent communities is increasingly dependent upon integrated social networks and the interface between communities, government, and industry (Broad et al., 2013). Unfortunately, these relationships are often disregarded, where each group denies social responsibility related to industry projects such as new coal mines (Glick & Glick, 1981). Communities assume that the government is responsible for ensuring their well-being, while industry makes a similar assumption based on other priorities such as economics of the proposal and project, and government assumes this issue is to be negotiated between industry and the community to avoid government interference (Glick & Glick, 1981). Such disconnects

are seen in education and communication materials related to industry activities. For example, the translation of scientific or technical content falls to neither industry nor governments leaving communities at a disadvantage (Shriver, Adams & Messer, 2014). This network of avoidance reflects the process of communication and information sharing related to new industry projects. Communication gaps generate disconnects between the provision of participation opportunities and the inclusion of shared understanding and collaborative debate in such opportunities.

Communication Infrastructure theory examines differences in communication structures and processes within specified social environments in order to understand how communication networks influence civic outcomes (Kim & Ball-Rokeach, 2006). Social network analysis addresses issues related to resource access and flows as a result of particular social relations. The quality of a communication environment, according to Kim and Ball-Rokeach (2006), is measured by the level of integration of the various connections, including the local media, community organizations, and residents. Through the examination of social networks, researchers can understand how relational ties or linkages function in the flow of information between actors, and how these network structures create or constrain opportunities for individual action (Wasserman & Faust, 1994). As noted by Rist et al. (2007), social networks have become "prominent spaces for social learning processes" (p. 26) in that the ability to access such networks as a result of negotiating social relations may enable collaborative interactions and relations between actors.

Communication bridges the gap between stakeholders and environmental issues, and has the ability to engage the public in discussions regarding industry projects (Ongare et al., 2013). These stakeholders "are involved in a dynamic, networked conversation that collectively forms the communicative foundation of community" (Broad et al., 2013, p. 327). Examining these

communication flows around specific issues, such as coal mining, allows for a better understanding of a community's communicative foundation. In this paper, I focus on the interpersonal relationships amongst community members, industry representatives, and government officials surrounding the Vista Project. My analysis aims to offer suggestions on improving industry communicative practices and recommend ways to collaborate with and educate communities through effective communication techniques in the project planning and assessment stages.

Hinton, Alberta and the Vista Project

Hinton has a population of 9,640 and is a community historically built around extractive resource industries, from wood products to coal mining. The community is located 15 minutes east of Jasper National Park situating it kilometers from a UNESCO World Heritage Site. Coal mining is one of the Town's six major industries and employs 350 people directly (Hinton Community Profile, 2014). Natural resources, whether for tourism or extraction, are an important part of the community, economically and socially.

The Vista Project covers 10,000 hectares on the eastern foothills of the Canadian Rocky Mountains, seven kilometers southeast of Hinton (Coalspur Mines Limited, 2008 December 4). The Vista Project is planned to include an open pit thermal coal mine for the primary purpose of extraction and export to Asian Pacific Rim countries. The coal mine is estimated to yield 313 million tonnes of marketable coal reserves over an approximate 30 year mine life-span. Coalspur initiated public consultations in 2010 and since then has undertaken four formal open houses, held informal meetings with community members, published community newsletters for distribution within Hinton and surrounding areas, and set up a corporate website (Technical

Report, 2014 March 28). Coalspur also supported an open door policy, and encouraged interested parties and individuals to set up meetings with staff to discuss their concerns.

Methodology

Data Collection

Employing a mixed methods approach, data for this study was collected using a household survey, as well as key informant and general public interviews. Prior to conducting this study, I completed an in-depth media content analysis which provides supplementary provincial and local context to the discussion of coal mining in Alberta in relation to environmental legislation and policies. I examined 178 digital and print resources (including periodicals, industry documents, and government documents) from 1993 to 2014 used in the dissemination of information related to coal mining and land reclamation.

I distributed surveys door-to-door to 434 households between July 2014 and October 2014 using an area probability sampling method. I surveyed one out of every eight houses based on 4,266 Hinton residences. The survey took approximately 15-20 minutes to complete depending on the respondent's answers. It was available online (www.communicativeflow.wordpress.com) or via hard copy format. Participants included respondents aged 18 years or older who had lived in Hinton for one or more years. The resulting sample contained 52 respondents.

I conducted key informant interviews between September 2014 and December 2014. Key informants included five municipal and provincial government representatives, and two industry representatives. I used purposive sampling to obtain these interviewees. Participants included key individuals involved in discussions about the Vista Project, and mining projects more

generally. I conducted six interviews with members from the general public between July 2014 and October 2014. I obtained these participants through snowball sampling or survey follow-ups.

Social Network Analysis

Social networks refer to a designated group of individuals, events, organizations, or groups that are connected in various capacities including frequency of interactions (Scott, 2000). Social networks are conceptualized in two ways: whole networks and ego-networks. Whole networks include all individuals and ties in a specified social group, such as a community or environmental discourse network, whereas ego-networks focus on ties originating from a specified individual or group depending on how nodes are defined (Scott, 2000). The examination of these connections or network ties shed light on patterns of interaction among various individuals or groups (Stoddart & Tindall, 2010). Identifying and analyzing these patterns makes apparent relationships or connections in a given network, that otherwise may not be obvious (Stoddart & Tindall, 2010). For industry projects, SNA provides a visual representation of communication processes at the grassroots level. I employ SNA in the analysis of my survey data using Visone 2.10 (Brandes & Wagner, 2004), in combination with data collected from my interviews and content analysis to contextualize and add depth to the social network.

I use the Vista Project to bound my SNA, focusing on the interactions between three key stakeholder groups: community members, government officials, and Coalspur representatives. I generated data from survey questions #7 - #18 (Table 4.1). Of the 52 survey respondents, only 35 survey respondents were used based on a respondent's answers to specific survey questions. If the survey respondent answered "No" to survey questions #7, #11, and #15, no social network data was generated, and that respondent was not included in the network (see Table 4.1).

Table 4.1: List of Select Survey Questions Comprising the Social Network Data Set

#	Question
7	Have you communicated (spoken/interacted) with any Community Members about the Vista Coal Mine Project in Hinton? *(Yes / No)*
8	If yes, please list up to five community members by their relation to you?
9	How often have you communicated (spoken/interacted) with each person about the Vista Project over the past year? *(Daily / Weekly / Monthly / 2-3 Times/Year / Only Once)*
10	What best describes your communication about the Vista Project with each person? *(I shared information with them / They shared information with me / We both shared information)*
11	Have you communicated (spoken/interacted) with any Government Representatives about the Vista Coal Mine Project in Hinton? *(Yes / No)*
12	If yes, please list the names of up to five government representatives
13	How often have you communicated (spoken/interacted) with each Government Representative about the Vista Project over the past year? *(Daily / Weekly / Monthly / 2-3 Times/Year / Only Once)*
14	What best describes your communication with each Government Representative about the Vista Project? *(I shared information with them / They shared information with me / We both shared information)*
15	Have you communicated (spoken/interacted) with anyone from Coalspur Mining Ltd. about the Vista Coal Mine Project in Hinton? *(Yes / No)*
16	If yes, please list the names of up to five individuals from Coalspur Mining Ltd.
17	How often have you communicated (spoken/interacted) with each person from Coalspur about the Vista Project over the past year? *(Daily / Weekly / Monthly / 2-3 Times/Year / Only Once)*
18	What statement best describes your communication with each person from Coalspur about the Vista Project? *(I shared information with them / They shared information with me / We both shared information)*

Notes. These questions are not necessarily sequential because specific questions were designed for use in the SNA, whereas others provided demographic information for example.

Given the anonymity of the survey, it was not possible to link alters (individuals or groups identified by the survey respondent) to egos (the survey respondent) other than the one who

identified them. As a result, this study draws on ego-network analysis. This SNA employs two-mode network data, because I am linking together individuals and groups (Stoddart & Tindall, 2010).

In this analysis, egos are treated as one mode of network data, depicted by numbered circles. Each number corresponds to a single, unique survey respondent. Stakeholder groups are treated as the second mode of network data and are depicted using rectangles. Stakeholder groups are categorized into 16 nodes under three broad categories including community members (family members, friends, work-related, neighbour, acquaintance, community group, service provider, union representative, and other), government officials (town council, provincial government, and government representative), and Coalspur representatives (senior management, middle management, supporting staff, and Coalspur). Ties, or links between the nodes, indicate that a survey respondent interacted with a specific stakeholder group regarding the Vista Project. Tie thickness corresponds to the number of individuals from a specific category identified by the survey respondent. Tie thickness ranges from one to five, as survey respondents were asked to identify up to five individuals in each stakeholder group (Questions #8,#12 & #16, Table 4.1). A thicker tie corresponds to the identification of more individuals in a specific stakeholder group.

Results

Composition of the Vista Project Communication Network

The arrival of new industry projects in a community requires interactions and communication between various stakeholder groups that are either impacted by the project or have interest in or concerns about the project (Alberta Environment and Sustainable Resource Development, 2013). In Hinton, the Vista Project lies outside town boundaries but impacts the community directly in areas including healthcare, employment, and housing for new mine employees.

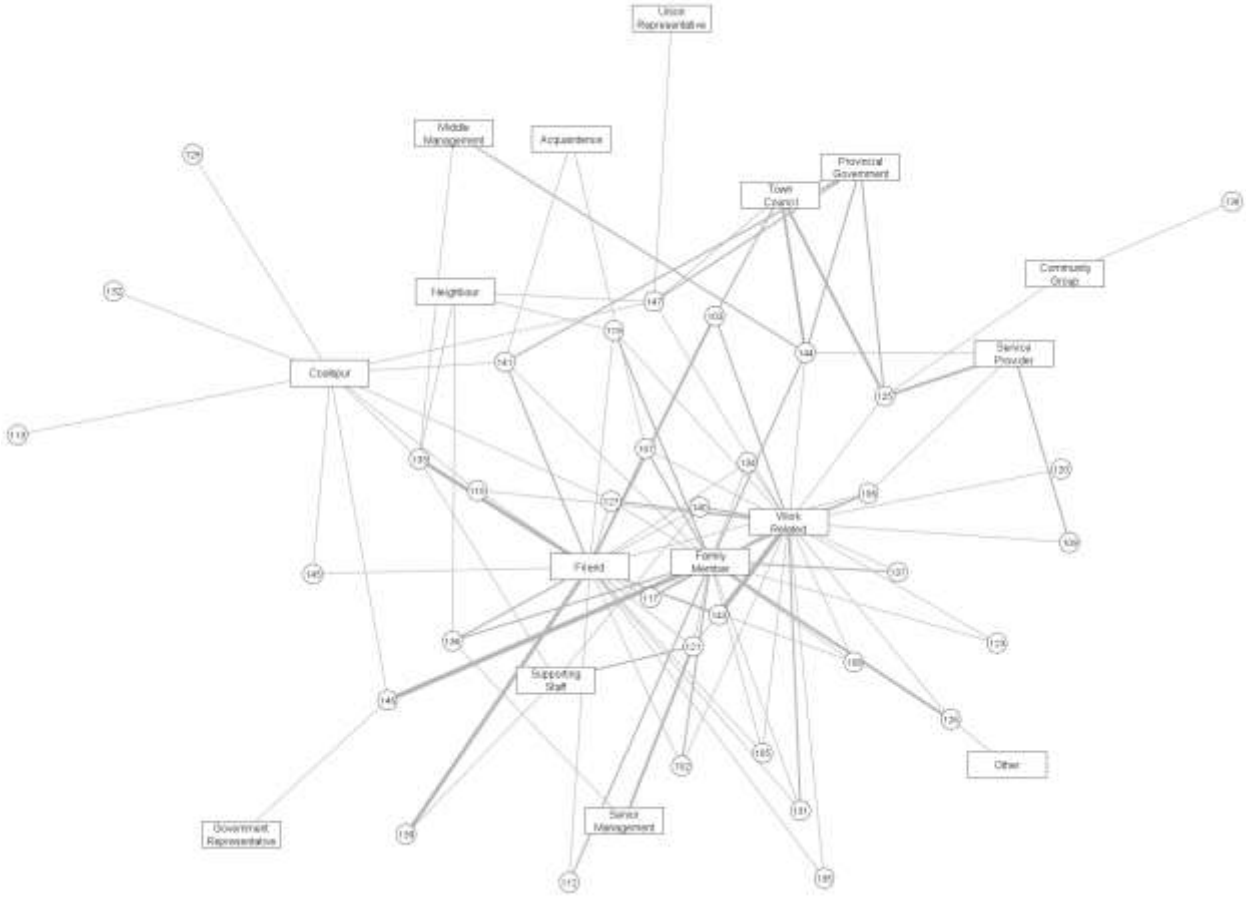

Figure 4.1. Communication Network Surrounding the Vista Project Including Number and Frequency of Interactions

Figure 4.1 illustrates the communication network surrounding the Vista Project, which is composed of 16 different stakeholder groups and 35 survey respondents. Friends, family members and work-related individuals are the most frequently identified groups with whom survey respondents interacted regarding the Vista Project as shown by their central location in the network. Stakeholder groups located on the outside edges of the network illustrate groups mentioned less frequently by survey respondents, and thus share fewer ties to survey respondents. Those groups mentioned less frequently include Provincial Government, Town Council, Government Representative, Middle Management, Supporting Staff, Senior Management, Community Group, Union Representative, Acquaintance, and Other. People in general, share more ties with family, friends and work-related individuals (Stoddart & Tindall,

2010). Therefore, discussions regarding centrality or the identification of central nodes in a given network can be misleading in assessing this communication network.

