Corporate Foundations in the Mining Industry:

Institutional Challenges to Private Sector Involvement in Development

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For my Family

Abstract

This thesis investigates the rise and performance of corporate foundations in the mining industry. Corporate foundations work to distribute the benefits of mining activities in developing countries. They are a hybrid organizational form that is connected to the funding and founding corporation, and yet to different degrees they independently govern their resources and activities. In addressing the problem of uneven benefit distribution, they are related to a growing interest in improved corporate social responsibility. This thesis examines corporate foundations' forms and functions from an economic geography perspective that situates their rise and performance within the diversity and heterogeneity of economic activities that formulate the current context of the political economy of the mining industry. Through an overarching framework of organization and institutional theory the thesis investigates if: 1) corporate foundations in the mining industry are fit for purpose; 2) how the form of corporate foundations influences function, and vice-versa; and 3) how are these foundations shaped by, and in turn shaping, their (corporate/local/regional/national economic/regulatory/political/social) environments?

It finds that corporate foundations in the mining industry currently lack a larger strategy to articulate the goal of their long-term performance. This is based on the findings of the empirical chapters that: 1) the organizational legitimacy of corporate foundations is particularly related to their form; 2) that problems of local failure to distribute benefit are an underdeveloped aspect of the resource curse, and requires close coordination with the technical changes of the mining industry and their effects on the regional population to manage; 3) that corporate foundations represent the path dependency of the mining industry, but when operated with a specific strategy for change are able to affect evolutionary institutional change in corporations; and 4) that the hybrid form of corporate foundations is best suited to build capacity and foster partnerships that facilitate processes of regional economic development through improved economic linkages with the mining industry. From these findings, the conclusion proposes that corporate foundations should adopt a strategy to serve as a mediator between mining corporations and the region to build institutional capacities and partnerships to facilitate the distribution of benefits from mining.

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List of Acronyms

BOP –Base of the Pyramid

Codelco - Corporación Nacional del Cobre

CSR –Corporate Social Responsibility

EITI – Extractive Industries Transparency Initiative

ESG – Environmental, Social, and Governance

FME – Fundación Minera Escondida

FTF –Foundations, Trusts, and Funds

GRI – Global reporting initiative

ICMM – International Council of Mining and Metals

IFC ─ International Finance Corporation

SME – Small and Medium Enterprise

SRI – Socially Responsible Investing

SX/EW – solution extraction/electro-winning

WB –World Bank

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1 Introduction

This research was undertaken at the common, yet persistently unpalatable, intersection between the very raw struggle for livelihood at the sites of resource extraction and development, and the refined skirmishing of international corporations to create and operate these sites. These contrasts are visceral in the physical spaces they occupy – at the extremes for example, of squatter labour camps to sleek corporate headquarters. However, they each embody both an individual and a shared socio-economic legacy currently confronted by specific changes in the expectations of business in society. This research is concerned with the processes of their convergence, sometimes fluid, often abrupt, and in focusing on corporate foundations - like sitting in the middle of a busy intersection full of traffic yet still under construction. Less metaphorically, the intellectual endeavour of this research, its work to engage with the theoretical level of understanding, was undertaken here in the energy and perplexity of these sites of intersection.[1] From this perspective it seeks to provide greater insight into the phenomenon of corporate foundations - questioning their practices and our conceptual understanding of their occurrence, development and performance. This drives the thesis and its research goals.

It also provides empirical material to begin to address a larger question: are corporate foundations in the mining industry organizations whose presence is altering the dynamics of the institutional challenges of private sector involvement in development? And, can they work to heal the fissures in the structure and function of firms, governments, and their relationships that now limit the distribution of development benefit from the mining industry?

[1] Intersection does not only refer to the lines (subjects or issues) passing through each other but also the products of their collusions and collisions.

Or, are corporate foundations a patchwork of disparate organizations covering and bridging these gaps without a distinct progressive or even evolutionary role to affect change? In physiological terms, are corporate foundations the 'Band-Aid' or plasters merely patching over a wound, or are they a 'Neosporin' or healing salve working to stop further infection and heal the problem?

First, it is important to introduce corporate foundations in the mining industry and why such a seemingly specific topic is worthy and capable of providing such an extensive research project. Corporate foundations of the specific nature this thesis is concerned with are a relatively new phenomenon in the mining industry. Most have been established in the past ten years (Nelson, Bannerman et al. 2010), and there are now over sixty in developing countries (Wall and Pelon 2011). Despite the name, they operate as not only foundations, but also as trust and funds. While no two are identical in structure or mission, they are established to address the 'distribution of benefit from mining operations' (Wall and Pelon 2011). For some, this is largely in financial terms and the distribution of economic benefit. For most, the foundation is also expected to address the social impact of financial benefit and in different ways to facilitate opportunities for development from it. The scale and timeframe of their operations also differ depending on the context in which they operate. In some instances the impact is both expected immediately and contained to the areas around the mine. In comparison, some foundations operate at a national scale or over the long-term with performance timelines extended over several generations. The difficulty of negotiating these parameters for what is contextually desirable and feasible presents a series of challenges for corporate foundations.

Corporate foundations in the mining industry are distinct from many other existing corporate foundations. The most well known corporate foundations would include the Ford Foundation and the Rockefeller Foundation, or more recently similar foundations within the

extractives industries such as the Shell Foundation. Each of these foundations is not site specific, but has broad reach across different issues and over many geographic areas. These foundations are each philanthropic organizations with variable degrees of independence in financial and administrative management from the sponsoring corporation. As a result, they should allow for donation and social investment removed from corporate motives.

By contrast, within the mining industry, corporate foundations have embraced these same underlying intentions; however, they are enmeshed in a more perplexing tangle of objectives, forms, and functions. Most corporate foundations in the mining industry have a more narrowly defined space of influence than the other large and well-known corporate foundations. The foundations that are the primary interest of this thesis are also further involved in the delivery and ensuring the sustainability of their programs than many larger foundations. Beyond the complications of this context specificity and intimacy they are most obviously different from other corporate foundations because they are specifically related to the mining industry and addressing concerns related to the impacts of that industry.

While acknowledging the confusion created by these differences, this thesis argues that primarily obfuscating the unique role of corporate foundations in the mining industry is the lack of clarity regarding their larger objectives or strategic raison d'être. For example, it is unclear if they are expected to manage compensation, or used to mitigate social impacts, or even if some corporate foundations are merely convenient vehicles to meet legal requirements to affected populations. Further, given the increasingly negative consequences to mining corporations for the failure to manage environmental and social harm created by their operations, it is uncertain to what degree these foundations are a tool of strategic risk and reputation management for the corporation. All these questions engage corporate foundations in a dialogue beyond that of corporate philanthropy. Broader yet, the nature of

their engagements for development injects these corporate foundations into the persistent development failures, primarily local, of resource economies.

A thick academic literature and generations of policy formation have sought to tackle the particularly incorrigible pattern of the failure of extractive dependent economies to maximize their development benefit and diversify their economies (Corden 1984; Auty 1993; Sachs and Warner 2001). The problem of the 'resource curse' associated with the extractive industry is largely addressed at the national level. However, industry and regulatory attention to environmental damage and social impacts is typically focused on the local role of the mining firm (Hilson and Murck 2000; Veiga, Scoble et al. 2001; CSRM 2007; Esteves and Vanclay 2009).

Corporate social responsibility (CSR) is often the banner under which most activities to address the resource curse via corporate performance occurs. However, in their encompassing nature, CSR initiatives have conflated and confused addressing the direct impacts of the mining operations process and addressing impacts on development from the presence of the industry. CSR, as it is increasingly expected of the major mining firms, has strayed into many areas of corporate performance (Porter and Kramer 2006; Bertels and Peloza 2008; Emel and Huber 2008; Bronn and Vidaver-Cohen 2009). As a result, CSR often only perpetuates strained relations between communities and mining firms and frequently fails to include a role for the development of local governments (Hamann and Kapelus 2004). As attention to the impact of mining climaxes, there is increased risk for firms to lose access to project finance and for the removal of the firms' social license to operate (for social license to operate see: (BSR 2003; Nelson 2006; Howard-Grenville, Nash et al. 2008).

Corporate foundations are situated amid issues of corporate social responsibility, the complicated political economy of the mining industry, and transnational activism for good governance and development. They are mechanisms that because of their different

relationship with the parent corporation compared to more common CSR programmes, and their specific focus on the economic distribution of benefit and non-operation specific impacts, offer a variation in the method of engagement for certain development changes. Their hybrid role, connected to and yet - to different degrees - independent from mining corporations combines the on-going approaches to address mining impacts that are conducted internally by firms through CSR programmes with approaches that are managed externally to the firm such as through partnerships with Non-Governmental Organizations (NGOs). As a result, corporate foundations are particularly interesting in their attempt to integrate approaches for engagement in development that are supported by different beliefs regarding the place for firms in socio-economic development.[2]

1.1 Research Significance

These perplexing and rather unique circumstances of corporate foundations in the mining industry prompt many questions about their design, intent, performance, and the expectations they create. Particularly, the thesis focuses on questioning whether corporate foundations:

1) Are organizations fit for purpose?
2) How foundation form influences function, and vice-versa?
3) How are these foundations are shaped by, and in turn are shaping, their (corporate/local/regional/national/economic/regulatory/political/social) environments?

[2] Chapter 4 further articulates the different beliefs about the appropriate role for business in social welfare and development issues. The two views largely follow that 1) businesses contributes to society through their performance and integration in society Friedman, M. (1970). "The Social Responsibility of Business is to Increace its Profits." The New York Times Magazine(September 13, 1970). Or, that businesses must work to provide a social good Smith, N. C. (2003). "Corporate Social Responsibility: Whether or how? ." California Management Review **45**(4): 52-76.

From this investigation it is hoped that these corporate foundations may offer a model of organizations and institutional relationships that reframes our understanding of the role and boundaries of organizations operating between meeting business objectives and engaging in development.

This research began in the midst of the global financial crisis of 2008 and proceeded under the continued unravelling of poorly understood institutional intersections. Undue confidence and overdue maintenance of the independent stability and structural fitness of institutions from banks, government agencies, and global markets obscured the rearrangement of the institutional attachments and the strength, and weaknesses, of their interdependencies. The overlooked significance of institutional and organizational intersections affected the stability of international economic stability and forced a re-evaluation, if not a need to re-construct, the structure and relationship of key social organizations and institutions.

At its own humbler scale, this thesis argues that a restructuring of institutional intersections is manifest with corporate foundations in the mining industry. These foundations are hybrid institutions born to address previous irresponsibility to many societies in the pursuit of mineral wealth. As such, they are perhaps an unlikely subject of analysis to evaluate the future potential of organizational forms for positive private sector involvement in development. However, with an eye to the greater puzzle of a rapidly changing society of institutional entanglements, and going back to the intersection of problems at the core of this research, there are three significant reasons to pursue a greater understanding of the particular rise and performance of corporate foundations. From the broadest to the most specific there is:

* One, an increasing participation and demand for private sector involvement in development, yet inconclusive knowledge about the organizational management of various programmes for engagement or their effects on institutional changes for development (Hammon 2004; Esteves and Barclay 2011; Kapstein and Kim 2011; Rajak 2011; SNV and WBCSD 2011)[3].

* Two, a specific narrative of the relationship between the extractive industries and development concerning the distribution and effects of economic benefit which corporate foundations and other institutions aim to alter (Corden 1984; Auty 1993).

* Three, no significant academic research on corporate foundations to complement preliminary research in the mining industry itself, [4] and work starting to take place in international forums such as the World Bank (Wall and Pelon 2011).

The thesis's findings aim to inform decisions about the future development of corporate foundations and their ability to address the institutional challenges of the mining industry's involvement in development. Cumulatively they work to articulate a suggested role for corporate foundations based on the findings in each chapter. Doing so informs the three significant gaps in knowledge and addresses the larger theoretical questions the thesis poses. Beyond these outcomes, it opens a new space for further academic explorations.

[3] Also see organizations such as Odi, Overseas Development Institute www.odi.org, and Business Fights Poverty, www.businessfightspoverty.org, and a research stream on business and development at the Harvard Kennedy School of Government www.ksg.harvard.edu/m-rcbg/CSRI

[4] The ICMM has information on corporate foundations scattered as case studies in a range of other reports, for example many appear in the report: Partnerships for Development http://www.icmm.com/mpd. Individual corporate foundations and the sponsoring corporations also have websites and some self-published reviews regarding their performance.

1.2 Theoretical Significance

Part 1

The theoretical significance of this thesis is built from its exploration of unique empirical material. At its core is the hybridity of corporate foundations to achieve economic and social goals, to operate between development and the private sector, and to create new footings upon which to construct a different governance of the relationship between the extractive industry and development. This hybridity challenges not just these practical dynamics, but also the conception of an organization that does such things and the institutional environments in which it is formed and transforming. In analysing corporate foundations they, as the empirical subject, provide the flesh to shape and fill the empty structure of theory. Yet in doing so, they often do not fit the theoretical mould. The contextually explicit development of corporate foundations confronts the expectations of existing theory, and in doing so creates opportunities for innovation.

This thesis operates from a perspective of theory as half of a dialectic with empirical information (Clark 1998). Theory must be built from empirical experiences rather than seeking empirical information to meet theoretical expectations and corroborate existing claims. In this way the exchange between theory and empirical matter facilitates a process open to new insights and theoretical advancement (Braun and Whatmore 2010; Barry 2012). Further, theory is a tool and thus is useful only with specific application. As Suddaby (2010, p. 14) aptly notes, the dangers of the over-extension of theoretical application of theory are: "…just as the world becomes a nail to a boy with a hammer, so too do we lose the variety and complexity of the empirical world of organizations when we begin to view it through a common theoretical lens." As a result, the use of organization and institutional theory in this thesis from an economic geography perspective is specifically to complement and draw out –

not explain or blanket - the process of understanding the relationship between form and function in the organizations of corporate foundations and change in the institutions that shape the environments in which they operate.

To better understand how organizational and institutional theories are used to do this, the nature of their use and how they are understood in this thesis must be further specified. Particularly it requires clarification of the choice to use organization and institutional theory together in this thesis. Both research fields lack established definitions or sets of objectives, and their use throughout the thesis represents a choice of how they are best understood and utilized.

Historically organization theory was rooted in sociology and the study of social structures. Curiosity about cooperative social systems in the early twentieth century, spearheaded by Chester Bernard, slowly led to the formation of research into social organizations (Williamson 1995). As the field developed, research to understand organizations was driven by a desire to explain the organizational changes occurring throughout the beginning of the second half of the 20th Century. Organizations, and particularly industrial firms, were concentrating, as well as undergoing diversification and bureaucratisation (Davis and Marquis 2005). Work in organization studies sought to understand these change processes to better predict and influence the behaviour of organizations in dynamic environments. Herbert Simon changed the field by introducing a behaviourally oriented approach that altered the focus of organization studies to frame processes of decision making with an understanding of the bounded rationality of organizational actors. He expanded this work with James March (March and Simon 1958) to further define the processes that constituted the organizational research field going forward.

Organizations, and the frameworks of bounded rationality and later interest in the construction and transfer of knowledge within organizations, have been examined from many

different perspectives. Some are integrative approaches, others open system or rational approaches (Scott and Davis 2007). Many different paradigms including transaction cost economics, agency theory, and the resource dependency theory have provided further approaches and specialized interest in organization studies (Davis and Marquis 2005). These approaches have attempted to keep up with the changing boundaries of organizations, and their increasing relationship with complicated networks and financial markets. The continual evolution of organizations also makes it difficult to conduct empirical analysis with any of these approaches (Reed 1996). With a desire to apply organization theory to empirical events, there is a movement to integrate the theory-driven organization field with the problem-driven research on institutions.

For this thesis and its empirical investigation of corporate foundations, examining organizations from an institutional perspective is a way to accommodate the theorizations of organizations and organizational change to an empirical subject. However, institutional studies is also a complex and meandering field of research such that there is no direct path to integration with organizational studies. In order to frame this relationship, the thesis works from a perspective of institutional studies based on understanding their composition and change process (North 1990). This therefore does not embrace institutional studies concerned with processes of 'institutionalisation'. Further, the thesis concentrates on aspects of institutional theory sometimes referred to as 'soft institutionalism' (Amin 2001), such as institutional and evolutionary economics rather than institutional studies more closely related to regulation theory in state practices and financial rules.

This choice of focus within institutional studies is further refined by its relationship with organizations. W. Richard Scott (Scott 2001; Scott 2008a) has articulated a version of the relationship between institutions and organizations that is useful. The understanding of the relationship between organizations and institutions he presents is slightly amended in this

thesis. Rather than viewing institutions as the container of many organizations, it adopts the suggestion of Amin (2001) to embrace Callon's (1998) view of institutions as potentialities or imminent forces that put economic activities into play. In this way the relationship between organizations is more dynamic, and economic activities embody institutional expression. The thesis goes further in its amendment to more traditional approaches to institutional theory by investigating the relationship of organizations *causing* institutional changes, and in doing so reversing the hierarchy of change processes articulated by Scott (2001).

But this analytical process encounters one more obstacle to its execution because institutional theory, even problem driven, is not an applied methodology of testable hypotheses. And so the thesis's economic geographic perspective provides the analytical tools. When integrated with economic geography, institutional theory helps abstract what orders economic life and helps explain the space economy (Amin 2001). In doing so in this research of corporate foundations, it brings institutional economic geography back to its classic interest in uneven development and spatial inequality.

The approach to apply institutional theory through the tools of economic geography is strategic. Jessop (2001) is critical of the institutional turn in economic geography. He argues that the institutional turn has no value in and of itself. Rather it is the researcher's and research programmes' choice to addresses intuitions that makes it significant, and moreover, the willingness to embrace ruptures to an institutional perspective that makes it a strategic rather than systematic perspective. This problem-oriented use of institutional theory does not methodically follow the theory itself.[5] If it is not doing this, then instead it must work adaptively, or as he describes it, through a strategic-relational approach that acknowledges the spatio-temporal and relational context of institutions. This

[5] In part this is because it very difficult to determine exactly what institutional is – there are many overlapping definitions and applications.

> "… strategic-relational approach suggests that they [institutions] should be analyzed as complex emergent phenomena, whose reproduction is incomplete, provisional, and unstable, and which coevolve with a range of other complex emergent phenomena. Institutions must be deconstructed rather than reified. In particular, they have histories. They are path-dependent, emergent phenomena, recursively reproduced through specific forms of action" (Jessop 2001, p. 1230)

This thesis's use of institutional theory is strategic – but it is also rooted in an investigation of particular empirical institutions with spatio-temporal specificity. This thesis does embrace 'ruptures' in the form of complementary theoretical perspectives to examine the reflexivity of agents within their institutional environment. It is the flexibility and interests of the tools of economic geography that allow this strategic use of institutional theory to give the institutional perspective purpose.

Part 2

As much as theories of organization studies and institutional change create the overarching framework of this thesis, and hold together the trajectory of analysis in the different chapters, they guide, but are not the primary tools of analysis. Tools of economic geography applied to the research and analysis of corporate foundations are used in each chapter to iteratively examine organizational change (Chapter 4 and 6) and institutional change (Chapter 5 and 7) as much as it is possible to separate them in this context. In doing so, change within the organizations of mining firms is explored as part of the institutional challenges to the role of business in society (Chapter 4). Also explored are changes in the political economy of extractives-based economies (Chapter 5) and the challenges of incorporating private sector involvement in development into this nexus of institutions.

Examining these specific institutional challenges to private sector involvement in development through the empirical example of a specific organizational event, in the form of corporate foundations, offers two opportunities to contribute to theoretical discourses. First, it

challenges the relationship between institutional and organizational change. Using the work of Cyert and March (1963), Williamson (1985), March and Simon (1958), and Hodgson (1999), their theoretical frameworks provide various intellectual entry points to the empirical material of organizational change and the foundations of the significance of form and function used in this thesis. This change is of course in the context of the relationships of organizations to the internal and external worlds of their operations. In this thesis this is examined through attention to the origins and performance of organizational form and function. A recurring problem in this analysis is the role of institutions affecting these changes (Granovetter 1985).

Institutions are most often described as "… the rules of the game in a society, or more formally, are the humanly devised constraints that shape human interaction"(North 1990). There is a reciprocal relationship between corporate foundations and the institutional contexts in which they operate: the foundations are not only responsive to their environments, they also reshape these environments. The organizational changes represented in corporate foundations challenges the form of institutional relationships and the nature of their functions. Thus the subject of researching corporate foundations is a theoretical opportunity to explore the relationships between the influences of organizational change on institutional change. It is a perspective of the bottom-up role of organizations affecting institutional change instead of the more common top-down approach viewing the effects of institutional change on organizations (North 1990).[6]

Second, the iterations of analytical focus in the chapters also present tensions between perspectives of institutional change as purposeful/ by design (North 1990; Ostrom 2005) or as

[6] To clarify, that this issue of direction of influences on change is meant separately from arguments about the cause of institutional or organizational change. For example as resulting from technological changes in way that Nelson or Ayres argue occurs is still a dimension of this argument. (Ayres, C. E. (1944). The Theory of Econonomic Progress. Chapel Hill, N.C., University of North Carolina Press, Nelson, R. and S. Winter (1982). An evolutionary theory of economic change. Cambridge, MA, Harvard University Press.

an evolutionary process (Veblen 1898; Hayek 1973; Nelson and Winter 1982; Ostrom 2005). In this research the tension is present in the concern over the extent to which corporate foundations are altering the mining business by design or evolution (Chapter 6) and to what extent their performances are purposefully seeking change in the institutional environment of the regional or national political economy in which they operate (Chapter 7). It offers an empirical research contribution to theorizations of institutional change (Alston 1996). This is a contribution that ultimately leads to an argument for understanding the integration of purposeful and evolutionary dynamics of institutional change rather than the dominance of either.

An economic geography perspective used as the analytical tool of the chapters structures the process of working towards these theoretical issues from the empirical material of research with corporate foundations. Specifically, this entails a perspective of the empirical used to challenge assumptions about economic processes through an appreciation of how heterogeneous, diverse, and different economic activities are, and the causes and consequences of these features (Clark, Feldman et al. 2000). For this research, corporate foundations occurring in many different ways and places quickly demonstrate the heterogeneity of form and diversity of function. The complexity of these features leads to investigating the intersections of form and function (Dixon 2012) and the on-going processes of institutional transition. Without returning to the context and subjects that it reflects through this use of economic geography, theory is of little utility.

Yet integrated well, theory and the empirical can help map the new terrain and landscape in which corporate foundations are operating, and by providing this perspective help inform those who are managing them and reacting to their development. More elegantly, "…the power of social science knowledge is not so much its predictive ability but its capacity to produce maps of causality that allow others to assess alternatives for intervention." (Clark

2007, p. 189). Thus, the insights of the thesis's findings offer these maps to the three significant research concerns that drew research attention to corporate foundations. In doing so, they offer an opportunity to understand corporation foundations and the circumstances of their work differently. By facing the overarching theoretical questions of organizations and institutional change, they may provide new empirical contributions that can more accurately account for and guide future articulations of organizational and institutional processes that aid in the understanding of similar, but different, phenomenon.

1.3 Research Framework

For practical reasons, most reviews of corporate foundations currently exist as case studies. This is an effective way to document a foundation and what it is doing. Case studies can then present that information back to the industry for replication or to broader society as well packaged information. However, a collection of case studies has limitations. Without comparison and reflection between cases, they offer little insight into the overarching phenomenon of the foundations they are documenting. Nor do they have the scope to address influences and effects beyond the parameters of the individual 'case'. They are largely carried out within the industry, and apart from a World Bank review[7], as a collection of stand-alone instances. Due to the way they have been examined thus far there are significant gaps and missed learning opportunities in our understanding of their development. This research has aimed to articulate and analyse the overlooked narrative of the 'case' of corporate foundations together as a phenomenon in the mining industry.

This analytical frame allows for a more holistic examination of corporate foundations and the circumstances of their development. It advances this research away from the

[7] Wall, E. and R. Pelon (2011). Mining Foundations, Trusts and Funds, A Sourcebook. Extractive Industries for Development, The World Bank.

segmentation of research produced through case studies. The overarching questions of organization and institutional theory then link the creation of the developing narrative of the rise and performance of corporate foundations in each chapter to specific aspects of the research objectives and theoretical questions. (Dimaggio and Powell 1983; Suchman 1995; Martin 2000; Scott 2008b). Areas of analysis are also consistent with economic geographers' interest in heterogeneity, difference, and change in economic activities and organizations (Clark, Feldman et al. 2000; Coe, Kelly et al. 2007; Tickell, Sheppard et al. 2007).

Within economic geography, Martin (2000) identifies and further differentiates among four different themes of inquiry: 1) the ways institutions are shaped by institutional environments, but then modify it; 2) the evolution of the economic landscape, while institutions aim for stability and are characterized by path dependency; 3) the role of technological innovation as a specifically geographically and socio-culturally determined activity; 4) and finally, the co-evolution of social regulation and institutional governance. Each of these themes is addressed in the process of understanding corporate foundations' emergence and performance. Each theme is most prominent in an individual chapter, yet they are in conversation with each other throughout the thesis.

Without a pre-existing literature or discourse regarding corporate foundations this thesis has had to find and test relationships with a range of existing associated theoretical tools. As a result, each chapter not only speaks more strongly to one of Martin's articulated themes, but a particular analytical approach as well. Described in more detail in the coming chapter summaries are four different areas: CSR and business studies frameworks; technological change and resource economies; path dependency and organizational evolution; and finally, organizational structure and learning. Each uses a different combination of an economic geography perspective and an aspect of a particular theoretical lens relevant to different views of corporate foundations. The framework structures the relationships between

the findings of each chapter and the overall research objective. The (admittedly ambitious) collective outcome of these analyses is the establishment of a well-rounded perspective with opportunities for analytical depth and openings from which to position further research.