Direction and Frequency of Communication around the Vista Project

Figure 4.1 also illustrates the frequency of interactions surrounding the Vista Project. The length of the tie corresponds to the average regularity of interactions between respondents and the identified stakeholder group. The further a respondent node is from a stakeholder node or the longer the tie, the less often interactions took place. I derived tie length from survey questions #9, #13, and #17 (see Table 4.1). Responses varied from one to five (1= Daily and 5 = Only Once). The scores for each group were averaged by respondent if applicable, since the respondent was able to identify up to five possible individuals for each of the three main stakeholder groups (Table 4.1). For example, a respondent could record "Sister", "Brother", and "Father" under Community Members with whom they interacted regarding the Vista Project, which were then categorized as "Family Member" for the social network, and the three frequency scores were averaged among this group.

The longer ties between most respondents and stakeholder groups suggest that communication related to the Vista Project happens infrequently (Figure 4.1). Figure 4.1 also shows the longest ties to the group nodes on the periphery of the network, which primarily include sub-groups of Coalspur representatives and government officials. Shorter ties appear closer to the centre of the network around such nodes as family members, friends, and work-related. Therefore, stakeholder nodes on the periphery of the network share fewer ties with survey respondents and communicate less frequently with respondents (Figure 4.1). According to interview participants, "[t]he [company] selects the mode of communication based on the anticipated levels of opposition to the project…Depending on the level of public concerns…the

[company] will match the level of detail and amount of communication." (Participants #9 & #13, line 36-37). Together, these suggest that high levels of opposition were not anticipated or experienced, and therefore minimal communication with key stakeholder groups was undertaken by community members.

Communication, on the part of industry, is often criticized for its strategic use in appeasing stakeholders (Aguinis & Glavas, 2012), isolating information (Shriver et al., 2014), and for its inability to engage communities (Walker, 2007). Participants acknowledged these limitations, noting "[y]ou know I've always said to industry that they have to do a better job of communicating with the public as to what they are doing" (Interview Participant #12, line 152-154). The extent to which communication takes place is also related to the requirements of policies and regulations in place (Aguinis & Glavas, 2012). Industry and provincial governments alike, contribute to communication processes surrounding industry projects such as the Vista Project.

Critiques related to industry and government communication provides incentive to focus on these stakeholder groups in the social network. To better understand communication between Coalspur representatives, government officials, and community members, group specific ego-networks were generated. Similar to Figure 4.1, the following networks depict regularity of interactions using tie length. These ego-networks also separate out each response from a respondent as a single node. Therefore, some respondents have multiple nodes in a single network. This provides a more detailed exploration of Figure 4.1, in that individual ego-networks illustrate the direction of communication between each respondent and the stakeholder group with whom they interacted.

Figure 4.2 depicts the communication networks surrounding Coalspur representatives. Based on the individuals identified by survey respondents, four distinct sub-groups were created corresponding to the individual's position within the company (support staff, middle management, senior management, and Coalspur). If a survey respondent was unable to recall the name of an individual, they were instructed to simply write "Coalspur". In Figure 4.2, tie style and arrow direction correspond to the type of communication occurring between the respondent and the stakeholder group. Ties with a dotted line illustrate two-way communication in which both the respondent and stakeholder group shared information about the Vista Project. The ties with arrows illustrate one-way communication, wherein arrows pointing at respondents show that a stakeholder group shared information with the survey respondent. Arrows pointing at a stakeholder group node show that a survey respondent shared information with that stakeholder group.

As illustrated in Figure 4.2, communication with most Coalspur representatives is less frequent as shown by the longer ties. The predominance of survey respondents who were unable to recall the name of the Coalspur representative with whom they interacted reiterates the infrequency of interactions. Communication with Coalspur representatives is characterized by both two-way and one-way communication. Coalspur partakes primarily in the sharing of information with respondents when examining one-way communication more closely (Figure 4.2). Interview participants shed light on this, noting that "[f]or companies it always comes down to economics, so how far they can go in terms of mitigation measures." (Participant #4, line 144-146). For this participant, mitigation measures refer to how stakeholder demands are negotiated and the type of communication methods used in the negotiation process, as dictated by financial capability. For example, some companies will hire independent consultants to develop and

implement the public consultation process. Coalspur's focus on sharing information appears to align with its financial constraints as a junior mining company. In sum, neither communication method appears substantially more or less frequent than the other.

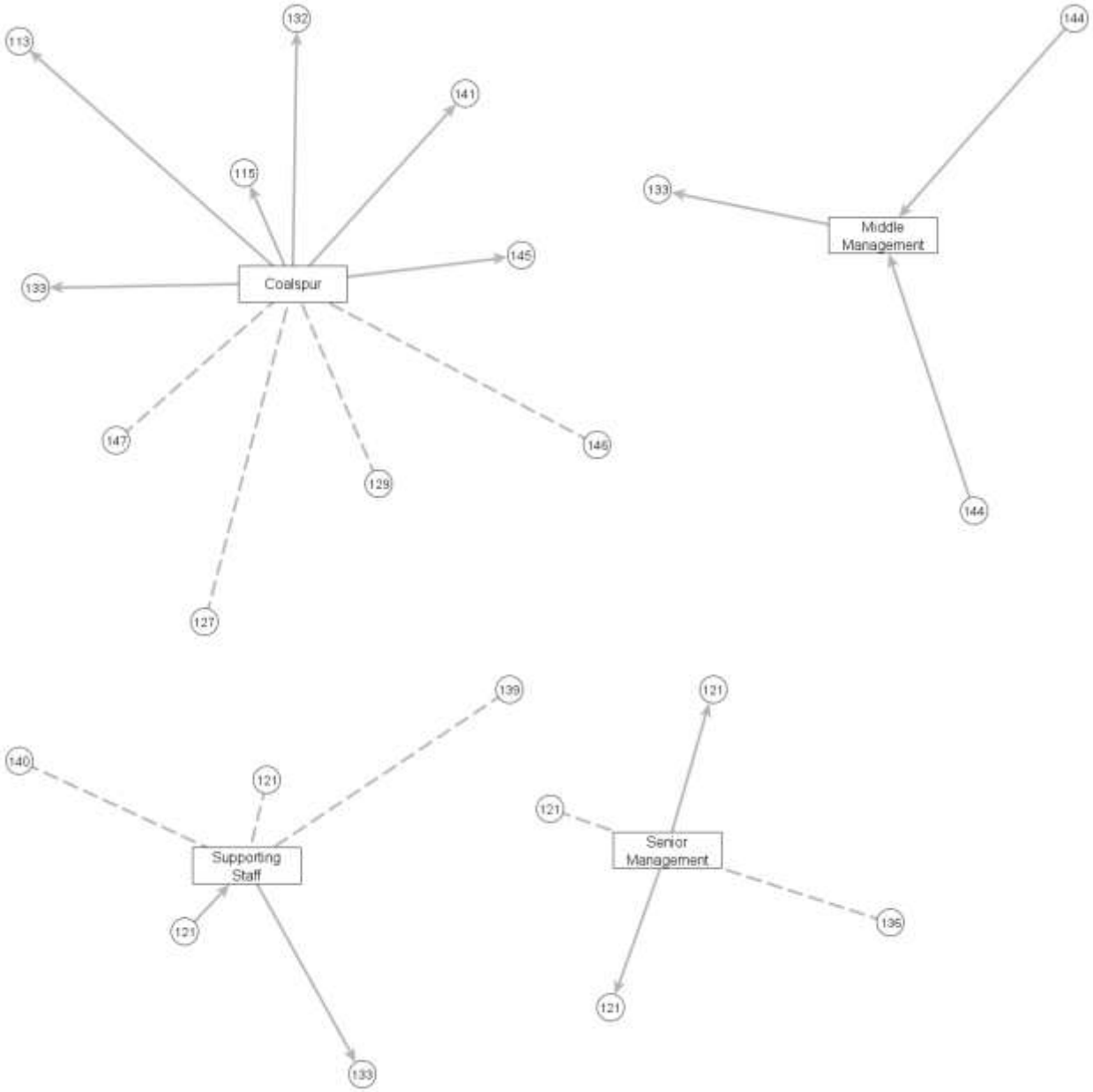

Figure 4.2. Ego-Networks of Coalspur Representatives Illustrating Direction and Frequency of Communication

Figure 4.3 depicts the interactions between survey respondents and government representatives. As in Figure 4.2, tie style and arrow direction demonstrate communication type. In Figure 4.3, interactions between respondents and representatives of the Provincial Government appear infrequent based on the longer ties, and characterized by both one- and two-way communication flows. One-way communication involved the sharing of information on the part of both government officials and survey respondents. Interactions with members of Hinton's Town Council appear more frequent, as shown by the shorter ties, and are characterized primarily by two-way communication.

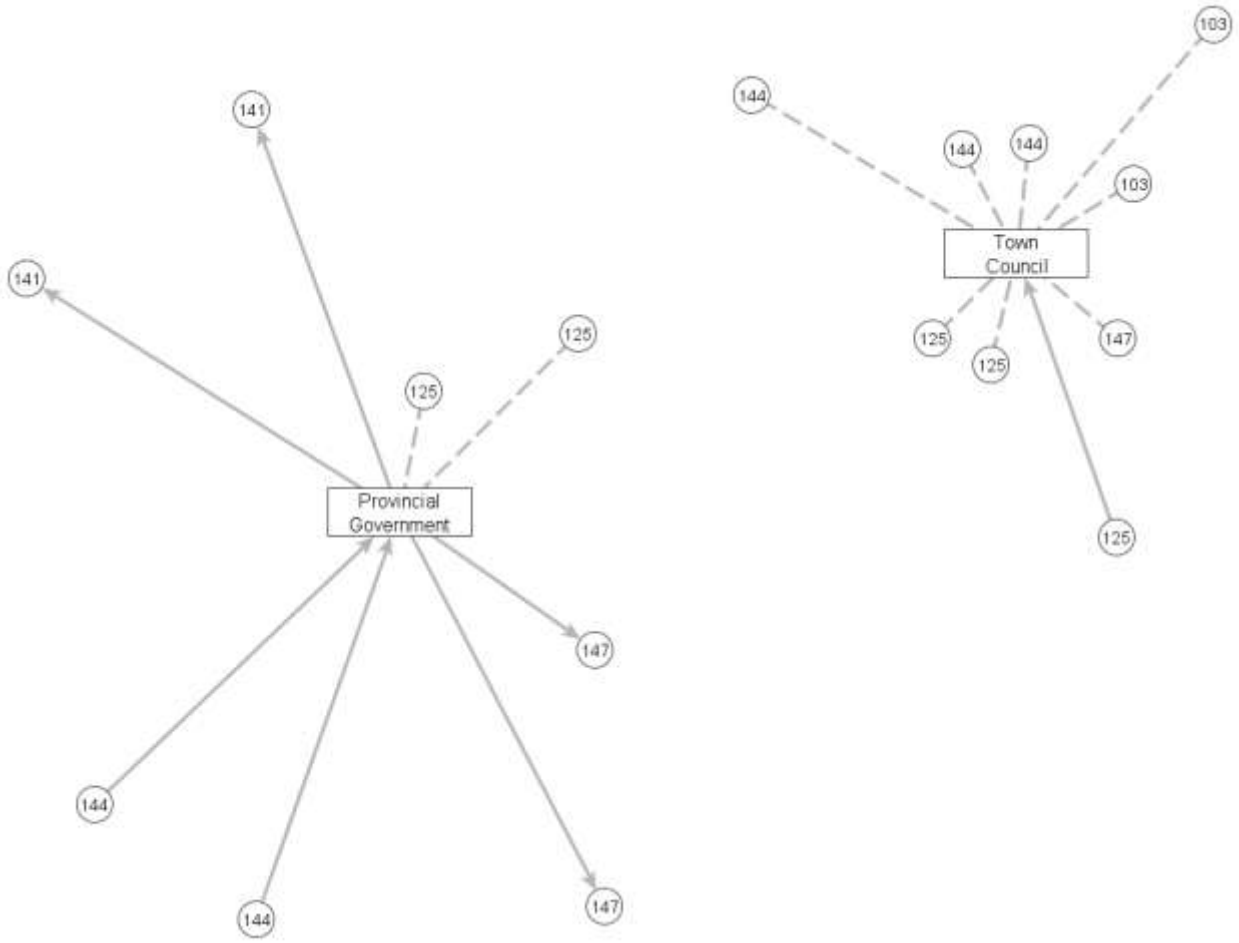

Figure 4.3. Ego-Networks of Provincial Government and Town Council Illustrating Direction and Frequency of Communication

The involvement of the Hinton Town Council in discussions related to the Vista Project was also identified by interview participants. One individual noted that "in the case of Coalspur, Hinton Town Council was very involved" (Participant #5, line 188-189). Another participant stated "[they] don't have a formal role officially right, Town Council, but informally they represent the 10,000 people most affected" (Interview Participant #10, line 316-317). As individuals who reside in Hinton and are elected representatives of the community this relationship appears logical. Town Council though, does not serve a formal role in the environmental assessment process, as noted above, on the basis of conflict of interest suggesting that more frequent and two-way communication may correspond to their belonging within Hinton.