This framework not only serves to expand the research scope of the thesis in the key areas outlined above; equally important, it also helps to define the theoretical and practical boundaries of the thesis. Theoretically, the interest is not in a structural analysis, but rather a considerably more nuanced approach that is able to speak to the on-going fluidity and uncertainty of the organizational and institutional processes of change. Practically, this thesis is not an exercise to determine if corporate foundations "work". Nor is it a politically infused critique of the nature of the capitalist systems exercised between mining corporations and the governments with which they are involved (Rajak 2011). That said, in seeking findings regarding the rise of corporate foundations and their ability to affect institutional intersections, it is certainly hoped that the thesis will contribute valuable insights to discussions that concern these questions.

The use of economic geography to examine corporate foundations is the meeting of a discipline that investigates the forces of regional economic disparity and organizations actively seeking to change regional economic disparities. The further connection between the use of economic geography as an analytical tool in the chapters and better understanding the relationship between the empirical and theoretical analysis is discussed in the literature review.

1.4 Chapter Introductions and Objectives

The core chapters are further prefaced after this introduction by a chapter (Chapter 2) that provides a literature review and a background of the mining industry in general, an introduction to the theoretical stance of each chapter, and also specifically providing context for the fieldwork in Namibia and Chile. A review of the research design and methodology then follows (Chapter 3).

1.4.1 Part One: Chapters 4 and 5

The analysis of the first half of the thesis largely examines the context of corporate foundations' emergence, form, and functions. These chapters aim to examine some of the series of social forces that have created the interest in establishing corporate foundations and define the 'problems' (Callon 1980) corporate foundations address. Identifying the logics for corporate foundations includes the examination of factors endogenous and exogenous to the mining industry. As such it situates the emergence of corporate foundations in an industry specific context as well as within the political economy of extractives based economies. These contextual analyses establish an understanding of factors that influence their emergence and expectations of their development.

In doing so they articulate the 'problem' that has served to produce corporate foundations and to which they direct their functions. The process of problematization (Callon 1980) involves questioning the controversy and identifying the issues that construct it. It is a process of understanding how a collection of issues is engineered into the idea of a 'problem' through the co-evolution of the 'problem' and responses to it. In this way these context focused chapters articulate the construction of the 'problem' the mining industry is responding to in the creation of corporate foundations and the construction of the 'problem'

in the political economy of managing the distribution of benefit from mining that corporate foundations are tasked to address. Key overarching themes of these sections are: changing institutional environments and adaptation to technological change and social movements – including the coordination of government and industry.

Chapter 4, Social Investment and Responsible Investment: Their relationship in the mining industry concentrates on the role of the milieu of social responsibility, and especially socially responsible investing, in affecting corporate behaviour in the mining industry (Porter and Kramer 2006; Aguilera, Rupp et al. 2007; Campbell 2007). The increased interest in different forms of social responsibility is occurring in response to the tensions between the concerns of investors and the practices of corporations. This chapter articulates the way socially responsible investing has not only shaped the nature of the 'problem' that corporate foundations are a response to, but also how the methods and activities of the socially responsible investment movement encourage the use of other particular strategies such as social investment. This is done through the presentation of the relationship between both socially responsible investing and social investment to CSR. However, it argues that the discourse behind these two activities, in theory more than in practice, is built on different intents. Social investment was originally guided by normative values, while socially responsible investing is rooted in the 'business case' of profitability from responsible behaviour (Waddock and Graves 1997; Bronn and Vidaver-Cohen 2009; Lin, Yang et al. 2009). The convergence of these differences is evident in corporate foundations. Understanding the path to their intersection, but also the tensions between their logics, in corporate foundations is a critical component to recognising how they have shaped the creation of corporate foundations and influence their design and performance expectations.

This chapter contributes to the argument of the thesis by situating the emergence of corporate foundations as organizational forms responding to institutional initiatives. It looks

at the organizational response to institutional change. The findings of this chapter argue that the form of corporate foundations is more important in providing their legitimacy to the institutional environment of social responsibility than their functions. This finding is not consistent with the majority of organization theory that argues that form follows function and contributes to a new literature that questions this ordering (Dixon 2012). As a result, it also presents the possibility of greater diversity or confusion of functions than organizational forms for corporate foundations.

Chapter 5, The Resource Curse: Political Economy and the Mining Industry focuses on understanding the socio-technical environments of corporate foundations, concentrating on influences particular to the political economy of the mining industry in constructing the 'problem' corporation foundations are positioned to address. It does this through an argument that is critical of the Resource Curse and Dutch Disease's focus on the national level of development and their neglect of the regional failure of economic benefit from, and productive linkages to, the mining industry. It argues that these failures are seen in the outcomes and responses to particular technological changes in the mining industry. With examples from the Chilean copper mining industry and Namibian uranium mining industry, mal-adaptations to these changes are shown to have negative social impacts.

This chapter finds that these social structure failures then create the gaps between the extractive sector and development and the 'problems' of the distribution of benefit that corporate foundations address. This chapter contributes to the larger argument of the thesis in its discussion of the institutional challenges to change toward private sector involvement in development as part of the political economy 'problem'. Also, the argument for the significance of regional failures questions the responsibilities of regional organizations as a result of declining state involvement and increased privatization. Particularly, examining the responsibility of the mining industry and corporate foundations for the adaptive governance

of the linkages between industry and economic benefits. It leaves open how this re-allocation of responsibility is addressed and managed by the corporations involved. The next section of the thesis carries this investigation forward.

1.4.2 Part Two: Chapters 6 and 7

The objectives of the second half of the thesis are concentrated on the performances and outcomes of corporate foundations. Each chapter builds on the previous two by questioning the extent to which corporate foundations have or can affect the identified problems. First, in response to the organization questions raised in Chapter 4, the objective is to examine the process of corporate adaptation and the adoption of corporate foundations. This is done through the examination of the influence of path dependency to identify how the process of establishing corporate foundations has affected their intended use and structure. It also questions the possibility of corporate foundations as organizations to change the corporate institution. Second, Chapter 7 works to address the ability of corporate foundations to change the institutional context of the political economy 'problem' of uneven distribution of economic benefit. This examination draws together previous findings regarding the form and functions of corporate foundations and uses them to assess the fitness of the chosen functions for the form of corporate foundations. It does this based on the nature of knowledge transmission that these form and function pairings facilitate. Key themes of these chapters are: institutional hysteresis, path dependency, institutional evolution, regional industrial agglomeration, and organizational learning.

Chapter 6, Adaptation and Path Dependency: The role of organizations in institutional change investigates the conduct of the processes of corporate institutions and the intentions that guide them. This chapter analyses the process of adaptation to social responsibility in

mining corporations marked by the creation of corporate foundations (Lo 2004 ; Beinhocker 2006). In doing so it interrogates the path dependency of the industry in the use of corporate foundations (Martin 2010). After an examination of several different forms of corporate foundations, each used as part of corporate adaptation in the Chilean copper industry, it argues that the institutions of corporate foundations are in many ways path dependent. However, their concentrated use for social development, types of programmes, and typically intimate relationship with the corporation are not. This chapter argues for a view of path dependency as a process occurring in different levels of corporate and even institutional operations, but not all, thus still allowing for the evolutionary process of the firm as a whole. This argument contributes to the larger thesis in demonstrating the specific role of smaller and different sub-organizations for producing change in a larger institution. It also highlights the processes and outcomes of performing a response to the 'problems' of corporate responsibility presented in the previous section. Finally, part of the findings of this chapter articulates a significant relationship between the strategic use of corporate foundations within certain firms and their increased effects on corporate institutional change.

Chapter 7, Structure and Knowledge Transfer: the fitness of corporate foundations for regional development, the final empirical chapter of the thesis, accounts for the expectations, processes of establishment, and structure of corporate foundations in their performance. Given the breadth of issues corporate foundations are addressing, this chapter has chosen to explore the effects of these factors through an examination of one of the most common and overarching objectives - advancing regional development. It begins by mapping the hybridity of corporate foundations. This hybrid nature is discussed in two different levels affecting performance in facilitating regional development (Bhah and Coombes 2000; Edwards 2008; Bills 2010). At the macro-hybridity or external level, it presents the fitness of corporate foundations as a result of their positioning amongst other organizations and institutions for

engagement in regional development through the creation of industry clusters and regional industrial agglomerations around mines (Porter 1998; Asheim 1999; Porter 2000; Rosenthal and Strange 2004). At the micro-hybridity or internal level, it discusses the fitness of the structural organization of corporate foundations and the effects on tacit and explicit learning (Brown and Duguid 1996; Lam 2000; Gertler 2001; Amin and Cohendet 2004; Amin and Roberts 2008). The analysis of the macro and micro levels is illustrated through the example of their fitness to facilitate inclusive business programmes.

This chapter begins to tie together the different facets of institutional context affecting form and function previously explored in the thesis. In doing so it unites the unfolding corporate foundation narrative with the consequences of their performance outcomes. The findings of this chapter present many shortcomings in the performance of corporate foundations from their given expectations as a result of the suitability of their form and selection of functions to facilitate the distribution of the economic benefits of mining as regional development.

1.4.3 Finale

The conclusion summarizes the contributions of each empirical chapter to different literatures. Then it looks at the findings cumulatively to assess what they reveal about the primary research question, asking if the presence of corporate foundations is altering the dynamics of the institutional challenges of private sector involvement in development? And, can they work to heal the fissures in the structure and function of firms, governments, and their relationships that now limit the distribution of development benefit from the mining industry? Or, are corporate foundations a patchwork of disparate organizations covering and bridging these gaps without a distinct progressive or even evolutionary role to affect change?

To conclude and answer this question the thesis offers a new argument. This argument is based on an assessment that the larger strategic goal for the functions of corporate foundations is underdeveloped. As they exist now, it is difficult to assess their ability to specifically contribute to the presented problems. However, if directed by a larger strategic approach they do have the potential to engage with these issues. The conclusion proposes a model for this strategic approach, arguing that corporate foundations should aim to facilitate partnerships among organizations and institutions that govern the distribution of benefit from mining and build their individual and cooperative capacities. Further, that this role is necessary for transition away from dependencies, even on facilitating organizations like corporate foundations, and thus they must be designed for eventual exit or disappearance.

The argument for this strategic role is built from the findings of the empirical chapters. It also provides responses to the overarching theoretical questions regarding organizations and institutional change. Concerning the first question and the nature of institutional change as a result of organizational change, it finds that this process is occurring with corporate foundations and articulates some reasons why and areas for further research. For the second question and the nature of change by design or evolution, the thesis argues for the need of a model that offers an integrated and iterative approach that could represent what is occurring with corporate foundations.

2 Literature Review and Mining Industry Background

2.1 General Introduction

The narrative of corporate foundations occurs in an already busy field of activities concerning the relationship between mining and development. This literature review and background of the mining industry in the two countries where empirical research took place works to situate where this thesis jumps into this narrative. To do this it first presents an overview of the current state of the field of international mining and development organizations and literature. This is followed by an introduction to the theoretical framework used in each chapter. Each of these theoretical frames is matched to best addresses an empirical problem concerning mining and development with the economic geography tools used to assess and understand their relationship. In the process of each chapter's analysis not only is the empirical material evaluated and re-visioned so too is the applicability of commonly held theoretical assumptions and usages. Together this literature provides the foundational understanding of the empirical background and the theoretical toolkit of the thesis. It serves as an introduction to the on-going tensions surrounding the mining industry's engagement in development and how one approaches understanding this situation.

The second section then presents the history of mining activities in Namibia and Chile. It provides insight to the different trajectories and influences on the development of the mining industry in each country. Both countries have narratives of their socio-economic identification with the mining industry and national change or development expectations. These identifications are sometimes at odds with the benefit the industry may or may not provide. These narratives also influence decisions regarding the significance of the mining

sector for the national economy, and thus the way it is governed. Further, the development of both these political economies did not occur in isolation. The governance of Chile and Namibia has been subject to international influence and control respectively. Thus the development of the minerals sector of their economies is a reflection of the frictions between national policy and international interests in mineral endowments and labour forces. Altogether this contributes to the friction in the processes to determine responsibility for the governance of the mining industry's contributions to development.

This review aims to situate corporate foundations as undetermined outcomes of the tensions and frictions in the creation of the 'problem' (Callon 1980) of mining and development. Undetermined in that they are not the first mechanism engaged in these issues, nor is there a clear identification of *the* issue that if fixed would alter the nature of the 'problem' of mining and development. The establishment of corporate foundations is not an obvious choice or predictable response to the 'problem'. There are many responses occurring simultaneously, several of which view the nature of the 'problem' they are addressing differently. Corporate foundations are participating in the mess that is this situation. To understand why they are an intriguing subject of analysis, it is important to understand their relationship with these issues. The literature review of background information illustrates what has gone before in order to position the current potential of corporate foundations. The theoretical framing introduces the tools and rational that shapes the thesis's process of analysis. From this foundation the rest of the thesis interrogates the possible novelty and potential of corporate foundations against the context of their emergence and their current impacts on the relationship between mining and development.

2.2 International Mining and Development Organizations and Studies: Contextual Background

2.2.1 Governance organizations and financial constraints

The mining industry and the international 'level' of its management, regulation and identity are evolving their own normative values and standards of practice that then affect individual operations. This level, cloud like, is not bounded by national borders, and hovers across all areas of mining operations. It is permeated by international governance organizations, industry led best practice and advocacy groups, academic discourse, and activist activities. These branches of engagement are interconnected, and united have shown increased influence on improving the social and environmental responsibilities of mining operations.

The organization most prominent for standards of responsible practice is the International Council of Mining and Metals (ICMM).[8] The organization is composed of twenty-two members of the largest global mining corporations. There are also a total of thirty-one member associations including national associations, regional associations, and global commodity association members. In becoming members, corporations or associations agree to adopt the ICMM sustainable development framework by incorporating ten principles, and seven position statements of responsibility put forth by the ICMM into their corporate policy (see figure 1 below).

[8] http://www.icmm.com/

Figure 1: ICMM 10 Principles for Sustainable Development

Information from: www.ICMM.com

ICMM: International Council of Mining and Metals

The 10 principles

-ICMM principles for sustainable development, created from the focus areas identified in the Mining, Minerals, and Sustainable development report (MMSD 2002) and other international standards.

01. Implement and maintain ethical business practices and sound systems of corporate governance.

02. Integrate sustainable development considerations within the corporate decision-making process.

03. Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities.

04. Implement risk management strategies based on valid data and sound science.

05. Seek continual improvement of our health and safety performance.

06. Seek continual improvement of our environmental performance.

07. Contribute to conservation of biodiversity and integrated approaches to land use planning.

08. Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products.

09. Contribute to the social, economic and institutional development of the communities in which we operate.

10. Implement effective and transparent engagement, communication and independently verified reporting arrangements with our stakeholders.

From the ICMM Website: www.ICMM.com

Participation in the ICMM also requires transparent reporting according to the framework, and thus to maintain a public record of their commitment to sustainable operations. The Global Reporting Initiative (GRI) sets the reporting standards. ICMM members comply with these standards of disclosure and transparency and since 2010 also report to meet the demands of the Mining and Minerals Sector Supplement to the general report. Further, an independent third party assurer must assess the corporate reports and processes to implement the ten principles into corporate operations. Member corporations and organizations are assessed annually against the framework through their disclosure, transparency, and external assurance reports and their performance related to the principles is presented in the ICMM's Annual Review.

Figure 2: ICMM List of Member Corporations, from www.ICMM.com

ICMM list of Member Corporations
(in Alphabetical Order)

ARM – African Rainbow minerals
Anglo American
Anglogold Ashanti
Areva
Barrick
BHPbilliton
Codelco
Freeport-McMoran, Copper and Gold Inc.
Goldcorp
Gold Fields
Hydro
Inmet Mining
JX Nippon Mining and Metals
Lonmin
Mitsubishi Materials
MMG – minerals and metals group
Newmont
Rio Tinto
Sumitomo Metal Mining Co. Ltd.
Teck
Vale
Xstrata

The members also contribute to the ICMM for it to evaluate and distribute information about 'best practice' for sustainable mining. 'Best practice' is however a contestable idea in this instance. The standards for performance promoted by this idea of 'best practice' are highlighted examples of existing practice identified as the 'best' in the industry. This version of 'best' does not account for the 'best' possible or ideal practices. It sets a standard only as far as the industry is already willing to go towards the ideal. In some ways then, 'best practice' standards in this sense are the farthest-reaching compromises between the ideal and currently realistic (willingly to begrudgingly adopted) practices. However, as used by the ICMM, 'best practices' serve as the benchmarks to achieving staged improvement in environmental and social performance. Viewing this use optimistically, 'best practice' is a tool to achieve increasingly *better* practices over a longer-term perspective. The term 'best practice' is thus probably most accurately viewed as an indigenous term to the discourse of social responsibility and sustainability, having a particular understanding of its meaning through that context.

These caveats considered, the ICMM engages as the industry face for improving the image of mining. Many of their project work areas rely on partnerships with leading regional specialists and have pushed and advanced the industry's engagement in the sustainability discourse beyond that of many other multi-national industries. A particularly relevant example of their work is the product of a working group: "The Challenges of Mineral Wealth: using resource endowments to foster sustainable development", with a particular report on Chile (ICMM 2007). Through the data provided by the member corporations operating in Chile, the cooperation of the government, and the support of The World Bank and UNCTAD, this report reviews the relationship between mineral wealth and sustainable development in Chile. It pays particular attention to the economic linkages between the mining industry and the broader economy (ICMM 2007). It brings many of its arguments

back to issues of governance. In fact, it explains Chile's successful development as due to its institutions and governance structures. The ICMM, backed by many international research programmes, argues that:

> "Institutions and governance structures set the framework for and condition how public sector entities, citizens and private sector companies relate to each other. For the mining industry this means that if institutions and governance structures are unable to establish consensus among these groups, the contributions that mining activities can make to broader socio-economic development and poverty reduction will be constrained" (ICMM 2007, p. 47).

Following this, the strong institutions and governance structures of Chile explain their success because they have "…macroeconomic achievements and economic growth to reduce poverty and broaden social inclusion…" (ICMM 2007).

The ICMM's documentation of what they argue is successful governance policy then becomes available throughout the sector for imitation and further research. One of the most challenging obstacles to this ICMM approach to advance corporate responsibility in the industry is its structure. The industry is dominated by large multinational corporations, and is consolidating internationally (Ericsson 2002; Humphreys 2006). Increased merger activities have created many of the largest of the global firms, such as the merger in 2001 creating BHP Billiton. Further, the distinction between mining, finance, and sales of mineral commodities is increasingly blurred. For example, in the coming months the take-over of mining firm Xstrata by commodities trader Glencore will likely occur.[9] This merger indicates a change in the nature of the mining business and a further insulation of the 'majors' from the other smaller firms of the industry, due to their special relationship with the market. The increasing links between commodities producers and financial markets is an issue with potentially broad

[9] There are continual updates on the merger in most major mining information sites and public media concerned with business reporting. For example in the Guardian on April 13, 2012 http://www.guardian.co.uk/business/2012/apr/13/glencore-xstrata-deal-paperwork-delay?newsfeed=true

ramifications. For the structure of the mining industry, it makes the ICMM's work with and support from major corporations increasingly differentiated from the resources and concerns of the full spectrum of the mining industry and its many junior operators.

The firms that are not members of the ICMM are most often the smaller and single-site or single-country operating firms with limited resources for social and environmental management expertise. The smaller global profile - and often private ownership - of these firms also leaves them less exposed to reputational risks or as the targets of international activism. As a consequence, it appears that there is a growing divide in the global standards of operations. This is occurring despite the frequent close proximity of mine sites owned by majors and minors and their co-involvement in impacting local populations and the environment. The trickle-down effect of responsible mining behaviour from the majors to these firms is not yet overly apparent. Ideally, for smaller firms with the ambition of eventually selling a site to a large firm, it will become increasingly important that social and environmental considerations were part of establishing the mine in order to meet the standards of social responsibility of the major that purchases the site. In this way the standards of the majors could influence the junior firms. However, this is perhaps overly optimistic, as most junior firms fail to engage in more responsible practices because they lack the resources as much as, or more than, the will or motivation to do so.

Further frustrating the process of improving the social responsibility of the mining industry are large mining projects operating outside the same conventions as the ICMM member majors. The most obvious is the presence of mines invested in or owned by sovereign wealth funds or states, the most visible examples being some Chinese owned operations. The independent financing of these projects, as well as the manner of their operations, has drawn political and academic attention (Shankleman 2007; Haglund 2008; Kaplinsky and Morris 2009; Kragelund 2009). Transnational governance mechanisms are

slowly making in-roads for change. For example, building on movements for increased transparency in the extractives industries, the Chamber of Mines in Namibia has established universal prospecting protocols including publication of firm ownership and transparent publication of infringements. Chinese owned prospecting firms' full participation in this programme is slowly altering public sentiment.[10]

Table 1: Presents and overview of the relationships between the largest global mining firms, their geographic origins, membership in the ICMM and if they have corporate foundations. The information was compiled from several source. The ranking of firms is ordered by market capitalisation in 2010, as reported by Mineweb, 2010 ranking of "Top 100 mining firms: What a difference a year makes" table compiled from market data by Barry Sergeant. http://www.mineweb.com/mineweb/content/en/mineweb-mining-finance-investment-old?oid=95737&sn=Detail accessed: 2/12013. The information regarding ICMM membership was cross-checked with www.ICMM.com. Information regarding the use of corporate foundations was cross-checked against the BSR appendix (Nelson, Bannerman et al. 2010) of known corporate foundations and then checked against each corporation's website.

	Name:	Value: USD$ bn	Headquarters:	corporate foundations:	Member of ICMM
1	BHP Billiton	209.11	AU/UK	Yes	Yes
2	Vale	165.7	Brazil	Yes	Yes
3	Rio Tinto	135.45	UK/ AU	Yes	Yes
4	Shenhua	83.7	China	No	
5	Anglo American	60.99	UK	Yes	Yes
6	Suncor	58.15	Canada	No	
7	Xstrata	57.13	UK and Switzerland	Yes*	Yes
8	Barrick	40.98	Canada	Yes	Yes
9	Freeport-McMoRan	37.87	USA	Yes	Yes
10	NMDC	37.2	India	No	
11	PotashCorp	36.31	Canada	No	
12	Goldcorp	31.13	Canada	Yes	Yes

[10] Interview with Interview respondent type E 3/15/10

13	Southern Copper	30.86	Mexico	Yes*	
14	Norilsk	30.23	Russia	No	
15	Mosaic	29.52	USA	Yes*	
16	Sasol	27.44	South Africa	No	
17	CSN	25.9	Brazil	?	
18	Anglo Platinum	25.89	UK/SA	Yes	Yes (in connection to Anglo American)
19	Newmont	24.11	USA	Yes	Yes
20	Teck	23.68	Canada	No	Yes
21	Chalco	21.68	China	?	
22	ENRC	20.53	UK	No	
23	Impala	19.02	SA	Yes	
24	China Coal	18.69	China/Hong Kong	?	
25	ICL	18.67	Canada	?	
26	Alcoa	17	USA	Yes	
27	Newcrest	16.69	Australia	No	
28	Sterlite	16.47	India	?	
29	AngloGold Ashanti	16	South Africa	Yes	Yes
30	Antofagasta	15.93	UK	No	
31	Fortescue	14.96	Australia	No	
32	Zijin	14.83	China/Hong-Kong	?	
33	Kinross	14.34	Canada	Yes	
34	Canadian Oil Sands	14.19	Canada	?	
35	Kumba Iron Ore	14.06	South Africa	Yes**	
36	Shanxi Xishan	13.8	China	?	
37	Peabody Energy	13.06	USA	No	
38	K+S	12.66	Canada	?	
39	Kazakhmys	12.62	UK	No	
40	Cameco	12.51	Canada	No	

* - Indicates a firm that not listed with a corporate foundation in the BSR report but, their website indicates they do have a foundation.

** - Indicates the foundation is through the connection of the firm to Anglo American and their foundations.

Other governance initiatives are similar to this process and are formally advocating for transparency at the state level. For example, The Extractive Industries Transparency Initiative (EITI) creates a system of corporate disclosure of payment to the government and government disclosure of the payments received by corporations in the extractive sector.[11] The remit of the EITI is fairly narrow. Its power to promote good governance rests with the creation of civil society attention to the financial transactions between corporations and governments. Once aware, these groups can then question their consequences or outcomes. Through this system the EITI aims to reduce corruption and better account for mining revenues. The EITI is not itself a mechanism that explicitly enforces good governance (Barry 2010). However, the information it makes public provides the incentive to conduct good governance.

Other leading initiatives for responsible governance are related to corporate finance. They make access to project finance contingent upon responsible practices such as good governance, environmental, and social responsibility (often referred to as ESG issues – Environmental, Social, and Governance). Within the International Finance Corporation (IFC), the private sector lending arm of the World Bank, there are binding performance standards attached to financing projects in developing areas. They are meant to improve the benefit of funded projects and minimize negative impacts.[12] Private lending banks also participate in this system of loans with required performance standards through the Equator Principles.[13]

There is also work at the corporate level to improve the transparency of their own governance – and it is spawning a growing field of consultants needed to construct this

[11] Website: http://eiti.org/

[12] Website: IFC performance standards, http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/publications/publications_handbook_pps

[13] Website: Equator Principles, http://www.equator-principles.com/

corporate level governance for social and environmental management (Sadler and Lloyd 2009). The ICMM is one of the few organizations with the advantage of participating in extractive governance activism with transnational initiatives such - as those by the World Bank - as well as reforms within corporations.[14] Given the limited available literature specifically about corporate foundations in the mining industry, these areas of work and mediating organizations such as the ICMM are moulding the broader dialogue from which corporate foundations have emerged and currently situate their performance.