The trends in Figures 4.2 and 4.3 related to the frequency of communication reflect the availability of these groups to community members. Town Council members reside in the community and likely partake in activities that make them more accessible to various community members. One interview participant describes this relationship, noting "well I think ultimately [Town Council] hold a fairly key piece, because the social licence to operate comes from the community, and from its elected officials" (Interview Participant #10, line 311-312). Members of the provincial government and some Coalspur representatives likely do not reside in the community, and thus interact with community members only when required such as during public open houses. This suggests that social licence comes from within the community including discussions among members of the community, whereas interactions with outsiders serve as sources for additional information that is difficult to acquire from community members and groups.

Participation and Network Integration

Figure 4.4 illustrates the communication network surrounding the Vista Project and its relationship to how respondents felt about the participation opportunities made available to them by Coalspur. This social network also explores how network characteristics related to frequency and direction influence participation. I expanded on Figure 4.1 by adding a meaningful participation measure. This measure was calculated using a respondent's score in relation to the perceived availability, quality, and conduct of participation opportunities organized by Coalspur (see Chapter 3).[3] I use a grayscale colour scheme of the respondent node to visualize the level of satisfaction with participation opportunities. A black node corresponds to higher levels of satisfaction with participation opportunities, whereas a white node corresponds to dissatisfaction with participation opportunities. Nodes for which a participation score was not recorded were removed from the network. Similar to Figure 4.1, tie length corresponds to regularity of interactions, and tie thickness corresponds to number of individuals interacted with in the specified stakeholder group.

In Figure 4.4, most respondents appear satisfied with the participation opportunities made available by Coalspur. Interview participants described Coalspur's presence in the community, stating "[w]ell one of the things that was also noticed after they got well along and they had a fairly decent project in some business case, they got really aggressive about sponsorships and support in the community" (Interview Participant #10, line 280-282). Coalspur made their presence and availability known in the community which may contribute to satisfaction. Satisfied respondents primarily fall within the network, whereas those demonstrating

[3] Meaningful Participation was measured using a five-item index, drawing on the work of Griffin-Ives (2011). A factor analysis was run and all items loaded >0.70. A reliability analysis returned a Cronbach Alpha of 0.89. The factor has scores ranging from 0 to 3.80, with a mean score of 2.19 (sd = 0.83).

dissatisfaction seem to reside on the periphery of the communication network and further from the more frequently accessed groups (family, friend and work-related ties) (see nodes 120, 131,and135 for example). This suggests that the frequency of communication may influence a respondent's perception of participation opportunities made available by Coalspur.

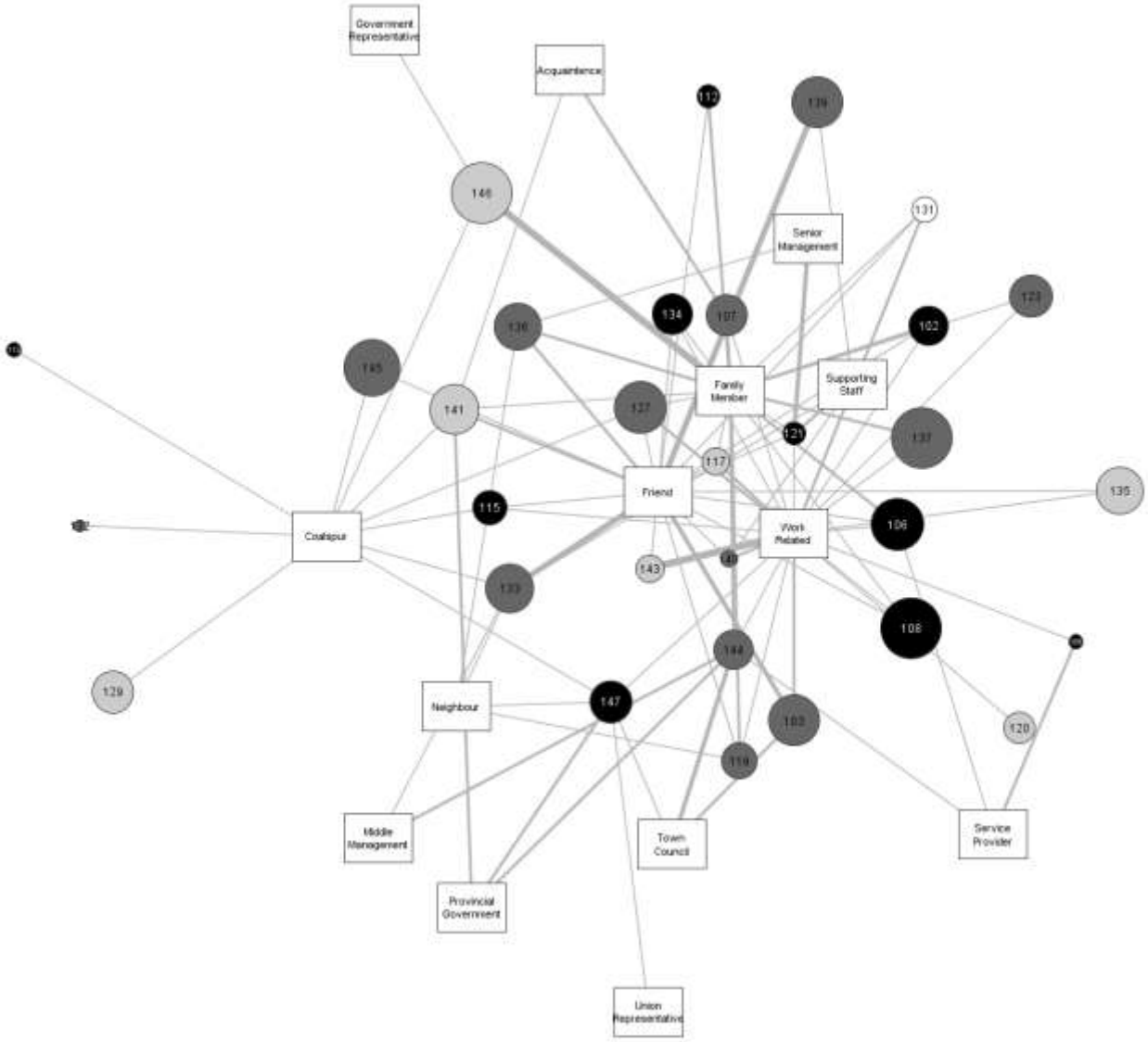

Figure 4.4: Vista Project Communication Network Illustrating Frequency of Communication, Satisfaction with Participation Opportunities, and Length of Residence

In addition, those most satisfied appear to share few ties with government officials and industry representatives, suggesting that these relationships may not influence how participants view participation opportunities (see nodes 104, 106, 134 for example). This may result from the coal

mining industry's historical existence in the community, and these individuals' perceived lack of need for information from industry and government representatives. Individuals may also acquire the desired information from more available sources including family or friends removing the need to contact government or industry representatives.

In small communities, length of residence is often linked to broader and more integrated social networks (Sampson, 1988). I applied length of residence in Hinton to help contextualize the social network and to examine if it influences participation, as well as the types of ties individuals have to different stakeholder groups. The size of the respondent node corresponds to the respondent's length of residence in Hinton, where a large node indicates longer residence. Length of residence varies amongst the levels of satisfaction with participation opportunities, and demonstrates no apparent patterns.

A useful measure for assessing the integration of a network aside from identifying immediate patterns is network density. Network density is the comparison of the number of ties to the number of potential ties in a given network (Perdue & McCarty, 2015). A network density of 1.00 indicates a completely connected network, wherein every survey respondent interacts with every stakeholder group identified. Figure 4.4 has a network density of 0.22, which indicates a low density communication network surrounding the Vista Project (Borgatti, 1999). The number of potential ties outweighs the number of actual ties in this network, suggesting that most respondents are not accessing or interacting with the majority of individuals and/or groups involved in the communication network surrounding the Vista Project. Low network density in combination with infrequent communication suggests that this network is less integrated which may influence possibilities for collaborative debates surrounding the Vista Project.

Discussion

Communication related to the Vista Project is structured in accordance with the goals and objectives of the formal approval process, as outlined in provincial environmental policy, surrounding extractive resource projects. The communication network then, caters more to meeting timelines which enable the company to begin construction and generate cash flow, rather than deliberative debate and communicative action during the public consultation process. Opportunities to develop diverse and effective communication networks are increasingly limited as a result of policy guidelines.

Communication Frequency

Frequent communication and discussion in the realm of political awareness and participation is often associated with more informed and engaged publics (Eveland & Hively, 2009). Communication surrounding industry projects is guided by policies such as Environmental Impact Assessments (EIA) in alignment with current environmental legislation including the *Environmental Protection and Enhancement Act* (EPEA). The EIA process dictates that public involvement occurs at four distinct periods during the approval process for new projects: prior to conducting and during an environment assessment, as well as in the review of the company's proposed and draft environmental impact statements. Public open houses and meetings in communities take place during the review of a company's environmental impact statement (Canadian Environmental Assessment Agency, 2015). In the Vista Project, discussions began in 2010 and final regulatory approval was received in 2014, demonstrating that the formal approval process takes time. The opportunity to participate is also limited to four specific points in the approval process suggesting that these interactions are infrequent in nature.

The communication network for the Vista Project corresponds to the structuring of the approval process surrounding industry projects more generally. The network is composed of various infrequent interactions, and appears fairly spread out (Figure 4.1). This demonstrates that the majority of communication surrounding the Vista Project occurred approximately 2-3 times per year to once a year. Examining the regularity of communication, a respondent's interactions, even with family members, friends, and work-related individuals appear relatively infrequent suggesting that discussions about the Vista Project occurred at specific points in time. This may result from increased media attention to the Vista Project related to the announcement of permit approvals, regulatory hearing dates and public houses for example (Cuadrado-Ballesteros, Frias-Aceituno, & Martinze-Ferrero, 2014). In addition, the EPEA does not stipulate the number of public consultations required for a new industry project making the EIA process susceptible to varying degrees of communication and interactions.

The amount and type of communication is also tailored based on the community within which the industry is entering. The social networks, in combination with perspectives from interview participants describe a tailoring of information to a community based on perceived information needs. In the context of the EIA process, this translates directly into the style and availability of public participation opportunities and communication. For example open houses are planned as the primary form of public participation, while the company promotes an open door policy to address additional concerns. Hinton's historical positioning as a natural resource town familiar with the mining industry, may result in less intensive communication with community members. Interactions with the public, although required, are infrequent and vary based on information needs and demands of a community as determined by the company.

Financial capability also factors into level and detail of communication undertaken by Coalspur. Engaging community members in participatory opportunities that encourage collaboration and debate take time, and involve extensive knowledge and research of a community to help plan and facilitate appropriate methods (Webler & Tuler, 2006). As a junior mining company, Coalspur had no existing or active mines to generate the cash flow needed to develop opportunities for participation aside from those necessary to the approval process. Less frequent communication surrounding the Vista Project, as described in Figure 4.1, reflects both the company's financial positioning, and Hinton's perceived minimal need for project information given the community's historical experience with natural resource extraction and development in the area.

These factors influencing frequency of communication resemble what Habermas referred to as the "colonization of the lifeworld", where "social arenas once coordinated via communicative action [are transformed] into arenas coordinated by administrative and economic subsystem imperatives" (Gunderson, 2014, p. 636). An individual's ability to act is inherently structured by the goal of natural resource development, without consideration for the legitimacy or value of that goal (Weber, Roth, & Wittich, 1968). Public discussion surrounding the project arose out of legislated requirements for public consultations related to the proposed extractive resource project, rather than experience with or knowledge of the project outside the regulatory framework. This disconnect between the proposed project and community experience makes collaboration challenging, as perceptions of the project and its environmental impacts are seen through the lens of the company proposing the project. If communities are only engaging with these projects when it is necessary for the approval process, the effectiveness and success of participation opportunities is minimized. Key to successful and meaningful participation is the

continual involvement of the public throughout the evolution of the project as a whole (Ongare et al., 2013). Walker (2007) argues that dialogue and deliberation are essential components to collaboration. Without regular involvement in discussions about such projects, opportunities for dialogue to move into deliberation are limited.

Communication Flows

The types of interactions that take place between various stakeholder groups further limit possibilities for collaboration. Nwagbara and Brown (2014) argue that conflict and concern is generated by one-way communication flows that exclude individuals or groups from discussions surrounding new industry projects. One-way flows tend not to foster behaviour change in that these limit an individual or groups ability to participate in any capacity throughout the project's lifespan (Ongare et al., 2013). Therefore, two-way communication is desirable when planning and implementing participation opportunities.

In the above analysis, the frequency of communication is intricately tied to the types of interactions (Figures 4.2 & 4.3). Community belonging makes a difference in how communication takes place. The interactions between survey respondents and provincial government officials and Coalspur representatives were a mix of both one- and two-way communication flows. Provincial government officials and many Coalspur representatives do not reside in the community, and when these individuals are available opportunities to share information often take place at designated events such as public open houses or for specific reasons, such as a meeting with a First Nations member. The attendance at public open houses hosted by Coalspur demonstrates this further. The first open house was attended by 244 people, dwindling to 60 people at the third open house. The dramatic decline in attendance suggests that individuals likely only attended one open house, which speaks to why communication with these

stakeholder groups is infrequent. This is considered a mechanism of control, wherein information resources are isolated to a few individuals who are not easily accessible (Shriver, Adams, &Messer, 2014; Lukes, 2005). Interactions with Coalspur representatives and provincial government officials are dictated by their availability, as well as by how Coalspur chose to undertake the public consultation process.