The significant exception to the overall lack of literature about corporate foundations is a piece of work in the World Bank's Oil, Gas and Mining Unit.[15] They have commissioned a review of corporate foundations in the mining industry that resulted in the creation of the World Bank Sourcebook of Mining Foundations, Trusts and Funds (Wall and Pelon 2011). It presents the diversity of mining foundations, trusts and funds in developing nations. The sourcebook expands upon a report conducted by Business for Social Responsibility (BSR), "Experiences with Mining Foundations" (Nelson, Bannerman et al. 2010). That report documented the known corporate foundations in the mining industry and compared them with other mechanisms for benefit sharing. The World Bank Sourcebook went further and created a typology of the forms of corporate foundations, trusts and funds based on ownership and their development approach. It also indicates some challenges and contributions from experiences with these foundations to date. The most limited view of its offerings recognizes its extremely important role of mapping the field of corporate foundations, trusts and funds. The identification of existing foundations and the key features of their organization and operations define the space and structure the entrance points to

[14] An example of their work in this area is the Extractive Industries review and its related work streams. http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTOGMC/0,,contentMDK:20605112~menuPK:592071~pagePK:148956~piPK:216618~theSitePK:336930,00.html

[15] http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTOGMC/0,,contentMDK:20188239~pagePK:210058~piPK:210062~theSitePK:336930,00.html

research it. Below is the list of corporate foundations trusts and funds originally populated for the BSR "Experiences with Mining Foundations" report that World Bank Sourcebook built from.

Table 2: List of Corporate Foundations, Trusts and Funds created for the BSR report "Experiences with Corporate Foundations" (Nelson, Bannerman et al. 2010) also the same list referenced for the World Bank Sourcebook on "Mining Foundations, Trusts and Funds" (Wall and Pelon 2011).

Italized firms are members of the ICMM

* Foundation, trust, or fund serving aboriginal communities in OECD countries

	Name	**Associated Company**	**Country**
1	Alcoa Foundation	Alcoa	NA – Global
2	Anglo American Chairman's Fund	*Anglo American*	South Africa
3	Anglo American Epoch and Optima Trusts	*Anglo American*	South Africa
4	Anglo American Group Foundation	*Anglo American*	NA- Global
5	Anglo Chile EMERGE Program	*Anglo American*	Chile
6	AngloGold Ashanti Fund and Trust	*AngloGold Ashanti*	South Africa
7	Antamina Mining Fund	Antamina S.A.	Peru
8	Anum Lio Foundation	PT Kelian Indonesia (Rio Tinto)	Indonesia
9	ARM CSI Trust and Chairman's Fund	*African Rainbow Minerals*	South Africa
10	Asociacion Ancash	Antamina S.A.	Peru
11	Asociacion los Andes de Cajamarca	*Newmont Mining*	Peru
12	BHP Billiton Development Trust	*BHP Billiton*	South Africa
13	BHP Billiton SEWA India Development Foundation	*BHP Billiton*	India
14	The Cerrejon Coal Foundations (Water, Indigenous Development, Progress, Institutional Strengthening)	Cerrejon Coal	Colombia
15	Clermont Aboriginal Community	*Rio Tinto* Coal	Australia*

	Development Fund	Australia	
16	DeBeers Fund	DeBeers	NA- Southern Africa
17	Debswana Diamond Trust	Debswana & DeBeers	Botswana
18	Escondida Foundation	*BHP Billiton*	Chile
19	Fondo de Inversion Social	*CODELCO*	Chile
20	Freeport Partnership Fund for Community Development	*Freeport McMoran*	Indonesia
21	Fundacion Falcondo	*Xstrata*	Dominican Republic
22	Fundacion San Isidro	*BHP Billiton*	Colombia
23	Fundacion Sierra Madre	*Goldcorp*	Guatemala
24	Gelganyem and Kilkayi Trusts	*Rio Tinto*	Australia*
25	Goldfields Ghana Foundation	*GoldFields*	Ghana
26	Greater Rustenburg Community Foundation	-	South Africa
27	Hail Creek Wiri Yuwiburra Community Benefits Trust	*Rio Tinto* Coal Australia	Australia*
28	Impala Bafokeng Trust	Impala Platinum	South Africa
29	Impala Community Development Trust	Impala Platinum	South Africa
30	Inti Raymi Foundation	*Newmont Mining*	Bolivia
31	Kashansi Foundation	First Quantum Minerals	Zambia
32	Kestrel Aboriginal Community Development Fund	*Rio Tinto* Coal Australia	Australia*
33	Kupol Foundation	Kinross Gold Corporation	Russia
34	Las Bambas Mining Project Social Contribution trust	*Xstrata*	Peru
35	Lihir Gold Integrated Community benefits Package	Lihir Gold	Papua New Guinea
36	Lonmin Community Development Trust	*Lonmin*	South Africa
37	Mineral Foundation of Goa	Various	India
38	Montelibano Educational Foundation	*BHP Billiton*	Colombia

39	Mozal Community Development Trust	*BHP Billiton*	Mozambique
40	Musselwhite Fund	*Goldcorp*	Canada*
41	Namdeb Social Fund	Namdeb	Namibia
42	Newmont Ahafo Development Foundation	*Newmont Mining*	Ghana
43	Northern Territory Aboriginal Benefits Account	Government	Australia*
44	Palabora Foundation	*Rio Tinto*	South Africa
45	Phelps Dodge Foundation	Phelps Dodge	NA-Global
46	PNG Sustainable Development Fund	*BHP Billiton*	Papua New Guinea
47	PT Freeport Indonesia Trust Funds	*Freeport McMoran*	Indonesia
48	Raglan Fund	*Xstrata*	Canada*
49	Rio Tinto Aboriginal Foundation	*Rio Tinto*	Australia*
50	Rio Tinto Foundation Zimbabwe	*Rio Tinto*	Zimbabwe
51	Rio Tinto Western Australia Future Fund	*Rio Tinto*	Australia*
52	Rossing Foundation	*Rio Tinto*	Namibia
53	Sadiola Hill & Yaleta Gold Mines Community Development Fund	Morila S.A.	Mali
54	Sorowako Educational Foundation (Yasan Pendidikan Sorowako)	PT Inco Indonesia	Indonesia
55	Tahltan Heritage Trust Fund	NovaGold	Canada*
56	Tampakan Community Foundations	*Xstrata*	Phillippines
57	Tintaya Foundation	*BHP Billiton*	Peru
58	Vale Foundation	*VALE*	Brazil
59	Vale Social Trust	*VALE*	Peru
60	Western Shoshone Educational Legacy Fund	*Barrick Gold Corporation*	United States*

The findings from the two reports provide baseline features of corporate foundations. These include things such as: most corporate foundations in the mining industry are founded by major mining firms, the majority have been created once operations began, and that

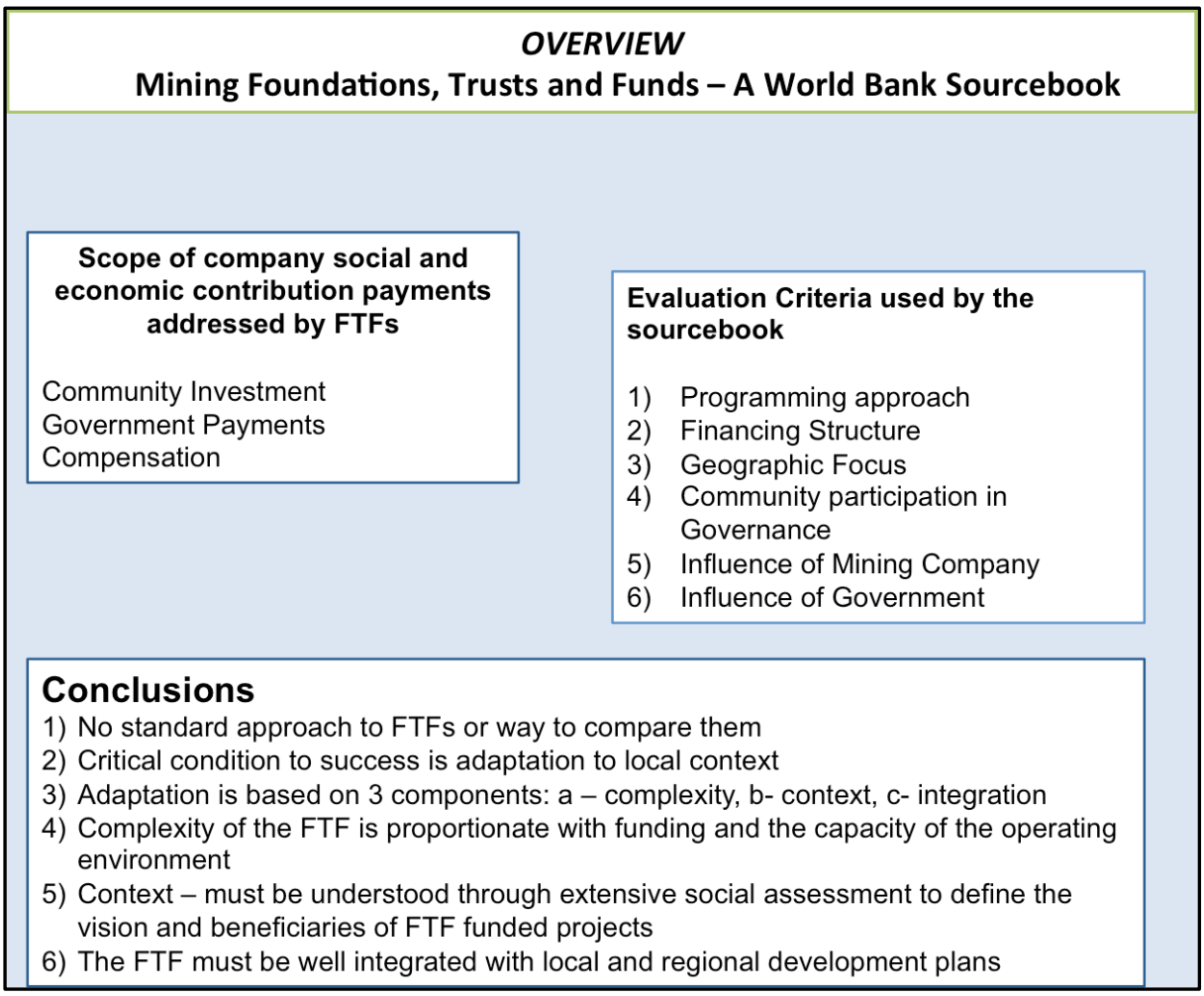
corporate foundations differentiate themselves from other forms of community investment through their governance structure and direct administrative presence. It also provides a positive assessment of their utility for building bridges to other development sectors, to develop institutional knowledge, and to attract specialized expertise.

The World Bank Sourcebook (Wall and Pelon 2011) is dominated by case studies of fourteen foundations, trusts, and funds in Peru, South Africa, Mozambique, Namibia, and Papua New Guinea. The governance structure of each is presented, and it provides a guide to the variables of form and function in corporate foundations. The report also identifies a range of programmatic approaches classified as: community investment, government payment, or compensation. Within these classifications, foundation programming operates on a spectrum of only grant making, to fully implementing and managing programmes. The mechanisms of funding the foundations themselves were also reviewed. Each foundation was rated on its degree of involvement with and influence on its work from the community, corporation and government.

This sourcebook creates a map of corporate foundations, and is useful in positioning the cases examined in the fieldwork in a broader context. This Sourcebook provides an essential overview of the existing field of corporate foundations an analysis of the critical components of their structure and operations. Yet, in the report's capacity to provide information about corporate foundations to the industry it leaves open for future analysis the implications of corporate foundations' work and suggestions of their future role in the extractive industry. The report's conclusions (summarized in Figure 4 above) repeatedly highlight the significance of integrating the performance of corporate foundations into the local context. The local context as addressed here appears to assume everything from the current and historical relationship with the industry to an detailed understanding of existing development planning and community values. Whilst true, the process of understanding the

variability of context and its relationship with corporate foundations is extremely difficult to ascertain. It is beyond the remit of the Sourcebook to address the process of understanding the intersection of corporate foundations into this critical local.

Figure 3: Overview of the focus and findings of the World Bank sourcebook on Foundations, Trusts and Funds in the mining industry ((Wall and Pelon 2011). Includes the scope of the contributions, evaluation criteria, and the conclusions. Compiled as a summary for this thesis.



As a result, there is little critical evaluation of: 1) the relationship between the structure of corporate foundations and the work they are doing, 2) the specific nature and causes of the 'problem' of the failure to distribute the economic benefits of mining projects that corporate foundations address or 3) the changes that occur as a result of their work or presence. The absence of these critical assessments makes it difficult to evaluate the role of corporate foundations in a larger assessment of the mining industry's contribution to development. Also, by not providing these assessments, there are more limited opportunities for improvement in the establishment of future foundations or the trajectories of existing foundations.