In contrast, two-way communication appears most prevalent among interactions between respondents and other community members, Coalspur support staff, and Town Council members, all of whom are more likely to live in the community. The communication network associated with Town Council members in particular illustrates this point (Figure 4.3). Although Town Council had no formal role in the approval process for the Vista Project, they were still a component of the communication network. Despite the Vista Project being located outside Hinton's town limits, it directly impacts the community. Community members acknowledged these impacts, and that Town Council is involved in interactions between Coalspur and community members as a result. Town Council also represents an entity through which community organizing may take place, in that its position enables it to more easily mobilize resources and develop strategies aimed at achieving community goals (Broad et al., 2013). The accessibility of Town Council members and their relationship with community members as representatives is more conducive to two-way communication and plays a key linkage role between industry and community (Kim & Ball-Rokeach, 2006).

The type and frequency of interactions surrounding the Vista Project reflect a combination of factors including stakeholder availability and accessibility, community belonging, financial capability, as well as a community's perceived information needs. Hinton's

historical ties to the coal mining industry shape these information needs, and influence the types of participation opportunities undertaken.

Participation and Integration

The integration of communication networks in a community is a result of many interacting factors, including the frequency and type of communication flows (Eveland & Hively, 2009). Integration also corresponds to the individuals involved in the network as discussed above. In combination, these factors contribute to the connectedness of a network which is associated with "a higher sense of belonging, collective efficacy, and levels of civic participation" (Ognyanova et al., 2013, p. 2435). As such, collaboration and social learning more broadly arise out of a well-connected communication network.

The communication network surrounding the Vista Project is a low density network, suggesting that the number of possible interactions far outweighs the number of actual interactions. This is not unusual for communication networks that are issue-focused (Eveland & Kelinman, 2013). Discussions about the Vista Project are similar to discussions about politics, wherein individuals engage fewer individuals from their networks based on interest and knowledge of the project or industry (Eveland & Kleinman, 2013). The dramatic decline in attendance at Coalspur open house further supports this idea, in that people's attendance was potentially based on accessing or sharing very specific information making subsequent attendance unnecessary. Although communication occurs more frequently with family, friends, and work-related ties, less frequent discussions that occur between individuals outside these groups may play a larger role in the dissemination of information related to the Vista Project (Huckfeldt, Beck, Dalton, & Levine, 1995; Granovetter, 1973). Weak ties between individuals and groups are known to generate larger social networks by bridging cohesive groups, resulting

in the broad diffusion of information (Eveland & Kleinman, 2013). A less dense network may correspond to a more informed public but, only if bridges exist. This notion appears possible given that most respondents seem satisfied with the participation opportunities made available to them by Coalspur (Figure 4.4). This suggests that the quality of interactions is more important than the quantity of interactions in this communication network.

A communication network with low density also indicates that the community resources available in relation to the Vista Project were not utilized. Kim and Ball-Rokeach (2006) argue that these individuals "miss out on storytelling resources that would help them 'imagine' their community" (p. 181). Counter to the Granovetterian strength of weak ties argument, this observation aligns with scholars who argue that highly connected and dense networks are associated more often with public awareness and legislation reform (Perdue & McCarty, 2015). Hinton's historical connection to the coal mining industry may explain such gaps in accessing community resources, in that many individuals come to know about mining through close interpersonal connections. This connection also denotes the potential ideological connections between community members and the industry's necessity in the area.

Community members acknowledge industry through its involvement in the community. Coalspur's investment in the community, in areas such as social and cultural activities and events, reflects its attempt at fostering interpersonal relationships which is a key aspect in understanding community concerns (Broad et al., 2013). A less dense network and feelings towards participation opportunities as represented in Figure 4.4 may not demonstrate overall awareness of the project, its environmental impacts, and the quality of participation opportunities, but rather provide a general assessment of the company and its participation opportunities in comparison to how public consultations were undertaken in past projects. Kim

and Ball-Rokeach (2006) argue that the resources available to communities contribute to the construction of shared discourses but are also influenced by the "sociocultural geography" of a community. The familiarity of coal mining within the community and the associated experiences with the regulatory process influences how communities approach discussions and communication related to new projects. Rist et al. (2007) argue that participation does not necessarily translate into social learning. Despite the relative satisfaction of respondents towards the participation opportunities offered by Coalspur, the low integration of the network in combination with infrequent communication detracts from the potential for social learning related to the Vista Project.

Limitations

There are a number of limitations associated with the above study including response rate and artificial constraints on the communication network. The study concluded with a 12% response rate. As a result, I was unable to achieve a representative sample of the population. This influences the accuracy of the patterns I was able to identify, as well as those not evident given the small sample size. Based on this limitation I only inferred any findings to my sample rather than the community of Hinton.

The survey questions asked in this study may have limited the possible responses in terms of the number of ties, as well as the individuals identified. For example, a survey respondent was asked to list community members, government officials, and Coalspur representatives. If an individual spoke with an industry representative from a different company about the Vista Project, they would fall outside these three categories and thus not appear as a response on the survey. I may have also artificially constrained the network size resulting from the design of survey questions (Eveland & Hively, 2009). Individuals were only able to identify up to five

individuals under each stakeholder group, when they may have generated more names. However, the names listed may represent the most frequent interactions for these respondents (Eveland & Hively, 2009).

Conclusion

The ability to effect change to current environmental policy is possible, but requires diversity in network membership, coordination across the different levels of government (federal, provincial and municipal) around various goals and objectives, and the use of communication strategies that effectively engage public debate (Lysack, 2015). Communication is described as a mechanism through which collaboration and social change is possible (Ongare et al., 2013). There are many barriers to effective and inclusive communication as a result of social, political, and economic forces. Individual communities are characterized by their own unique combination of these forces, which subsequently influence the communication resources available.

The communication network surrounding the Vista Project is characterized by infrequent, one- and two-way communication flows, with minimal integration across the network. The frequency of communication reflects the structure of the formal approval process, as well as the financial capability of the company. The flow of communication is related to community belonging, wherein two-way communication appears most prominent among respondents and other individuals who reside in the community. Hinton's historical ties to the coal mining industry influence this communication network in terms of the perceived communication needs of the community by the company and its residents.

The lack of defined guidelines related to the frequency of community involvement in Alberta's environmental policy and the influence of the area's historical ties to natural resource extraction industries contributes to the use of communication strategies and techniques by

companies that are at odds with the notion of deliberative democratic debate. Environmental policy should aim to offer more clarity around public participation related to the frequency with which it should take place, the types of opportunities that constitute participation, and encourage the prioritization of communication and participation regardless of economic barriers. Environmental policy should outline and require methods of communication that promote two-way communication flows and encourage deliberative debate.

Areas for further research may include asking participants about the substance of conversations and interactions, with a more specific focus on the content and messages associated with these interactions. Additional research may also look to make a comparison between a community's general communication network and the communication network surrounding an industry project (Huckfeldt et al., 1995). Differences between the two communication networks may offer insight into network and/or community characteristics that contribute to specific ties or lack of ties. Using a whole network analysis may allow for a more detailed examination and assessment of community networks.

Communication is key to engaging publics in discussions around extractive resource industry projects, and effectively doing so requires frequent and inclusive involvement and interactions with local communities. As noted by one participant, "[p]rojects that impact communities should have dialogue in communities" (Interview Participant #10, line 197-198).

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Chapter Five

Conclusion

In this study, I asked "how does the flow of communication, surrounding environmental policy, in relation to land reclamation influence the deliberative processes of communities at the grassroots level?". The objectives of my research were to analyze the processes by which communication occurs between industry, government, and community in the context of provincial and federal environmental policies around natural resource management, examine the role of communication in the facilitation of social learning, and critically examine how participation and non-participation in deliberative processes affects the flow of communications. Social learning theory, as proposed by Rist et al. (2007), in combination with Communication Infrastructure theory (Kim & Ball-Rokeach, 2006) formed the theoretical framework for this study. I used a mixed methods approach to achieve my research question and objectives, which included a household survey, key informant and general public interviews, as well as a content analysis of media, industry, and government documents. In my research, I focused on the Vista Coal Mine Project (hereafter referred to as the 'Vista Project'), located in Hinton, Alberta, Canada as a case study.

In early 2014, coal prices globally began to drop in response to an over-saturated market. As a result, Coalspur announced in June 2014 its intention to undertake a strategic review process in relation to the Vista Project throughout the remainder of the year and into early 2015. This research began prior to this announcement and to Coalspur receiving final regulatory approval (October 10, 2014) to move forward with the Vista Project. For that reason, this research still provides valuable insight on communication flows and deliberative processes surrounding extractive resource industry projects.

Community involvement in industry projects is a staple of current environmental legislation and policy in Alberta. Changes to Federal environmental legislation, the West's historical ties to natural resource extraction industries, and the unique challenges individual communities face in regards to new industry projects influences how public consultations take place in terms of information demands and communication goals. This research responds to Masuda, McGee and Garvin (2008) by shedding light on the need for developing and improving novel approaches to community participation, and the importance of communication to this process. Communication Infrastructure theory provided a vehicle through which to explore these processes, as it has been successfully applied by practitioners in urban community settings (Broad et al., 2007). Social learning theory offers a broader objective for this examination of communication process, given its home in the study of natural resource governance in the areas of collaboration, deliberative debate, and collective decision-making (Garmendia & Stagl, 2010). Together they provided a lens through which to understand communication's role in deliberative processes, and its ability to influence behaviour change around environmental issues such as land reclamation.

This study is valuable to various stakeholders, but is targeted primarily at community groups and members of the general public who wish to improve and/or change relations with companies operating in or close to their communities, practitioners in industry-related occupations interested in developing and implementing effective communication strategies and meaningful public engagement, government officials working with rural communities tied to natural resource industries, as well as environmental policy makers. This study contributes to the study of communication and the sociological understanding of natural resource management.

Summary of Findings

Communication is a concept that arguably bridges the gap between stakeholders and environmental issues through its ability to engage publics in discussions around industry projects (Ongare et al., 2013). The ever expanding diversity of communication tools and participation methods available today makes it difficult to identify the best way to bridge this gap between industry and community. The lack of clarity provided in both environmental legislation and policy related to the conduct and frequency of public consultations, the outlet, format, and provision of project information to the general public, as well as a company's ability to disregard more effective participation methods in light of economic objectives complicate this process and represent significant barriers to deliberative processes at the grassroots level.

Individuals come to know about extractive resource projects, and their environmental impacts, through the media and company documents. Interpersonal associations however, are more readily linked to engagement and active participation, and the fostering of such relations is becoming a key component of the approval process in response to Corporate Social Responsibility initiatives and acquiring a 'social licence to operate'. This study was designed and undertaken to reflect the communication environment surrounding industry projects, and their ongoing use and negotiation of both mediated and interpersonal relations. 'Chapter 3: Mining the Medium' focused on how the use of various communication channels, such as local media and Coalspur resources, influenced participation in the planning of industry projects, with a specific focus on the topic of land reclamation. 'Chapter 4: "Projects that impact communities should have dialogue in the community"' focused on mapping the interpersonal associations related to the Vista Project as a whole, and how these interactions in terms of frequency and direction of communication affected perceptions towards the participation opportunities made available by

Coalspur. Together, these chapters shed light on the integration of the communication network surrounding the Vista Project in regards to how the resources accessed, whether mediated or interpersonal, in relation to the project shape people's perceptions towards participation opportunities.

In the communication of project information, Coalspur predominantly used more traditional media tools including the local media, in the dissemination and reception of project information. The first paper, 'Chapter 3: Mining the Medium' demonstrates that the type of source accessed is an important indicator of how respondents feel about participation activities, when considering a specific topic such as land reclamation. In addition, the types of information available through these sources, including in-depth technical reports, make the method important. Current environmental legislation in Alberta requires companies to distribute project information to communities as presented to the regulator, which often results in the provision of minimal information, requires certain efforts to access, an understanding of reclamation, and/or interpretation by industry professionals. With limited incentive or motivation to diversify communication strategies beyond what is recommended through environmental policies, this positions Coalspur as an information gatekeeper. In sum, this study found that environmental policy reinforces the use of less dynamic and structured communication tools, which serve to minimize opportunities for community dialogue and collaborative discussions around the Vista Project.

In the communication network surrounding the Vista Project, the quality of interpersonal associations appear more important than the quantity of connections. In the second paper 'Chapter 4: "Projects that impact communities should have dialogue in the community"' I found that local people, including members of the Town Council, offer key links between community

members and industry. These associations are often more conducive to deliberative debates and discussions as a result of more frequent and reciprocal interactions, as well as shared local knowledge and experiences with the coal mining industry. The environmental assessment process however, structures the regularity of interpersonal interactions which subsequently generates interest only at specific periods in time. This structure minimizes opportunities for successful and meaningful participation, in that the goal of interpersonal communication is not the continual involvement of the public throughout the evolution of the project as a whole (Ongare et al., 2013).

Understanding the communication networks within a local community provides insight into the key individuals, groups or resources involved in discussions, the frequency and type of interactions taking place, and where gaps in communication exist. Collaboration, and social learning more broadly, arises out of a well-connected communication network composed of community members, organizations and local resources. Coalspur's control over information resources in combination with the low density communication network surrounding the Vista Project suggests that this network lacks integration (see 'Chapter 4: "Projects that impact communities should have dialogue in the community"', Figure 4.4). Current provincial environmental legislation and policy support less integrated networks through the structuring of the EIA process, and stipulations regarding information distribution.

Deeper engagement and better communication with local citizens around natural resource development has the potential to highlight the diversity of interests and provide alternative interpretations not represented or acknowledged by stakeholder groups (Kahane, Lopston, Herriman & Hardy, 2013), as well as enhance learning (Fitzpatrick, Sinclair & Mitchell, 2008). As noted by Ercan and Dryzek (2015), "deliberation is not just about communicating, it is also

about listening and reflecting" (p. 242). Apart from local community however, involvement in natural resource extraction projects by the wider public is often a debated and contested issue. The Cheviot case (see Chapter One: Introduction) illustrated such contestation, but drew attention to the importance of broader publics to such discussions. Kahane et al. (2013) note that the inclusion of various stakeholder groups in project discussions have the potential to challenge power structures, and offer equal representation in deliberative environments. In addition, "a rigorously diverse and sufficiently large group of citizens provides a microcosm of existing public opinion" (Kahane et al., 2013, p. 16). In Hinton where historical and ideological links to coal mining (and the natural resource extraction industry more generally) exists, requesting input from the broader public may assist in negotiating and/or balancing these to support deliberation and offer a more holistic perspective.

Although my research focuses on community-level communication tools and networks surrounding the Vista Project, it also sheds light on the potential for participation and involvement of broader publics. The lack of diversification in communication strategies and the use of more traditional media work to exclude larger publics in these discussions. This limits interpersonal interactions and the expansion of communication networks beyond that of the local community. Recent changes to participation requirements through Bill C-38 reinforce this scenario, and create an environment where broader involvement is limited. Deliberation is based on the central tenet that the public must be provided with the necessary information, from which to contemplate, discuss, and challenge perspectives (Abelson, Forest, Eyles, Smith, Martin, & Gauvin, 2003). Although local knowledge and experiences are extremely important to such discussions, the development of public natural resources has effects beyond those of the local community on national and global issues such as climate change. Thinking about the role of

communication within the natural resource extraction industry more broadly, requires further investigation into the contributions and configurations of external publics in discussions around new and existing projects (Kahane et al., 2013).

Key to better integration, and consequently participation, is the effective communication of information that is accessible to community members and the public. Accessibility speaks to a community's understanding of the content, the diversity of media and outlets used for its distribution, and the availability of local resources to represent all perspectives and concerns throughout the project's lifespan (Nwagbara & Brown, 2014; Kim & Ball-Rokeach, 2006). In light of recent legislation changes and the increasing importance of the social agenda to natural resource extraction, my study highlights the role and significance of communication to deliberative processes. Further, this study touches on the importance of rethinking current environmental policies in terms of how they develop and evaluate effectiveness, inclusiveness, and meaningfulness of public participation and communication strategies (Rist et al., 2007; Sinclair, Diduck, & Fitzpatrick, 2008). If social learning is the goal, establishing a community foundation built around integrated communication networks is the objective (Broad et al., 2007).

Limitations

This research had various limitations resulting from sample size, construction of the survey tool, social environment, and the political climate. My survey method concluded with a 12% response rate. As a result, I was unable to achieve a representative sample of the population. This affected my research in three key areas: 1) I was unable to infer any findings to the community of Hinton, 2) I was restricted in the number of predictors I could use in each regression model in 'Chapter 3: Mining the Medium', and 3) it potentially influences the accuracy of the patterns I was able to identify in my social network analysis, as well as those which may not be evident in 'Chapter 4:

"Projects that impact communities should have dialogue in the community"'. The design of the survey tool may have artificially constrained the social network analysis and further influenced the accuracy of patterns, by limiting the number of responses a participant could provide.

Economics and politics also played a role in dictating community attention to particular areas, and may have influenced the reception of my research project. The coal mining industry has existed in and around the community since the early 1900s, and continues to provide financial and economic support in the form of funding and jobs. Individuals may have decided not to participate in my research given the long-standing existence of the industry in the community, and the uncertainty surrounding the Vista Project. This may have resulted in selection bias however, my sampling method, use of unbiased and neutral language, and advertising strategy aimed to minimize this effect. Regional by-elections were also quickly approaching during my field season, which may have impacted the willingness of Town Council members to participate in interviews. Overall, this research may have received better reception if the mine was going forward as planned.

Areas for Further Research

This study focused on an ego-network analysis given the anonymity of the survey results as well as the scope of the project as a whole. Future studies may find it useful to conduct a whole network analysis of a small community tied to the natural resource extraction industry. This would allow for an in-depth examination of the information gatekeepers in a network. In terms of industry and government representatives, it would enable researchers to identify individuals who function as the bridge between community members and the company.

A whole network analysis could be extended in a comparative analysis of a community's general communication network and the communication network surrounding an industry project

(Huckfeldt et al., 1995). Social networks surrounding political issues tend to differ from more casual social networks, and this type of analysis would provide a means through which to visualize these differences. Further, it would allow for a more detailed examination of how characteristics such as community affiliation or occupation contribute to specific ties or lack of ties, as well as integration of a community versus project network.

A final area for further research may explore participants' conversations and interactions with specific groups or individuals in the communication network. This micro-level approach could focus on the content and messages associated with these interactions, as well as provide supplementary material to the social network analysis (see for example Stoddart & Tindall, 2010). Questions asked might include what interested them in the project, why they chose to participate or not, and what motivated them to continue or not continue in these interactions. Data collected from these discussions can be used to create different tie weights in the network, or to generate a separate discourse network.

Concluding Comments

In this study I explored the social learning process in the Vista Project in Hinton, Alberta through the framework of Communication Infrastructure theory. In the first paper 'Chapter 3: Mining the Medium', it was apparent that many individuals utilize mediated resources in the acquisition of project information in areas such as land reclamation. The limitations of these resources in terms of encouraging collaboration and facilitating deliberative discussions were evident, drawing attention to the construction of current environmental policies and their lack of clarity and incentive toward the use of more dynamic communication methods on the part of industry.

'Chapter 4: "Projects that impact communities should have dialogue in the community"' explored the nature of interpersonal communication surrounding the Vista Project. This chapter

examined the characteristics of these communication flows, and how the frequency and type of communication influenced perceptions around participation. Documenting these relationships is important to understanding if specific forms of communication inhibit or enhance opportunities for deliberative debate around natural resource management. Current environmental policies restrict the flow of information and generate poorly integrated communication networks, which subsequently disrupt opportunities for deliberative debate around industry projects.

Public participation has evolved alongside environmental policy since 1973 to which communication has been a key component. The rapidly evolving media landscape and the increasing prevalence of global environmental narratives such as climate change, provide relevant motivation to continually revisit and evaluate how publics are engaged in natural resource management. Conversely, recent changes to environmental legislation as well as current environmental policies make public participation vulnerable to economic objectives and motivations, which influence opportunities for collaborative discussions (Kirchoff & Tsuji, 2014). Communities and practitioners alike must acknowledge these vulnerabilities and exercise their ability to hold industry accountable to local information demands and participation needs. Exploring and documenting these communication flows enables a better understanding of how communication can serve as a foundation for improving communication forms, establishing an integrated community voice, and influencing and affecting positive social-environmental change.

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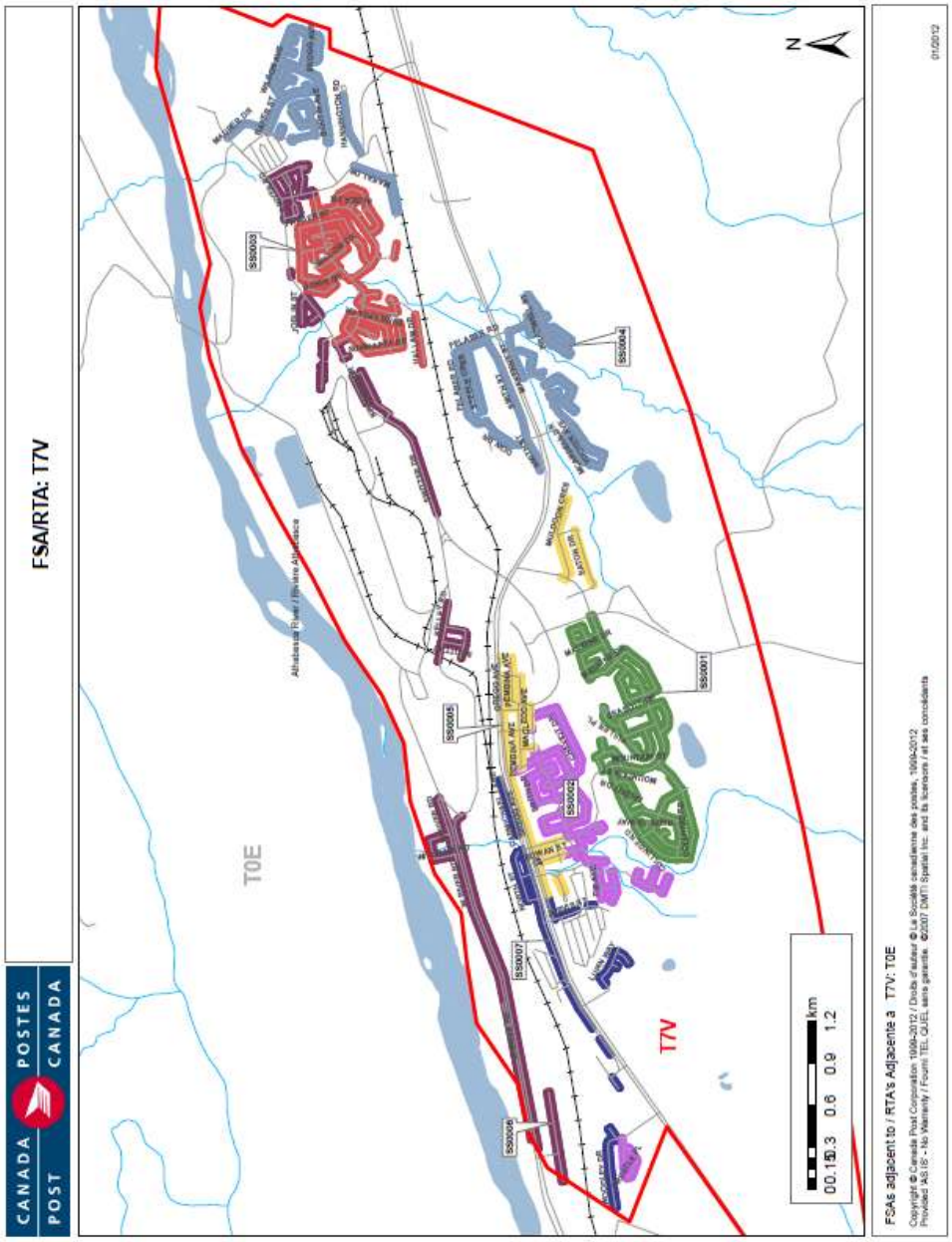
Appendices

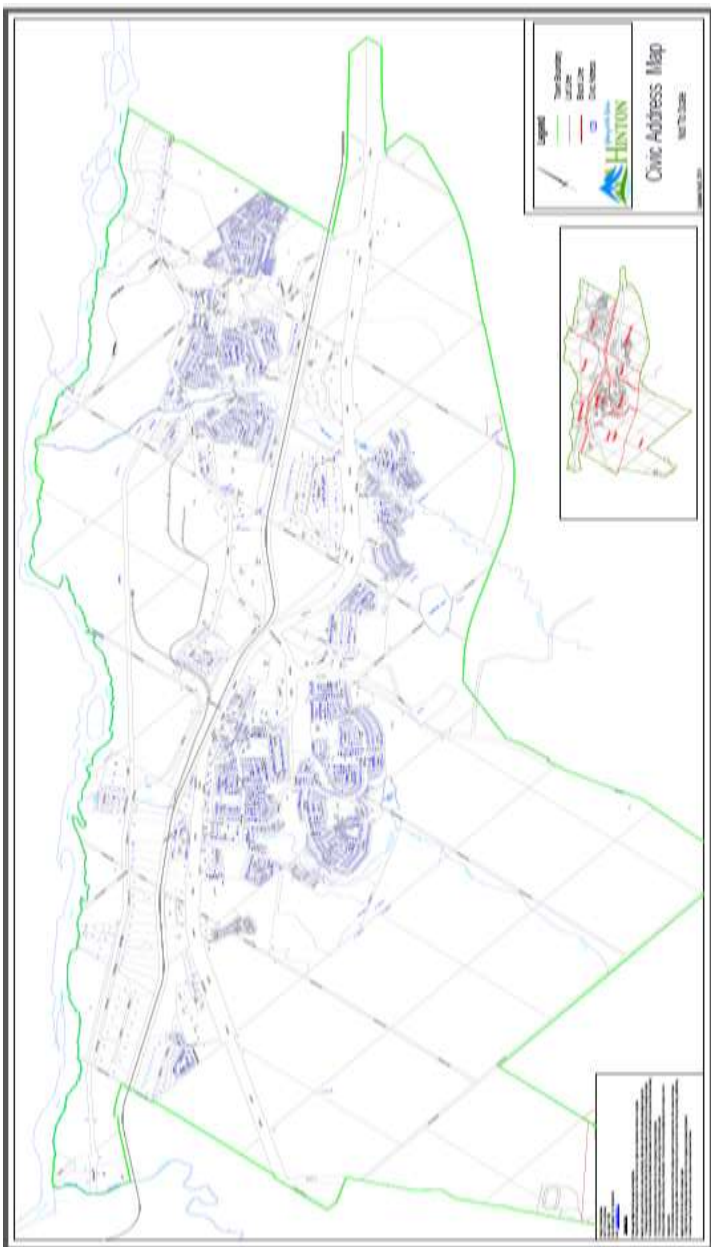
Appendix A

Canada Post Geographic Section Map



Appendix B

Hinton Civic Addresses Map



Appendix C

Website

UNIVERSITY OF ALBERTA
DEPARTMENT OF SOCIOLOGY

COMMUNICATION AND SOCIAL LEARNING IN THE RECLAMATION OF THE 'VISTA COAL MINE' PROJECT IN HINTON, ALBERTA

About the Project

Click here to complete the survey

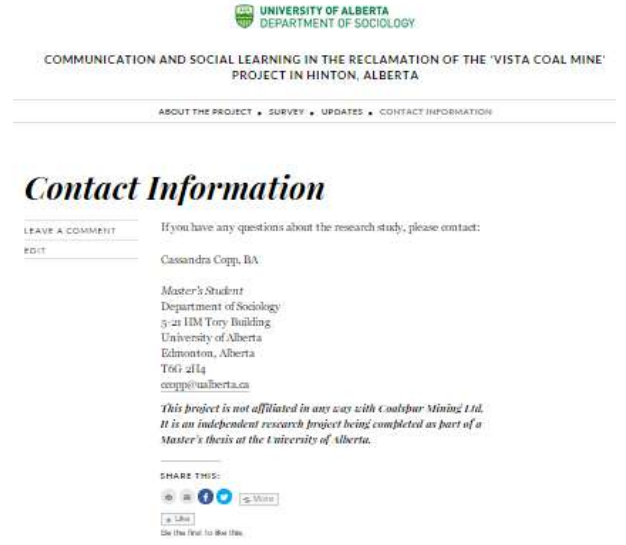
This is a research project being conducted as part of a Master's thesis at the University of Alberta. The research will take place between June 2014 and September 2015.