This thesis then serves to address these issues of greater depth and scope than were the intended purpose of the Sourcebook. While the Sourcebook will remain the document representing the breadth of field of corporate foundations it also therefore lacks the greater conceptualization and framing of corporate foundations in the global context of understanding organizations and institutional relationships for improved development from the extractive sector. This thesis and its focus on implementing foundations and its particular selection of thematic investigations does more than provide an 'academic' evaluation of corporate foundations in the mining industry. It offers an evaluation of corporate foundations embedded within many of the larger complex discourses critical to fully understanding their form, function, and future ability to contribute the improved distribution of wealth from natural resources.

2.2.2 *The academic discourse: from impact assessment to a critical review of private sector involvement in development*

The lack of such critical assessments of corporate foundations in the World Bank sourcebook is not representative of the larger discourse on mining and development. This academic literature, as well as practices of impact assessment, is critical to compare the processes of the mining industry's engagement in development with broader fields of knowledge. As a result, this work and literature expands the context in which corporate foundations must be situated.

Starting with critical practices, impact assessment is a rapidly evolving profession. Environmental Impact Assessment (EIA) as a legislative requirement has expanded to also address the social impacts of large projects through social impact assessment (SIA) (Burdge 1987; Burdge 1990; Burdge and Robertson 1990; Rickson, Burdge et al. 1990; Gagnon, Hirsh et al. 1993; Interorganizational Committee on Guidelines and Principles for Social Impact Assessment 1995). Advocacy of social impact assessment has included several guides about how to conduct SIAs (Assessment 2003; Becker and Vanclay 2003; Burdge 2004; Esteves, Franks et al. 2012). Moreover, it has forced corporations to measure and publicly address social impacts and responsibility.

The expansion of issues considered in SIA is representative of the increasing scope of the industry's awareness of impacts and its role in development. For example, early SIA was conducted for problems of resettlement and other highly disruptive and obvious events (Szablowski 2002). The current state of the art for SIA reflects a concern for the evaluation of more subtle community needs, stakeholder participation, and community investment decisions (Esteves 2008; Esteves 2008; Esteves and Vanclay 2009; Esteves, Franks et al. 2012). SIA has now also spawned several other impact assessment structures that tackle the increasingly recognized complexity of large extractives projects. This includes assessment of

human rights impacts, cumulative impact (several projects within one region), and strategic impact assessment (SEA) as a planning and policy tool (MET 2008). For example, the rapid expansion of the uranium mining industry in Namibia has been addressed with a SEA for the region around Swakopmund to coordinate the pace of development, locations of new mines and support infrastructure, and process of government oversight (Dalal-Clayton 2010).

The consultants who conduct impact assessments often work in conjunction with development experts to help establish and operate the mining industry's corporate foundations. The range of work these consultants conduct offers them a broad overview of standards of practice across the industry.[16] The increased regulatory requirements for various impact assessments are growing the demands for such expertise. However, as the business of impact assessment expands, there is a greater likelihood that social impact assessment is more focused on achieving certain criteria, or box-ticking, than it is thought-provoking for the corporation (Buchan 2003). The negative side of the expanding scope of assessment tools to evaluate corporate impact and responsibility is the production of increasingly streamlined responses for the management of diverse impacts.

There is now debate about the spread of corporate responsibility consulting as the perpetuation of a neo-liberal roll-out spear headed by multinational firms (Sadler and Lloyd 2009; Rajak 2011). These authors bring together the long-debated blurred boundaries between CSR projects and corporations taking over the role of government and/or paternalistically managing community needs with increasing CSR as a mechanism of expanding the areas of corporate control. Rajak (2011) conducted an ethnographic examination of the corporate social responsibility practices of international mining firms operating in South Africa's platinum mining region. She argues that many of the CSR programmes, including those entered into as state initiatives, serve more to further the access

[16] Interviews with consultants who conduct SIAs for the mining industry

and expansion of the corporations and their model of doing business than they provide sustainable solutions. The nature of corporate involvement in development programmes in particular is often condemningly corporate-serving and unsustainable beyond the presence of the mine. It calls for a further examination of the motivation for private sector involvement in development. It also necessitates evaluating the ethics, sustainability, and legacies created by private sector led development.

This critique of the expansion of the 'CSR industry' is not well integrated with the larger academic discourse on CSR in the mining industry (Warhurst and Mitchell 2000; Hilson 2002; Kapelus 2002; MMSD 2002; Azapagic 2004; Hamann and Kapelus 2004; Hammon 2004; Jenkins and Yakovleva 2006; Sethi and Emelianova 2006; CSRM 2007; Dashwood 2007; Jones, Marshall et al. 2007; Campbell 2012; Warnaars 2012). Many of these studies address the social responsibility of mining firms by evaluating performances, especially as case studies. The literature is often critical of practices and highlights failures. Yet overall, it stresses the need to improve the practices of assessing and performing CSR. There are few openings in these critiques for synthesis with literature critical of the CSR industry as a whole. Seeking to evaluate corporate foundations and how they represent a model of engagement outside the traditional CSR 'industry' and assessment practices, and yet how they still have similar goals and methods to traditional CSR, forces these issues together.

Watchdog and activist organizations also conduct critical evaluation of social responsibility practices. For example, the Bench Marks Foundation[17] of South Africa is a non-profit organization that works in the mining industry across the South African Development Community (SADC). Academic researchers work for the organization with regional experts and activists to evaluate and report on the environmental and social policy of corporations, as well as the impacts of the mining industry (BMF 2003). Their work uniquely

[17] http://www.bench-marks.org.za/

merges academic research with active engagement to prompt increased responsibility and impact management. Studies are explicitly undertaken in particular mining clusters and regions to pair the contextual and historical circumstances of the place with the current presence of the mining industry (van Wyk 2007; Cronje, Chenga et al. 2008; van Wyk, Segwe et al. 2008; van Wyk 2009; van Wyk, Cronje et al. 2009). Some academic reports have also been produced that relate common issues and possible solutions garnered from the experiences of their work (Chenga, Cronje et al. 2006).

This collection of academic literature and activism is often critical of CSR and includes evaluations of the contributions of the mining industry to development. However, it does not often provide the counter-narrative of work encouraging and exploring new possibilities and approaches for private sector involvement in development. In part, this is likely because the discourse of private sector involvement in development is not necessarily rooted in corporate responsibility.

Historically, corporations contributed to development through large donations to aid organizations. The wealthiest often established philanthropic foundations. Many of these corporate foundations are the leading global donors today, such as the Gates Foundation, Rockefeller Foundation, and Ford Foundation. Pharmaceutical corporations, banks, tech firms, and even oil giants have corporate foundations. The quasi-independent nature of these foundations allows the corporations to isolate funds, often held in trusts, for philanthropy (Lew and Wojcik 2009). Investment decisions are then made by the foundation's own procedures and are arguably separated from the firms' business interests.

The development sector is a flourishing field for academic research, government intervention *and* corporate engagement (Carr 2011). The disappointing progress of many development programmes, and increasingly strained aid resources, has called attention to this as a space for greater involvement from the corporate sector. It has converged with the

growth of CSR and business theory about maximizing the core competencies of corporate performance and strategic social responsibility (Prahalad and Hamel 1990 ; Porter and Kramer 2006). This has moved corporate interest away from 'random' need-based giving. Further, this model of CSR has pushed some industries into using the business itself philanthropically. This business case logic, expanded upon in chapter four, often undermines the value of non-strategic corporate giving.

Development, or business 'for good', has itself become a business opportunity. C.K. Prahalad (2010) is credited with starting the sweeping interest in the Base of the Pyramid (BoP). He argued the base of the population pyramid, the global poor, are an untapped market that if included in the global market could advance many people away from poverty, at the same time providing prosperity to firms. A range of social enterprises has also sprung up following similar logic. These companies are designed to provide development benefit and turn a profit – ideally in a development-oriented activity. Also, micro-loans - small start-up funds given to establish a small or medium enterprise - have been made famous by the work of Muhammad Yunus (Yunus and Jolis 2003). Finally, inclusive business practices, incorporating new small and medium enterprises as procurement firms, or into other aspects of the supply chain, are widespread and championed for their role in private sector involvement in development. Business Fights Poverty, a UK based organization, coordinates and documents many of these activities. It also hosts several forums each year to discuss these initiatives with corporate directors together with aid agencies such as the UK Department for International Development (DFID).[18]

These new initiatives position private sector involvement in development as compatible with the open-market led development structures of neoliberalism (Harvey 2005).

[18] Many of these programmes are well presented on their webpages and supported by efforts of the UNDP ex: http://www.growinginclusivemarkets.org/, Business fights poverty: http://www.businessfightspoverty.org/.

In this way these programmes fit the arguments of Rajak (2011), that the perpetuation of CSR as engagement in development concerns perpetuates the interests of corporations more than safeguarding the interests of impacted populations. In other ways, they interfere with the trickle-down distribution of the capitalist system. Investing in certain communities rather than allowing the national market and governance structures to determine patterns of investments is an example of such an interfering intervention.

Economic geography has long been concerned with the dynamics of uneven development (Smith 1982; Clark, Feldman et al. 2000; Mackinnon and Cumbers 2007; Massey 2008). The distribution of wealth across space has been addressed as an issue of global economic systems and raised particular interest in Marxist perspectives of economic processes (Swynegedouw 2010; Harvey 2011). Debates have been raised over the structure of capitalism, and has led research on the varieties of capitalism in different regions of the world (Hall and Gingerich 2009). Other work has concentrated on particular aspects of difference in economics systems, such as the regulation of international finance (Clark and Wojcik 2007).

Another substantial literature addresses regional economies and development and focuses on the nature of the regional relationship to the national; processes of regional innovation and resilience; agglomeration and clusters of economic activities; and bonds with other global and economic forces (Storper 1997; Asheim 1999; Porter 2003; Christopherson, Michie et al. 2010). From a local, regional, or international perspective – or the relationship between them – economic geography's concern with uneven development helps to articulate the history of the development of the mineral economies in Namibia and Chile. It offers a framework to prioritize the regional effects of mining and the efforts of corporate foundations in a way that accounts for the international issues that influence them.

2.2.3 Economic geography and the theoretical stances of each chapter

In addition to the background of related context and academic literature that grounds this thesis it is also necessary to introduce its theoretical framing. First, the relationship between the over-arching theoretical approach of the thesis will be articulated relative to the selection of the specific theoretical stances used as analytical tools in each chapter. Next, a brief introduction to the economic geography subfields driving each chapter is provided. Finally, there is a discussion of how each chapter's engagement with theory complements the other chapters and serves the thesis as a whole.

While not terribly obvious, there is some communication between the themes of institutional theory and economic geography. Increasingly, work in economic geography is embracing the overlap. Martin (2000) suggested the potential for an "institutional turn" in economic geography that has not yet fully appeared. Justifying this shift in focus, he cites its relevance to the discipline and the attention to institutional factors across the social sciences. In economics, institutions "play a role at all levels in the economy, from the structure and function of the firm, through the operations of markets, to the form of state intervention (Williamson 1985, Hodgson 1988, North 1990)" (Martin 2000, p. 78). Drawing upon institutions in sociology, he calls upon those who have worked to reinterpret economic action as social action – Granovetter 1985, Zukin and Dimaggio 1990, Granovetter and Swedburg 1992. Specifically:

> "…*economic activity is socially and institutionally situated*: it cannot be explained by reference to atomistic individual motives alone, but has to be understood as enmeshed in wider *structures of social, economic, and political rules, procedures and conventions*, both of a formal and informal nature, that is the focus of an institutional approach to economic geography.
>
> More specifically, we may define an institutional approach to economic geography as an attempt to illuminate the following basic question: *to what extent and in what ways are the processes of geographically uneven capitalist economic*

> *development shaped and mediated by the institutional structures in and through which those processes take place?* " (emphasis in the original) (Martin 2000, p. 79).

This thesis aims to contribute to this conception of institutional economic geography by examining the potential of corporate foundations to mediate the "geographically uneven capitalist economic development" occurring with mining operations as mediated by institutional structures (Bridge 2004; Mackinnon and Cumbers 2007; Harvey 2011). In doing so, it works from the tradition of economic geography examining the institutions of uneven development (Smith 1982) and from a less-traditional perspective of organizational change.

This incorporation of organizational change is particularly tied to the theory of the firm discourse. This has journeyed from a neo-classical theory of the firm as units of production, to a principal/agent theory defined by optimal incentive schemes, to a transaction cost theory defining the boundaries of firm activities, and finally to seeing the firm as a nexus of contracts or set of property rights (Hart 1995). These theories possess many overlaps and complementary conceptions of the firm. Universal across them is a consensus that the greatest perplexity of institutions and organizations is in understanding how they change. In this similarity they are linked to the core interest of economic geography in explaining the difference, relationships, and changes in economic activity across time and space. In framing the foundations of organization theory in 1938, Bernard identified the central problem to organization as "efficacious adaptations to changing circumstances" (Williamson 1995, p. 173). Williamson highlights that the mechanisms of adaptation are also ranging - from Bernard's intentional cooperative adaptation, Hayek's autonomous spontaneous adaptation, and the confluence of approaches built around governance structures to manage transaction costs or market hierarchies (1995). The current empirical examples of organizational change influenced each of these assertions. By examining the form and functions of corporate foundations and the effects of these over time on the conceptual boundaries of the

organization, this research aims to determine whether – and if so, how - corporate foundations in turn challenge these conceptualizations of organizational change for the conditions of society today and looking forward.