The purpose of this research project is to explore how information about coal mining activities, such as land reclamation, is received, shared, and discussed in Hinton, Alberta. The project focuses primarily on interactions between community members, industry representatives, and government representatives.

This research will focus specifically on Coalspur Mining Ltd.'s "Vista Coal Mine" project.

If you are interested in participating in other ways than completing a survey, such as an interview, please contact me at ccopp@ualberta.ca.

This project is not affiliated in any way with Coalspur Mining Ltd. It is an independent research project being completed as part of a Master's thesis at the University of Alberta.



UNIVERSITY OF ALBERTA
DEPARTMENT OF SOCIOLOGY

COMMUNICATION AND SOCIAL LEARNING IN THE RECLAMATION OF THE 'VISTA COAL MINE' PROJECT IN HINTON, ALBERTA

ABOUT THE PROJECT • SURVEY • UPDATES • CONTACT INFORMATION

Contact Information

LEAVE A COMMENT

EDIT

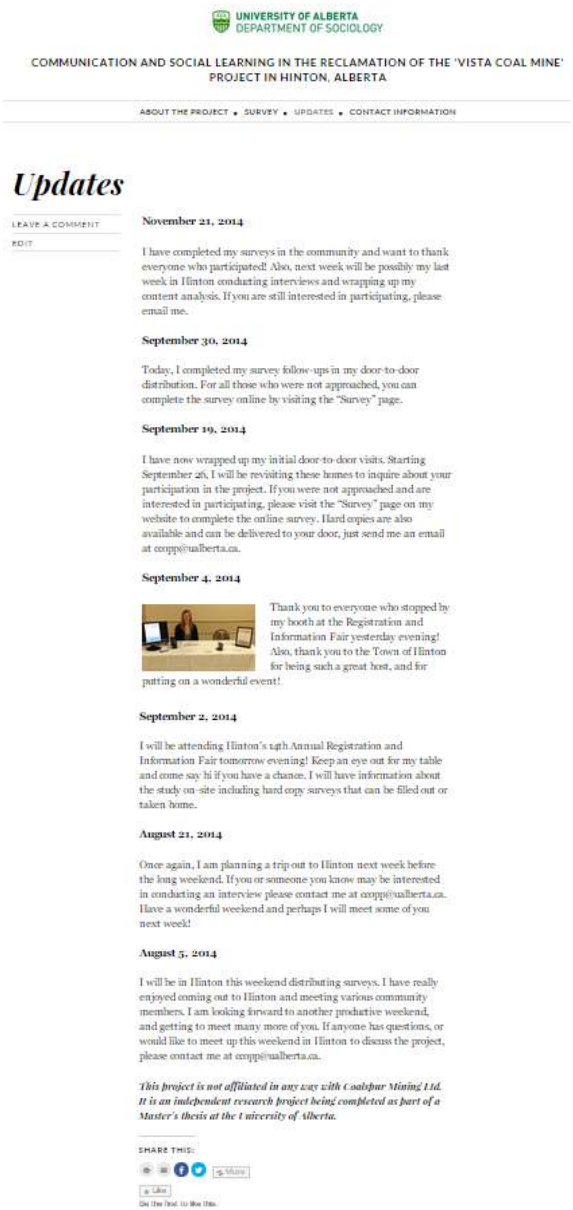
If you have any questions about the research study, please contact:

Cassandra Copp, BA

Master's Student
Department of Sociology
5-21 HM Tory Building
University of Alberta
Edmonton, Alberta
T6G 2H4
ccopp@ualberta.ca

This project is not affiliated in any way with Coalspur Mining Ltd. It is an independent research project being completed as part of a Master's thesis at the University of Alberta.

SHARE THIS:



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Updates

LEAVE A COMMENT

EDIT

November 21, 2014

I have completed my surveys in the community and want to thank everyone who participated! Also, next week will be possibly my last week in Hinton conducting interviews and wrapping up my content analysis. If you are still interested in participating, please email me.

September 30, 2014

Today, I completed my survey follow-ups in my door-to-door distribution. For all those who were not approached, you can complete the survey online by visiting the "Survey" page.

September 19, 2014

I have now wrapped up my initial door-to-door visits. Starting September 26, I will be revisiting these homes to inquire about your participation in the project. If you were not approached and are interested in participating, please visit the "Survey" page on my website to complete the online survey. Hard copies are also available and can be delivered to your door, just send me an email at ccopp@ualberta.ca.

September 4, 2014

Thank you to everyone who stopped by my booth at the Registration and Information Fair yesterday evening! Also, thank you to the Town of Hinton for being such a great host, and for putting on a wonderful event!

September 2, 2014

I will be attending Hinton's 14th Annual Registration and Information Fair tomorrow evening! Keep an eye out for my table and come say hi if you have a chance. I will have information about the study on-site including hard copy surveys that can be filled out or taken home.

August 21, 2014

Once again, I am planning a trip out to Hinton next week before the long weekend. If you or someone you know may be interested in conducting an interview please contact me at ccopp@ualberta.ca. Have a wonderful weekend and perhaps I will meet some of you next week!

August 5, 2014

I will be in Hinton this weekend distributing surveys. I have really enjoyed coming out to Hinton and meeting various community members. I am looking forward to another productive weekend, and getting to meet many more of you. If anyone has questions, or would like to meet up this weekend in Hinton to discuss the project, please contact me at ccopp@ualberta.ca.

This project is not affiliated in any way with Coalspur Mining Ltd. It is an independent research project being completed as part of a Master's thesis at the University of Alberta.

SHARE THIS:

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DEPARTMENT OF SOCIOLOGY

COMMUNICATION AND SOCIAL LEARNING IN THE RECLAMATION OF THE 'VISTA COAL MINE' PROJECT IN HINTON, ALBERTA

Survey

LEAVE A COMMENT
EDIT

CLICK HERE to take the survey now.

About the Survey

Surveys will also be distributed door-to-door in Hinton between July – October 2014. The initial door-to-door distribution of the survey has wrapped up, so if you were not approached and wish to complete the survey, please do so by clicking the above link. I will be undertaking follow-up visits with those whom I approached throughout the door-to-door distribution from September 26, 2014 until the end of October, 2014.

The purpose of this survey, and the research project as a whole, is to explore how information about coal mining activities such as land reclamation is received, shared, and discussed in Hinton. The project focuses primarily on the interactions between community members, industry representatives, and government representatives. The survey questions will ask about Coalspur Mining Ltd.'s "Vista Coal Mine" project, land reclamation in relation to this project, as well as environmental views.

As a community member of Hinton, you are invited to participate in this research project because your opinion is valuable to understanding this topic. Your participation in this study is voluntary. At any time during the survey you may refuse to answer a question, cease participating, and/or withdraw answers. Your responses will be confidential and anonymous.

The survey takes approximately 15-20 minutes.

How will the data be used?

This is a research project being conducted as part of a Master's thesis at the University of Alberta. This data may be used in written publications and/or oral presentations for academic, government, or public audiences. The original surveys and data will only be accessed by the primary researcher and her supervisory committee. All surveys, data, and notes will be kept encrypted on a password protected computer and all hard copies will be kept in a secure, locked location.

Questions?

If you have any questions about the research study, please contact Cassandra Copp at ccopp@ualberta.ca or Dr. Ken Caine (Supervisor) at ken.caine@ualberta.ca.

A Research Ethics Board at the University of Alberta reviewed this research project for its adherence to ethical guidelines. For questions regarding participant rights and ethical conduct of research, please contact the Research Ethics Office at (780) 492-2615.

This project is not affiliated in any way with Coalspur Mining Ltd. It is an independent research project being completed as part of a Master's thesis at the University of Alberta.

SHARE THIS:

Leave a Reply

Enter your comment here...

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Appendix D

Survey Tool

Communication and Social Learning in the Reclamation of the 'Vista Coal Mine' Project in Alberta, Canada

About the Survey

The purpose of this survey, and the research project as a whole, is to explore how information about coal mining activities is received, shared, and discussed in Hinton. The project focuses primarily on the interactions between community members, industry representatives, and government representatives. The survey questions will ask about Coalspur Mining Ltd.'s "Vista Coal Mine" project, land reclamation in relation to this project, as well as environmental views.

As a community member of Hinton, you are invited to participate in this research project because your opinion is valuable to understanding this topic. Your participation in this study is voluntary. At any time during the survey you may refuse to answer a question, cease participating, and/or withdraw answers. Your responses will be confidential and anonymous.

The survey will take approximately 15-20 minutes

This is a research project being conducted as part of a Master's thesis at the University of Alberta. This data may be used in written publications and/or oral presentations for academic, government, or public audiences. The original surveys and data will only be accessed by myself or by my supervisory committee. All surveys, data, and notes will be kept encrypted on a password protected computer and all hard copies will be kept in a secure, locked location.

If you have any questions about the research study, please contact Cassandra Copp at ccopp@ualberta.ca or Dr. Ken Caine (Supervisor) at ken.caine@ualberta.ca.

A Research Ethics Board at the University of Alberta reviewed this research project for its adherence to ethical guidelines. For questions regarding participant rights and ethical conduct of research, please contact the Research Ethics Office at (780) 492-2615.

By completing this survey, I agree to participate in this research project. I have read and understand the terms and conditions outlined in this form. I have been given the opportunity to ask questions and my questions have been answered.

GO TO NEXT PAGE TO BEGIN SURVEY →

Communication

1. What type of household is this (*Multi-family refers to more than one family residing in a single home*):

   Single-Family 1
   Multi-Family 2

2. Year of Birth: _____

3. How many years have you resided in Hinton: _____ (# of years)

Community Awareness and Affiliation

4. Are you aware of the "Vista Coal Mine Project"?

   Yes 1
   No ..... 2 ***If NO, go to Question 27***

5. Are you aware of the company "Coalspur Mining Ltd."?

   Yes 1
   No 2

6. What group do you belong to in Hinton (**only circle one**):

   Community Member 1
   Individual not employed by the below two

   Government Representative 2
   Ex. Town Council Member or employee of a Provincial/ Federal natural resource agency

   Coalspur Mining Ltd. Representative ..... 3 ***Go to Question 27***
   Ex. Employee of Coalspur Mining Ltd.

7. Have you communicated (*spoken/interacted*) with any **Community Members** (*anyone **not** employed by Coalspur Mining Ltd., a Town Council Member, or employee of a federal/ provincial natural resources agency*) about the Vista Coal Mine project in Hinton?

Yes.....1
No.....2 ***If NO, go to Question 11***

8. If **YES**, please list up to five community members by their relation to you (*Ex. Parent, Co-Worker, Sister, etc.*):

Community Member 1:_____
Community Member 2:_____
Community Member 3:_____
Community Member 4:_____
Community Member 5:_____

9. How often have you communicated (*spoken/interacted*) with each person about the Vista project over the past year?

	Daily	Weekly	Monthly	2-3 times/year	Only Once
Community Member 1	1	2	3	4	5
Community Member 2	1	2	3	4	5
Community Member 3	1	2	3	4	5
Community Member 4	1	2	3	4	5
Community Member 5	1	2	3	4	5

10. What best describes your communication about the Vista Project with each person:

	I shared information with them	They shared information with me	We both shared information
Community Member 1	1	2	3
Community Member 2	1	2	3
Community Member 3	1	2	3
Community Member 4	1	2	3
Community Member 5	1	2	3

11. Have you communicated (*spoken/interacted*) with any **Government Representatives** (*Town council members or employees of provincial/federal natural resource agencies*) about the Vista Coal Mine project in Hinton?

Yes 1
No ..... 2 ***If NO, go to Question 15***

12. If **YES**, please list the names of up to five government representatives:

Government Rep. 1: _____
Government Rep. 2: _____
Government Rep. 3: _____
Government Rep. 4: _____
Government Rep. 5: _____

13. How often have you communicated (*spoken/interacted*) with each **Government Representative** about the Vista Project over the past year?

	Daily	**Weekly**	**Monthly**	**2-3 times/year**	**Only Once**
Government Rep. 1	1	2	3	4	5
Government Rep. 2	1	2	3	4	5
Government Rep. 3	1	2	3	4	5
Government Rep. 4	1	2	3	4	5
Government Rep. 5	1	2	3	4	5

14. What best describes your communication with each **Government Representative** about the Vista Project:

	I shared information with them	They shared information with me	We both shared information
Government Rep. 1	1	2	3
Government Rep. 2	1	2	3
Government Rep. 3	1	2	3
Government Rep. 4	1	2	3
Government Rep. 5	1	2	3

15. Have you communicated (*spoken/interacted*) with anyone from **Coalspur Mining Ltd.** about the Vista Coal Mine Project in Hinton?

Yes.....1
No.....2 ***If NO, go to Question 19***

16. If **YES**, please list the names of up to five individuals from Coalspur Mining Ltd. (*If unable to remember the name(s) of the individual(s), write COALSPUR*):

Coalspur Rep. 1:_____

Coalspur Rep. 2:_____

Coalspur Rep. 3:_____

Coalspur Rep. 4:_____

Coalspur Rep. 5:_____

17. How often have you communicated (*spoken/interacted*) with each person from **Coalspur** about the Vista Project over the past year?

	Daily	**Weekly**	**Monthly**	**2-3 times/year**	**Only Once**
Coalspur Rep. 1	1	2	3	4	5
Coalspur Rep. 2	1	2	3	4	5
Coalspur Rep. 3	1	2	3	4	5
Coalspur Rep. 4	1	2	3	4	5
Coalspur Rep. 5	1	2	3	4	5

18. What statement best describes your communication with each person from **Coalspur** about the Vista Project:

	I shared information with them	They shared information with me	We both shared information
Coalspur Rep. 1	1	2	3
Coalspur Rep. 2	1	2	3
Coalspur Rep. 3	1	2	3
Coalspur Rep. 4	1	2	3
Coalspur Rep. 5	1	2	3

The next set of questions will focus specifically on information about reclaiming the Vista coal mine and the Vista Coal Mine project ("Vista Project").

19. Please identify up to 5 information sources from which you have heard or read about **reclaiming the Vista coal mine** (*persons, organizations, print/digital media, etc.*). For each information source you identified, please indicate what kind of source this is.

Source	**Source Type**
Ex. The Prince George Citizen	*Ex. Newspaper*
Source 1:_____	Source 1:_____
Source 2:_____	Source 2:_____
Source 3:_____	Source 3:_____
Source 4:_____	Source 4:_____
Source 5:_____	Source 5:_____
If NONE, go to Question 25	

20. For each information source you identified, please indicate the following:

a. In general, how often do you use/access this information source:

	Daily	**Weekly**	**Monthly**	**2-3 times/year**	**Only Once**
Source 1	1	2	3	4	5
Source 2	1	2	3	4	5
Source 3	1	2	3	4	5
Source 4	1	2	3	4	5
Source 5	1	2	3	4	5

b. How often did this information source discuss **reclaiming the land** of the Vista coal mine:

	Never	Seldom	Often	Always
Source 1	1	2	4	5
Source 2	1	2	4	5
Source 3	1	2	4	5
Source 4	1	2	4	5
Source 5	1	2	4	5

c. How useful has this source been in providing information about **reclaiming the land** of the Vista coal mine:

	Not Useful		Neutral		Very Useful
Source 1	1	2	3	4	5
Source 2	1	2	3	4	5
Source 3	1	2	3	4	5
Source 4	1	2	3	4	5
Source 5	1	2	3	4	5

d. In general, how useful has this information source been in providing information about the Vista Project:

	Not Useful		Neutral		Very Useful
Source 1	1	2	3	4	5
Source 2	1	2	3	4	5
Source 3	1	2	3	4	5
Source 4	1	2	3	4	5
Source 5	1	2	3	4	5

21. In the last twelve months, which information source did you turn to most often for information on the Vista Project? (**circle only one**)

Source 1 Source 2 Source 3 Source 4 Source 5

Once again, the following questions will focus specifically on information about the Vista Coal Mine project ("Vista Project").

22. Of the 5 information sources you identified regarding the Vista project, did you share any of these with others? If **YES**, with whom did you share these information sources?

	No	Yes	Community Member	Government Representative	Coalspur Representative
Source 1	No	Yes	1	2	3
Source 2	No	Yes	1	2	3
Source 3	No	Yes	1	2	3
Source 4	No	Yes	1	2	3
Source 5	No	Yes	1	2	3

23. Of the 5 information sources you identified regarding the Vista project, did anyone share these sources with you? If YES, who shared these information sources with you?

	No	Yes	Community Member	Government Representative	Coalspur Representative
Source 1	No	Yes	1	2	3
Source 2	No	Yes	1	2	3
Source 3	No	Yes	1	2	3
Source 4	No	Yes	1	2	3
Source 5	No	Yes	1	2	3

24. Of the 5 information sources you identified, what kinds of information helped you best understand the reclaiming of the Vista coal mine site (Please be specific):

_____

_____

The following questions will now focus on your involvement in participation activities related to the Vista Coal Mine project.

25. Have you engaged in any of the following activities over the past year in relation to the Vista Coal Mine project? (*Please check one per row*)

	Have done It	**Have not, but willing**	**Have not, unlikely**
Attended an information meeting	A	B	C
Attended a rally	A	B	C
Joined a group	A	B	C
Shared information with family and friends	A	B	C
Signed a petition	A	B	C
Voted for a particular politician	A	B	C
Written to a politician	A	B	C
Written a “letter to the editor”	A	B	C
Written online comments in response to media stories	A	B	C
Started paying more attention to media reports	A	B	C
Attended a hearing that approves mining projects	A	B	C
Made a post on Facebook, Twitter, blogged or other social media about the Vista Project	A	B	C
Participated in public surveys such as this one	A	B	C
Gave a presentation in formal public meetings	A	B	C
Used a toll-free telephone number to register my point of view	A	B	C

The following questions will now focus on your involvement in participation activities related to the Vista Coal Mine project.

26. Listed below are statements about your participation in discussions about the Vista Coal Mine project. Please indicate the degree to which you agree with each item using the following scale (1 = Strongly Agree, 2 = Mildly Agree, 3 = Unsure, 4 = Mildly Disagree, 5 = Strongly Disagree):

	SA	MA	U	MD	SD
It was easy to find out about participation opportunities	1	2	3	4	5
More methods of participation are needed	1	2	3	4	5
Coalspur sufficiently educated me on the Vista Project	1	2	3	4	5
Deliberation was encouraged in participation activities	1	2	3	4	5
Coalpsur was receptive to alternative solutions proposed by community members	1	2	3	4	5
Members of the community understand the need for citizen participation	1	2	3	4	5
Elected officials support participation activities	1	2	3	4	5
Coalspur follows up with community members on the results of participation activities	1	2	3	4	5

The following questions will now focus on your environmental views and opinions.

27. Listed below are statements that people sometimes make about the relationship between humans and the environment. Please indicate the degree to which you agree with each item. Choose the number of your response for each statement using the following scale (1 = Strongly Agree, 2 = Mildly Agree, 3 = Unsure, 4 = Mildly Disagree, or 5 = Strongly Disagree):

	SA	MA	U	MD	SD
We are approaching the limit of the number of people the earth can support.	1	2	3	4	5
Humans have the right to modify the natural environment to suit their needs.	1	2	3	4	5
When humans interfere with nature, it often produces disastrous consequences.	1	2	3	4	5
Human ingenuity will insure that we do not make the earth unlivable.	1	2	3	4	5
Humans are severely abusing the earth.	1	2	3	4	5
The earth has plenty of natural resources if we just learn how to develop them.	1	2	3	4	5
Plants and animals have as much right as humans to exist.	1	2	3	4	5
The balance of nature is strong enough to cope with the impacts of modern industrial nations.	1	2	3	4	5
Despite our special abilities, humans are still subject to the laws of nature.	1	2	3	4	5
The so-called "ecological crisis" facing humankind has been greatly exaggerated.	1	2	3	4	5
The earth is like a lifeboat with very limited room and resources.	1	2	3	4	5
Humans were meant to rule over the rest of nature.	1	2	3	4	5
The balance of nature is very delicate and easily upset.	1	2	3	4	5
Humans will eventually learn enough about how nature works to be able to control it.	1	2	3	4	5
If things continue on their present course, we will soon experience a major environmental catastrophe.	1	2	3	4	5

Additional Information

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Finally, here are a few questions about yourself.

28. Are you:

Male 1
Female 2

29. Ethnicity (*optional*): _____

30. What is your highest level of education completed:

Less than High school 1
High school graduate (includes GED) 2
Some college, no degree 3
College degree (Technical or Community College) 4
Some University, no degree 5
University Graduate (Bachelor's) 6
Graduate or Professional Degree (Master's, Ph.D., M.B.A, etc.) 7

31. What is your current occupation? Briefly describe what you do at work. Please be specific (e.g. clerk, truck driver, sells furniture, farms). If you are presently unemployed or not working for pay, describe your last main paying job (if you had one):

_____

_____

_____

32. Number of family members living in the household (including yourself): _____

Do you have any additional comments about the study? (**Please do not sign your name**)

_____

_____

_____

GO TO NEXT PAGE FOR ADDITIONAL INFORMATION →

Additional Information

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Additional Participation

Would you be willing to be contacted at a later date to possibly participate in an interview for the same study? (If yes, please include your name and email below).

Name:_____

Email:_____

Thank you, once again, for taking the time to complete this survey. Your opinions are important to us and will be treated with the utmost respect and confidentiality.

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Communication and Social Learning in the Reclamation of the 'Vista Coal Mine' Project in Alberta, Canada

Consent

I Agree to Participate

Next

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Do you have a survey code?

Yes No

Back Next

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Community Awareness and Attitudes

1. What type of household is this?

Single Family
Multi-Family

2. Year of Birth

3. How many years have you resided in Vinton?

Number of years

Back Next

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1. Are you aware of the "Vista Coal Mine Project"?

Yes No

2. Are you aware of the company "Coalspur Mining Ltd."?

Yes No

3. What group do you belong to in Vinton?

Community Member (Individual not employed by the above two)
Government Representative (Ex. Town Council Member or employee of a Provincial/ Federal natural resources agency)
Coalspur Mining Ltd. Representative (Ex. Employee of Coalspur Mining Ltd.)

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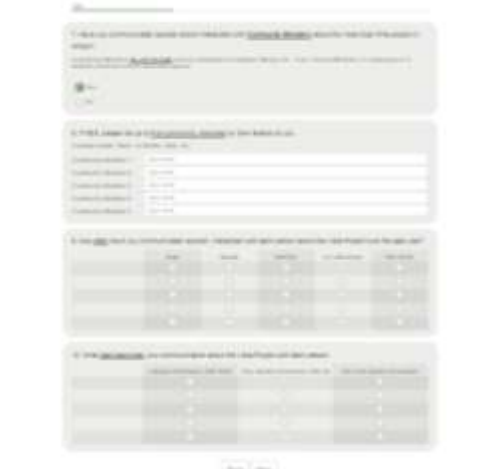
7. Have you communicated (spoken and/or interacted) with Community Members about the Vista Coal Mine project in Vinton?

Community Members do not include employees of Coalspur Mining Ltd., Town Council Members, or employees of the federal/ provincial natural resources agency

Yes
No

Back Next



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Appendix E

Newspaper Advertisement & Posters

Poster

Newspaper Advertisement

Communication and Social Learning in the Reclamation of the 'Vista Coal Mine' Project in Hinton, Alberta

This is a research project that explores how information about coal mining activities such as land reclamation is received, shared, and discussed in your community. The project focuses primarily on the interactions between industry representatives, government representatives, and community members in relation to Coalspur Mining Ltd.'s "Vista Coal Mine" project. This research is being conducted as part of a Master's thesis at the University of Alberta.

Researchers from the University of Alberta will be in the community distributing surveys between September and October 2014.

If you are interested in participating in this research project, please visit **www.communicativeflow.wordpress.com** or contact Cassandra Copp at **ccopp@ualberta.ca**

UNIVERSITY OF ALBERTA

A Research Ethics Board at the University of Alberta reviewed this research project for its adherence to ethical guidelines.

Appendix F

Data Collection Spreadsheet

Date: ____________________ Researcher: ____________________

Survey Record Sheet - EXTRA

			VERSION			Not Home	Flyer Left	FOLLOW UP		
Code	House #	Street	O	HC	IS			Yes	No	Date, Time, Notes
							Y/N			
							Y/N			
							Y/N			
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							Y/N			

HC - Hard Copy	Follow Up: Includes HC pick up dates, return for IS, or come back at a better time			
O - Online Version	SURVEY CODES	R2: 115 - 173	R4: 259 - 345	R6: 380 - 443
IS - Interview Survey	R1: 001 - 114	R3: 174 -258	R5: 346 - 379	R7: 444 - 501
	If short survey codes for route, use a survey code between 502-600			

Do Not Distriubte Survey To:

R1	390 Collinge Road
R1	193 Fairfax Drive
R1	113 Maligne Place
R1	183 Sutherland Avenue

Appendix G

Survey Cards

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Sorry we missed you...

SURVEY CODE

Communication and Social Learning in the Reclamation of the 'Vista Coal Mine' Project in Alberta, Canada

This is a research project that explores how information about coal mining activities such as land reclamation is received, shared, and discussed in Hinton. The project focuses primarily on the interactions between industry representatives, government representatives, and community members in relation to Coalspur Mining Ltd.'s "Vista Coal Mine" project. This research is being conducted as part of a Master's thesis at the University of Alberta.

A Research Ethics Board at the University of Alberta reviewed this research project for its adherence to ethical guidelines.