The process of addressing these larger institutional and organizational goals thus requires moving back to the select use of economic geography as the analytical tool of each chapter. By embracing the uncertainty brought on by many factors of difference economic geography is well suited to analyse the empirical material of this research. It can specifically account for factors that contribute to informing the overarching theoretical aims of organizations and institutional change. The economic geography perspective acknowledges that sometimes reality defies theorisation and generalisation (Clark 1998). Thus, away from the pressure to produce stylized facts, the economic geography lens when applied to empirical research allows theoretical ambiguity to play a role, or be a factor, of the observed dynamics.

As first described in the introduction several subfields of economic geography are used in each chapter to create a complementary whole for the investigative and theoretical process of the thesis. The thesis divides into two conceptual halves. Chapters Four and Five explore how to understand the 'problems' at hand in this investigation of corporate foundations. Chapters Six and Seven test the performance and outcome of corporate foundations against the problems identified in the previous two chapters. Together they work through the significant themes and discourses of economic geography in order to engage with the overarching questions concerning organizations and institutional change.

Chapter Four first does this through its focus on corporate social responsibility (CSR) and socially responsible investing (SRI) (Porter and Kramer 2006; Aguilera, Rupp et al. 2007; Campbell 2007). The purpose of this chapter to understand the 'problem' of change within mining corporations that corporate foundations are created to address is critically

related to change in the institutional environment in which these corporations operate. These changes are particularly visible through CSR and SRI activities. Further CSR and SRI are excellent lenses for evaluating the relationship of the organizational form and function of corporate foundations (Tickell, Sheppard et al. 2007). They each address the nature of economic activity in particular contexts and time with an objective to change corporate performance over time and to create change in their activities into the future. These core concepts of time-and-context-specific change in economic geography are introduced and used as the tools of analysis in this first empirical chapter.

Chapter Five pairs with Chapter Four to address the 'problem' that corporate foundations are addressing in the institutional environment in which mining and development occurs. To achieve this, the chapter focuses on the particular discourse of the resource curse as a longstanding political economy perspective explaining the persistence of uneven development in mineral economies (Corden 1984; Sachs and Warner 2001; Murshed and Serino 2011). To address the empirical research in relation to this discourse the tools of economic geography are applied to examine the contributing factors of uneven development (Smith 1982; Mackinnon and Cumbers 2007; Massey 2008). In this case of corporate foundations that includes an examination of the nature of economic activities and their technical specificity for certain types of mining and within particular regions. This analysis differs from the macro, state level analysis that the resource curse traditionally addresses. Again this chapter makes use of the central inquiries of economic geography concerning change in economic activities in particular places over time. The analysis of this chapter helps illuminate the gap between national and regional distribution of benefit from the mining industry and a 'problem' in the institutional environment that corporate foundations could serve to address.

Chapters Six and Seven move forward from the analysis of Chapters Four and Five to examine the performance of corporate foundations relative to the problems analysed in the previous chapters. To do so they transition away from the focus of the earlier chapters on important *subjects or existing streams of discourse* (corporate social responsibility and the resource curse) related to corporate foundations, mining and development. Their interest in performance instead calls for attention to *processes* (organizational adoption and adaptation, regional change and development) and related theoretical understandings. Here, significant fields of interest to economic geography and the theoretical discourses used to address them are brought to the chapters' analysis.

The evolution of economic activities is a consistently important concern to economic geography. As such, it has occupied a large theoretical space in the discipline and has developed in several ways relative to different aspects of economic processes (Boschma and Frenken 2009). For Chapter Six and its focus on the process of corporations adopting corporate foundations and the potential for them to adapt towards improved social responsibility, including the distribution of the economic benefits of their activity, the use of the discourses of path dependency and evolutionary economics are particularly suitable (Hodgson 1999; Dopfer 2005; Martin and Sunley 2006; Witt 2008).

Both often make use of biological metaphors to define terms and explain parallel structures of change processes existing in biological change and change in human created organizations and institutions (Nelson 2006). The degree to which the processes are interrelated in practice rather than merely used as accessible conceptual terminology is continuously contested and a critique of the theoretical approach (Witt 2008). For the purpose of Chapter Six the extensive literature concerning evolutionary economics and organizational and institutional path dependency provides an entrance point and structure for the analysis of change in mining corporations through the adoption of corporate foundations.

As a theoretical frame, different versions of evolutionary economics has persisted through many changes in the discipline of economic geography and therefore requires attention in any attempt to challenge the utility of economic geography for different empirical and theoretical ends.

Further, specifically applying this largely theoretical discourse to empirical material is an opportunity to test how robust these theorisations are in practice. In doing so the chapter is able to 1) advance the investigation built chapter by chapter to better understand the existence, form, and function of corporate foundations and 2) also contribute to the discourse of evolutionary economics and path dependency and inform its applicability for other future theorisations in economic geography and applications to empirical cases. Addressing the significance of evolutionary change and its many characterisations in economic geography is an essential component to understanding the relationship between the empirical utility of economic geography and a larger theoretical understanding of organizational and institutional change.

In addition, through engagement with the discourse of evolutionary economics and path dependency Chapter Six is able to ground the rather subject specific investigation of corporate foundations and change in the relationship between development and the extractive industry in a more general conceptual debate. This grounding both draws out the more universal issues present in this empirical material as well as making its specificity more accessible to those who engage with different subjects, but common intellectual concerns. The same is true of the use of theory in Chapter Seven. This chapter pairs with Chapter Six in its approach to further examine the process of the performance of corporate foundations in the mining industry. It also works as a complement to Chapter Five by addressing the performance of corporate foundations to address failures in the *regional* distribution of economic benefit.

Chapter Seven engages with the work in economic geography concerning the growth and performance of learning regions as well as learning within and between organizations (Gertler 2001; Rosenthal and Strange 2004; Amin and Roberts 2008; Asheim 2009). These two spaces of academic engagement both represent the application of processes of economic geographic thought to important and current economic needs. As another significant thread of work within economic geography it is important to recognize how few of the empirical examples that support it are based in developing economies or non-western organizations. The learning regions most discussed are located in the United States, England, and Italy (Asheim 2009). The organizations are largely corporations and scientific research organizations (Amin and Cohendet 2004). The tools of this analysis of learning regions and organizational learning map well onto the questions the chapter addresses about the ability of corporate foundations to facilitate regional development. But, the context of corporate foundations does not fit those of the other empirical material that has contributed to the literature. Therefore this chapter makes use of the existing theoretical knowledge to analysis the processes of corporate foundations performance. Much like in Chapter Six, at the same time as using the theory as a tool the specific empirical material it is applied to serves to test the theory in previously unused contexts. Differences in the applicability of our theoretical understandings of learning regions between developed and developing contexts could indicate a great weakness in their utility to provide insight into many emerging regional development challenges.

Together, the use of economic geography and specific theoretical stances in each chapter serves to separate and analytically focus on key components to understanding the rise of corporate foundations, their institutional environments, and the outcomes related to their organizational processes. Further, these stances link the empirical problems addressed with the larger questions of change in organizations and institutions. Finally, due to the pairing of

the chapters: Four and Five to address existing discourses through core theoretical concepts in economic geography; and Six and Seven to test processes and significant discourses in economic geography against new empirical material subject specific and theoretically interesting examinations occur iteratively throughout the thesis and with the intention of contributing to a greater coherent whole (see table 2).

The next section moves on from this introduction to the intellectual approach to this research to present the contextual background necessary to understand the empirical context where research was conducted. This background serves as the narrative of the mining industry in Namibia and Chile and as an insight into the international political economy of mining and development that underlies and influences all current discussions about the interaction between mining firms and contributions to development.

Table 3: Theoretical stances of chapters – relationships to each other and thesis objectives

Chapter		*Chapter*	
Four: SRI/CSR and corporate foundation form and function	➔	**Six:** evolutionary economics and path dependency adoption of corporate foundations in the mining industry	The chapters to the left in this row build upon each other. Both concern the corporate process of change and performance.
Five: Resource Curse and Regional development failure ⬇	➔	**Seven**: Learning regions and organizational learning – corporate foundation fitness for creating regional development ⬇	The chapters to the left in this row build upon each other. Both concern the corporate foundation and regional economy processes of change and performance.
The above chapters both address critical discourses already important to issues of mining and development. In these chapters these discourses are analysed through a lens of issues critical in economic geography.		The above chapters both address key discourses in economic geography concerning processes of economic development and change. They are each used to analyse and test the process of the performance of corporate foundations.	

2.3 Namibia

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2.3.1 Regional and resource history

In 1846, while aboard a British sailing ship, T.E. Eden recorded in great detail his perspectives of the Namibian coast whilst on a mission to find nitre and understand "the true nature of guano" (Eden 1846). The previous western-recorded explorations of the area's resources were conducted in the Namibian interior. In Eden's view, previous explorations were inadequate due to the failure of the expeditions to come closer than 150 miles of the coast except at Walwhich (Walvis Bay). In contrast to the apparently inhospitable desert

interior, there were hopes that the nitre and guano found at similar latitudes along the coastal desert of South America would also exist here. After extensive account of the coastal mineralogy, noting the high quartz content of the area, (and failing to explore much around the later discovered, and diamond rich, southern bay of Luderitz), the exploration failed to find nitre. They did find guano and this peaked interest in the phosphate rich deposits.

But Eden was rather late in his discoveries, as the scaling-up of the extraction of the region's natural resources had already begun. It had started with the metal crafts of the indigenous communities. It then expanded through trade between these communities and the first explorers before it moved under the official colonial system. And so, what would become Namibia, an area already inhabited by at least four indigenous groups, was identified for its open land and resources, claimed, and 'made' for their exploitation.

These groups included a range of cohabitants subsisting on the land in regionally appropriate means. The San or Bushmen people were the oldest inhabitants of the region and a hunter-gatherer society. Bantu nation people such as the Ovambo and Kavango migrated from eastern Africa to northern areas of Namibia and settled into a fishing and farming way of life. Other Khoisan speaking people like the San moved north from the South Africa area and raised sheep and goats, including groups such as the Nama and then Damara in the 9th century. They occupied the area around the Orange River and into the central plains. The Herero were also of east African Bantu origin and arrived as latecomers to Namibia in the 17th century. They and a nomadic cattle-raising group that occupied Kaokoland before them then all spread to the plains.

German colonists strategically expanded their territorial holdings first, aiming to increase their presence and therefore colonial right to the area before the British colonists, who had also established a settlement in Namibia. The colonists' occupancy over the existing inhabitants in the 1880's worked by "depriving [the] people of the capacity to attain

economic self-sufficiency by taking away their land and cattle", and was conducted through discriminatory and exploitative laws (Namibia 1986, p. 11). Forced off their land and into unsustainable areas, such as the eastern Kalahari, the Nama and Herero groups in particular were starved of water and fought for survival. Mass uprising and wars of resistance ensued between 1904-1907 among the different tribes, and primarily against the German colonists. In the Nama and Herero revolts, more than 70 per cent of Herero and 60 per cent of the Nama were killed or died of starvation (UNESCO 1974).

Then, in the upheaval of the First World War in 1914, the area of current Namibia and then German South West Africa, was taken over by British South Africa. After the war, the territory was assigned as a class 'C', or least developed, mandate by the League of Nations, and given to His Britannic Majesty and placed under the control of South Africa. The terms of the mandate required administering the land for the access of all and the welfare, in terms of economic and moral development, of the people. But, the mandate soon became the entrance pass for South Africa to realise the economic plunder of Namibia's resources. Managed largely as the 'fifth province' of South Africa, ownership rather than guardianship provided the framework for territorial management. This was so much so that in 1946, with the creation of the United Nations (UN) after the Second World War, South Africa refused to acknowledge the UN's legitimacy to supersede the League of Nations and particularly their policy to move all territories to independence (Namibia 1986). As the only mandatory power that did not accept the transition to independence, they sought to further their resistant position in what would become a protracted legal affair regarding the legal status of the UN.

The time Namibia was under South African rule left a legacy of exploitation and violence. In the words of the UN Institute for Namibia in 1986, looking forward to a plan for Namibian independence:

> " The socio-economic and political conditions in Namibia today are epitomized by the illegal South African regime's pernicious policies based on racial discrimination and exploitation. These policies have resulted in widespread poverty among the blacks and considerable affluence of the privileged white community.
>
> Excessive exploitation of the mineral, agricultural, and fishery resources, the externalization of the wealth generated in Namibia, the near complete neglect of the human resource development and the basic infrastructure for the majority mean that socio-economic restructuring will be needed upon independence" (Namibia 1986, p. 1).