If you are interested in participating in this research project, please visit **www.communicativeflow.wordpress.com** and complete the survey by entering your survey code, or contact Cassandra Copp at **ccopp@ualberta.ca**.

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Thank you for your interest...

SURVEY CODE

Communication and Social Learning in the Reclamation of the 'Vista Coal Mine' Project in Alberta, Canada

This is a research project that explores how information about coal mining activities such as land reclamation is received, shared, and discussed in Hinton. The project focuses primarily on the interactions between industry representatives, government representatives, and community members in relation to Coalspur Mining Ltd.'s "Vista Coal Mine" project. This research is being conducted as part of a Master's thesis at the University of Alberta.

A Research Ethics Board at the University of Alberta reviewed this research project for its adherence to ethical guidelines.

Please visit **www.communicativeflow.wordpress.com** to complete the survey.
The survey takes approximately 15-20 minutes to complete.
If you have any questions or concerns, contact Cassandra Copp at **ccopp@ualberta.ca**.

Appendix H

Interview Tools

INTERVIEW GUIDE – GENERAL PUBLIC

Mining the Communicative Flow: Communication and Social Learning in the Reclamation of the Vista Coal Mining Project in Alberta, Canada

Principle Investigator: Cassandra Copp
Supervisor: Ken Caine

The purpose of this interview, and the research project as a whole, is to explore how information about coal mining activities is received, shared, and discussed in Hinton. The project focuses primarily on the interactions between industry representatives, government representatives, and community members. The interview questions focus specifically on Coalspur Mining Ltd.'s "Vista Coal Mine" project.

If you have any questions during the interview, feel free to ask these at any time.

Opening Questions

1. Tell me about your role in the community
2. Can you briefly describe to me your knowledge of the Vista Coal mine project.
    a. How long have you been aware of the project?
    b. Where have you received this information?

Communication Methods

1. Are you involved in interactions with government or industry representatives in Hinton?
    a. If yes, can you describe to me these interactions?
2. How do you interact with these government or industry representatives?
    a. Are there specific communication tools or formats you rely on?
    b. Do you think these individuals are accessible to all community members?
3. Do you think these modes of communication are effective?
    a. Are there communication tools that exist, that you think would improve communication between industry, government and community members?
    b. Can you provide examples?
4. Are there specific groups in the community that you interact with regarding the Vista project, beyond industry and government representatives?
    a. Can you describe to me these interactions?
    b. How often do these interactions take place?

Participation Opportunities

1. How were you involved as a community member in discussions about the Vista project?
    a. How were you notified about participation opportunities?
    b. Are there ways that the distribution of this information may have been improved?
2. Can you describe the structure through which these discussions take place?
    a. Was it a formal presentation by the company/government for the community?
    b. Was it an informal round-table discussion in which all stakeholders contributed?
    c. Was it more along the lines of a question and answer period?
3. Did you contact industry or government representatives for more information?
    a. Are there specific types of information you were looking for?

Land Reclamation

1. Can you describe to me your experiences with coal mining and land reclamation in Hinton?
2. Are you aware of Coalspur's plans to reclaim the mined land?
    a. Can you describe to me these plans?
        i. Is reclamation occurring throughout the project?
        ii. Is the goal to reclaim the land to its pre-mine state?
        iii. How long is the reclamation process anticipated to last?
        iv. Are there specific groups involved in the reclamation efforts?
3. Do you recall how information about land reclamation communicated to the community?
    a. Did this information answer your questions?
    b. Was it easy to understand?
    c. Looking back, would you have preferred to receive this information in a different way?
4. Were you provided with or requested additional resources to learn more about land reclamation?
    a. Who provided these resources?
    b. What types of resources?

Concluding Questions

1. How is community involvement important to such projects?
2. Are there additional ways to engage communities in issues of reclaiming mined lands that companies/governments should be exploring further?

Thank you for taking the time to sit down with me, and answer these questions. If you have any questions or comments regarding the interview today, please feel free to contact me. Again, you have 10 business days to withdraw your interview, and you can do this by contacting me directly.

INTERVIEW GUIDE – KEY INFORMANT

Mining the Communicative Flow: Communication and Social Learning in the Reclamation of the Vista Coal Mining Project in Alberta, Canada

Principle Investigator: Cassandra Copp

Supervisor: Ken Caine

The purpose of this interview, and the research project as a whole, is to explore how information about coal mining activities is received, shared, and discussed in Hinton. The project focuses primarily on the interactions between industry representatives, government representatives, and community members. The interview questions focus specifically on Coalspur Mining Ltd.'s "Vista Coal Mine" project.

If you have any questions during the interview, feel free to ask these at any time.

Opening Questions

1. Tell me about your role with the company/government.
2. Are you involved in interactions with community members from Hinton?
    a. If yes, can you describe to me these interactions?
    b. Are there specific groups in the community that you interact with?
    c. How often do these interactions take place?

Communication Methods

1. How do you, or the company/government, choose to communicate with community members?
    c. Are there specific media sources you rely on?
    d. Do you think these reach all community members?
    e. How does the company reach individuals for whom these sources are unavailable?
2. What are the company's/government's primary objectives when selecting a communication method?
    f. Is there a framework the company/government relies on for the dissemination of information?
3. What are the company's/government's views on social media as a means in which to communicate with the community?
    g. Is it effective?
    h. For what reasons did the company/government choose to (or not to) use social media?

Participation Opportunities

1. How does community involvement inform the company's/governments mode of communication?
    b. How does the company/government ensure that community members are informed about the project?
2. Can you describe the structure through which these discussions take place?
    c. Is it a formal presentation by the company/government for the community?
    d. Is it an informal round-table discussion in which all stakeholders contribute?
    e. Is it more along the lines of a question and answer period?
3. Do community members contact your office or representatives for more information?
    f. Are there specific types of information they are looking for?

Land Reclamation

1. Can you describe to me the reclamation goals/process for the Vista project?
    c. Is reclamation occurring throughout the project?
    d. Is the goal to reclaim the land to its pre-mine state?
    e. How long is the reclamation process anticipated to last?
    f. Are there specific groups involved in the reclamation efforts? Scientists, etc.
2. How did the company/government communicate this information about land reclamation to the community?
3. Did the company/government provide the community with additional resources to learn more about land reclamation?
    g. What types of resources?
    h. Were these resources requested by the community specifically?

Concluding Questions

1. How is community involvement important to such projects?
2. What are some of the company's/government's primary ways of accomplishing this?

Thank you for taking the time to sit down with me, and answer these questions. If you have any questions or comments regarding the interview today, please feel free to contact me. Again, you have 10 business days to withdraw your interview, and you can do this by contacting me directly.

Appendix I

Survey Participant Consent Form

INFORMATION LETTER AND CONSENT FORM

Mining the Communicative Flow: Communication and Social Learning in the Reclamation of the 'Vista Coal Mine' Project in Alberta, Canada

About the Survey

The purpose of this survey, and the research project as a whole, is to explore how information about coal mining activities is received, shared, and discussed in Hinton. The project focuses primarily on the interactions between community members, industry representatives, and government representatives. The survey questions will ask about Coalspur Mining Ltd.'s "Vista Coal Mine" project, land reclamation in relation to this project, as well as environmental views.

As a community member of Hinton, you are invited to participate in this research project because your opinion is valuable to understanding this topic. Your participation in this study is voluntary. At any time during the survey you may refuse to answer a question, cease participating, and/or withdraw answers. Your responses will be confidential and anonymous.

The survey will take approximately 15-20 minutes

This is a research project being conducted as part of a Master's thesis at the University of Alberta. This data may be used in written publications and/or oral presentations for academic, government, or public audiences. The original surveys and data will only be accessed by myself or by my supervisory committee. All surveys, data, and notes will be kept encrypted on a password protected computer and all hard copies will be kept in a secure, locked location.

If you have any questions about the research study, please contact Cassandra Copp at ccopp@ualberta.ca or Dr. Ken Caine (Supervisor) at ken.caine@ualberta.ca.

A Research Ethics Board at the University of Alberta reviewed this research project for its adherence to ethical guidelines. For questions regarding participant rights and ethical conduct of research, please contact the Research Ethics Office at (780) 492-2615.

By completing this survey, I agree to participate in this research project. I have read and understand the terms and conditions outlined in this form. I have been given the opportunity to ask questions and my questions have been answered.

GO TO NEXT PAGE TO BEGIN SURVEY

Appendix J

Interview Participant Consent Form

INFORMATION LETTER AND CONSENT FORM
Mining the Communicative Flow: Communication and Social Learning in the Reclamation of the Vista Coal Mining Project in Alberta, Canada

Research Investigator
Cassandra Copp
Tory 4-19
University of Alberta
Edmonton, AB, T6G 2H1
ccopp@ualberta.ca
(780) 996-8596

Supervisor
Dr. Kenneth Caine
Tory 4-25
University of Alberta
Edmonton, AB, T6G 2H1
ken.caine@ualberta.ca
(780) 492-5853

Purpose
The purpose of this interview, and the research project as a whole, is to explore how information about coal mining activities is received, shared, and discussed in Hinton. The project focuses primarily on the interactions between industry representatives, government representatives, and community members. The interview questions will ask about Coalspur Mining Ltd.'s "Vista Coal Mine" project specifically.

Study Procedures
If you decide to participate, we can schedule a convenient time and place to conduct an interview. I am planning to complete interviews between July and December 2014. The interviews will take approximately 1 hour during which we will discuss how information about the Vista Coal Mine project travels between various stakeholders in Hinton, Alberta.

With your permission the interview will be audio recorded. I will be personally transcribing the interviews at which time your name and identifying features will be removed so that the final transcript will be anonymous (if requested). The audio recording will be encrypted, stored on a password-protected computer and then destroyed when this project is completed. All transcripts and notes will be secured in a locked room and only accessed by myself or by my supervisory committee.

Risks and Benefits
By participating in this project, you will have an opportunity to discuss your role as a key informant around the Vista Coal Mine project. Your knowledge and experience will contribute to the Environmental Sociology literature and assist in identifying ways to improve current environmental policies and communication strategies amongst various stakeholders. This research is of minimal risk to you and it is not expected that your participation will result in any risk above what you would encounter in your daily life.

Voluntary Participation

Please be aware that participating in this project is completely voluntary. At any time during the interview you may refuse to answer a question. Due to the ongoing nature of data analysis during this project, if you decide to withdraw a portion of your interview or to fully withdraw from the project, you must notify Cassandra **within 10 business days of the interview**. If you choose to withdraw all or part of your data, the data will be destroyed immediately. Please feel free to discuss these procedures with any member of the research team prior to conducting the interview.

Confidentiality and Anonymity

The primary intent of this project is to gather data for a Master's Thesis through the University of Alberta. This data may be used in written publications and/or oral presentations for academic, government, or public audiences. The original transcripts and data will only be accessed by myself or by my supervisory team. Your answers to questions will remain anonymous and confidential although insights from your interview may influence and be shared in subsequent interviews.

Due to the nature of a case study, it may not be possible to guarantee that other stakeholders involved in this project will not recognize some of your answers in the final reporting and presentation of the results of this study. If requested, your name and identifying features (such as the description and/or identification of your role in the company or government) will be removed from the transcript and pseudonyms will be used in all publications of this data. All interview transcriptions, audio recordings and notes will be kept encrypted on a password protected computer and all hard copies will be kept in a secure, locked location. Once interviews have been transcribed, the interview audio recordings will be deleted. Your name and contact information will be kept on a separate master list, also encrypted on a password-protected computer. This list is used so that I can contact you if necessary following the interview and to provide you with an update when I have completed the project. If you would like a copy of the final research report please request one at that time.

Further Information

If you have any questions or concerns about this research project, please contact Dr. Kenneth Caine at ken.caine@ualberta.ca.

A Research Ethics Board at the University of Alberta reviewed this research project for its adherence to ethical guidelines. For questions regarding participant rights and ethical conduct of research, please contact the Research Ethics Office at (780) 492-2615.

INFORMATION LETTER AND CONSENT FORM
Mining the Communicative Flow: Communication and Social Learning in the Reclamation of the Vista Coal Mining Project in Alberta, Canada

Statement of Consent

I agree to have this interview audio recorded:	Yes	No
I give permission for my name and identity to be used in this research project:	Yes	No
I give permission to be contacted for follow-up research:	Yes	No
I would like to review transcripts before they are used: *If yes, I understand that I have 5 business days to make any changes, after which time I deem the transcript reflective of our discussion*	Yes	No

I have read and understand the terms and conditions outlined in this form. I have been given the opportunity to ask questions and my questions have been answered. I agree to participate in this research project and will receive a copy of this consent form after both parties sign it.

_____	_____	_____
Signature of Participant	*Name of Participant (printed)*	*Date*

I agree, as the researcher, to uphold the terms and conditions outlined in this form.

_____	_____	_____
Signature of Researcher	*Name of Researcher (printed)*	*Date*

Appendix K

Content Analysis

Theme	Description	Presence
Expertise ("Borrowing the Land")	Sub-themes: reclamation experience/compliance and reclamation promises/goals. Focuses on how industry and governments discuss extractive resource projects.	38%
Reclamation Stories ("Backyard Stories")	Stories shared about reclamation on behalf of the public or community organizations.	17%
Operational/Legislated Processes and Expectations	Use of technical language to explain the coal mining process from the pre-mine approvals to post-mining operations.	43%
Innovation	Sub-themes: novel solutions and innovation in policy	12%
Limitations and Challenges	The acknowledged challenges and limitations to reclamation by industry and governments.	12%