The course of South African rule took several forms until eventual Namibian independence. The Afrikaner National Party (NP) was elected in South Africa in 1948, and through their influence the Southwest Africa National Party was elected in Namibia in 1950. The growth of the apartheid regime spread just as quickly into the territory. Among the earliest changes were the introduction of rigorous labour laws forcing the indigenous population to fuel the economy. It was an economy built without diversity or balance of enterprise, and with no benefit retuning to either the region or the labour. Driven by multinational corporations (MNCs) from South Africa, Europe, and North America for the products of farms, mines, and fisheries, no other formal economic infrastructure was established. In 1946, 8% GDP was remitted abroad, surging to a peak in 1956 at 40% before declining back to 20% in 1977 (Namibia 1986). This economic system reaped the benefits of Namibian resources and depleted its people.

Under increased international pressure from the UN to acknowledge the end of their mandate, South Africa consented to move away from managing the territory as a colony and to implement the Odendaal Plan. A formal management plan put in place in 1964, the Odendaal plan expanded the territorial regimes of apartheid in South Africa into the territory by establishing "homelands" for the indigenous people. It was a "… a comprehensive plan for the fragmentation of Namibia into a series of economically unviable "homelands" for

Africans which would, of necessity, remain perpetually dependent on the 'white' areas and, through them on South Africa" (Namibia 1986, p. 12). The areas where sustainable agriculture was possible (north and south) were taken over by the white farmers (largely displaced Boers). Indigenous Namibians pushed off their land were forced to survive as cheap manual labour.

The extremes of conditions under apartheid were in place during the foundation of the region's economic systems, and embedded in them racial and economic difference. For example:

> "…South Africa which has imposed a deliberate policy of race domination and ruthless exploitation of the people and the economic resources of the territory. As a victim of apartheid expansionism and the doctrine of white "supremacy", Namibia has been treated, for all practical purposes, as an extension of South Africa. As a result, the majority of whites who inhabit Namibia and control its vital institutions are South African citizens who have plundered their territories' resources to maintain white "supremacy" and a high standard of living for themselves" (Namibia 1986, p. 12).

Meanwhile, independence and resistance movements continued and slowly gained international support. The South West Africa People's Organization (SWAPO) was initiated in 1960. In short order the UN General Assembly recognized SWAPO as the only and authentic representative of the Namibian people. Finally, in 1966 the UN officially removed the South African Mandate, and in 1967 created the UN Council for South West Africa, or later UN Council for Namibia. Armed liberation struggles commenced on August 26, 1966 (Totterdell 1996).

Protest and violent suppression escalated in the country. UN Security Council Resolution 435, made in 1978, enforced the future of an independent Namibia commencing with fair and free elections overseen by the UN. But, as of 1986 South Africa still refused to follow its own, now acknowledged, lack of right to Namibia and maintained control using

'dilatory tactics' and creating a 'puppet regime' by managing its "internal settlements" (Namibia 1986, p. 15). These settlements and the apartheid regime perpetuated an export resource economy such that in 1983 80% of Namibia's physical output was exported - led by diamonds, lead, uranium, copper, zinc, as well as cattle, sheep, and fish. This particular economy was structured by the physical control of land and labour. The legacy of this system, particularly for indigenous groups such as the San, as asserted by Vermeylan, is that "…the long shadow cast by colonialism. It transformed land use from a practice that regulated social organization through property relations into one in which property boundaries affirm political-economic power structures." (2009, p. 143).

The mining industry and its labour regime were a large part of this structure. In 1983, minerals were 85% of exports and half of government revenues. Yet, mining employed just 6% of the population in 1985. The small generation of employment was due to high capital costs and intensive use of technology. Only three companies accounted for 90% of production, all in diamonds, uranium, base metals, and industrial metals. They were Consolidated Diamond Mines (CDM), Rio Tinto Zinc (RTZ), and Tsumeb Corporation - all MNCs and all Anglo-American/De Beers or South African state owned (Namibia 1986). Very little of the profit remained in Namibia. The Gross Domestic Product (GDP) in the 1970s was about 145 million pounds, while the national income was about 25 million pounds. The difference was due to the wealth going to South Africa and away with foreign companies (UNESCO 1974). A staggering amount of this fleeting wealth came from the mining and minerals sector. De Beers Diamond mining averaged a net profit of 25 million pounds a year, and Tsumeb Corporation, with significant foreign shareholders, accounted for 80 per cent of the zinc, copper, lead, cadmium, tin, vanadium, beryllium, and lithium mined between 1947 – 1966 at a gross value of 250 million pounds (UNESCO 1974). At the time of this UNESCO report, the Rössing mine and the exploitation of uranium were under

development, but it was predicted that the UK Atomic Energy Authority would take about 45 million pounds worth of Uranium during the 1970s (UNESCO 1974). In an attempt to stop this flood of resources and wealth out of Namibia, the UN Council for Namibia decreed in 1974 that for the protection of natural resources in Namibia, foreign corporations were not allowed to extract the country's resources without the UN Council for Namibia's permission. However, most corporations did not respond to the decree (IADF 1987).

In addition to the obvious benefit of continued operations, corporations were offered other incentives to operate under recognition of South African, rather than UN control. For example, during the first five years of operation for supporting the illegal regime, corporations such as Rio Tinto Zinc received tax benefits. The Rössing Corporation "was allowed to pay no tax at all for the first five years until its profits equalled the capital invested in the mine" (Namibia 1986, p. 49). Where all major investors in the mines were foreign, these policies left no financial benefit in Namibia.

Mining practices and the struggle for independence became intertwined. The power and dominance of the mining industry, and particularly their labour practices, created unified groups of young men to forge resistance protests and strikes. The earliest documented strike in Namibia occurred against the South West Africa Company at Gross Otavi Mine in 1893 (LaRRI 2006). But labour strikes, and their relationship with the struggle for rights and independence, did not receive international attention until the 1970-1971 national strike when over 13,500 workers struck against the contract labour system and, among notable things, brought mining to a halt (LaRRI 2006). These strikes highlighted the discrepancy of opportunity for Namibian blacks who lacked access to work, and any form of welfare, including healthcare. Families were often confined in the homelands, or Bantustans, and men were taken away from their families to work in major industry such as mining or fishing, where they were forced into harsh contracts and living conditions in single-sex dormitories

(IADF 1987; Moorsom 1996). Other economic opportunity was limited to within the undesirable spaces of the homelands, and was largely restricted to roadside markets (IADF 1987).

Most directly related to the working conditions of the mining and fishing industries, increasingly frequent labour strikes were enmeshed with political change for independence through the establishment of trade unions (LaRRI 2010). The National Union of Namibian Workers (NUNW) formed in the 1980s. Rather like COSATU in South Africa, the union was a leader in the broader social and political fights and worked closely with SWAPO (LaRRI 2006). These labour led protests helped carry Namibia forward to eventual independence in 1990, but not until after a bloody armed conflict with South African forces and acts of mass murder along the Angolan border.

The Namibian fight for independence became conflated with resource wars (Mitchell 2009) for Namibia and Angola and international political conflict between the communist MPLA and South African forces that drew military support from Cuba and the US respectively. Namibians fighting with SWAPO were heavily involved in battles in Southern Angola. It was not until the combination of SWAPOs public declaration that they were not a communist group, and growing hostility to the Apartheid regime in South Africa, that they received more military aid (Totterdell 1996).

Without any intention of diminishing the significance of the long struggle for Namibian independence, but in order to maintain focus on the contextual background for analysing corporate foundations in the mining industry, the details of this struggle will not be further elaborated. Complex events at the international level working to secure independence in both legal terms and official governance continued to unravel the stubborn South African insistence on possession and control. Meanwhile, resistance and oppression became increasingly violent across the country. Many leaders of the independence movement, and

those involved in political activism for independence were jailed, tortured, and frequently killed.

Upon independence, those who survived or were able to return from exile took leadership positions in the establishment of the new state. Sam Nujoma is the most well known of these leaders. He first left Namibia in exile in 1960 and was soon voted the president of SWAPO in absentia. His efforts abroad led him to represent Namibia and SWAPO in a number of international forums, and garnered great international support for independence. He had gained increased fame in exile for his attempts to test the South African ruling that exiles were welcome to return to Namibia. He did so and suffered arrest and removal. In the late 1960s he also began to move weapons into Namibia from Northern Africa to arm the resistance movement. In 1990, under the first free elections for an independent Namibia, he was elected President. He served until 2005 when his former comrade in SWAPO - Mr Pohamba - was elected, and he is still in office today. At the time of independence, nearly 50% of Namibians were unemployed (Totterdell 1996). The legacy of his presidency has been his work to fuse Namibia's many cultures and communities into one reconciled and cooperative nation and start the search for its new economic future.

2.3.2 Modern Day Namibia and Mining in Southern Africa

Changes in the Namibian economy have not followed political change quite so quickly. After decades of restricted enterprise and labour, little economic infrastructure existed beyond the natural resources sector. Following the developments in the mining sector after independence, it was clear that establishing a new structure of economic linkages and diversity of enterprise to bring wealth back into Namibia would be a difficult process. Just prior to independence in 1986 the UN Council for Namibia published recommendations for furthering the national economy and addressed the mining industry at length:

> "Despite mining having been the most important single activity in Namibia for about a century, the technological dimensions of the sector has been exogenously controlled and manipulated, resulting in a situation of total and perpetual technological dependence. A national sectorial technology strategy is therefore a necessary requirement to ensure an appropriate direction of technological development in Namibia. State involvement in prospecting, mining, processing and marketing operations is considered essential; for transnational corporations, if left to their own devices, will have little reason to involve Namibians in the technological aspects beyond routine operation and maintenance" (Namibia 1986, p. 145).

Other recommendations for management under a strong minerals department included a plan to balance welcoming foreign investment while maintaining national returns through the tax regime, and greater participation in the financing of mining development. This was expected to include the provision of infrastructure such as roads, power, water and even some exploration (Namibia 1986).

The operation of the Rössing Uranium mine serves as an excellent case study to follow the changes in operation of large and foreign owned mines before and after independence. Rössing operated illegally against the UN Council for Namibia's decree against resource removal without permission. Rössing also did not allow for trade union membership until after independence (LaRRI 2006). Following independence, on-going disputes between the unions and the mining corporation concerned the integration of black employees at higher levels of mine management and the relationship between experience and compensation. This particularly concerned workers who had spent careers in the mine and were not promoted, while newly educated and inexperienced whites were brought in as their superiors.[19] Other concerns focused on the use of sub-contracting companies, rather than Rössing employment, to cut-costs and save on benefits. For instance, employees at Arandis Services, a subcontracting corporation, objected to doing the same work as those employed

[19] Also supported by: The Rössing Mine workers union statement 20 April, 1988 where they questioned management's true commitment to racial equality Hecht, G. (2010). "Hopes for the Radiated Body: Uranium miners and transnational technopolitics in Namibia." Journal of African History **51**: 213-234..

by the mine, but without the same salaries or benefits (LaRRI 2006). [20] Fiscal efficiency through sub-contracting has become an increasingly used method of mining operation around the world. Independence finally brought significant changes to labour in 1992 with the Labour Act and its eventual amendment reflecting the increasing prominence of the Mineworkers Union of Namibia (MUN) by 2004 (LaRRI 2006).[21]

Rössing is also an example of the changing international political-economic relationships that came with independence. Prior to independence there was SWAPO resistance and international activism against the operation of the Rössing Uranium mine. Organizations such as the British Campaign Against Namibian Uranium Contracts (CANUC) (Hecht 2010) argued against operations for the safety of the miners and because of the lack of transparency regarding the countries purchasing the uranium. Mining uranium was not considered a nuclear activity in the same way as other aspects of nuclear production such as fuel or weapons. Hecht (2009) has researched extensively on the techno-politics of nuclear activities, particularly in France and Southern Africa. The French used radiation exposure monitoring systems in their uranium mines as early as the 1960s. "The Commissariat l'Energie Atomique (CEA) had taken such nuclearity for granted from its inception. It monitored all manner of radiation in French uranium mines itself, with the same labs and equipment used in reactors and other 'nuclear' workplaces" (Hecht 2009, p. 902). However, in the United States and Africa, uranium mining was not differentiated from other mining as a nuclear activity.

[20] There is a rich history of labour disputes in Namibia in and beyond the mining industry. It is comprehensively documented by the Labour Resources and Research Institute (LaRRI) in Namibia as well as in Jauch, H. (2004). Trade Unions in Namibia: Defining a New Role? . Windhoek, Namibia, FES and LaRRI. And, Karuuombe, B. (2001). A people united shall never be defeated. The mineworkers Union of Namibia (MUN) from 1986 to 2001. . Windhoek, Namibia, MUN.

[21] For a broader perspective of the experiences of Nambians' post independence see Becker, B. (2005). Speaking Out, Namibians Share their pespectives on Independence. Windhoek, Namibia, Out of Africa Publishers. Collection of interviews.

Hecht argues that this discrepancy is related to the lack of knowledge of nuclear things in Africa perpetuated by "transnational politics of knowledge and post-colonial power as well as abstract prescriptions and embodied instrumentalised practices" (Hecht 2009). Later in her analysis of South African uranium mine workers' radiation exposure, it is clear that mechanisms of calculating exposure and creating guidelines were highly influenced by Apartheid practices that did not account for the greater risks and exposures encountered by black workers, nor did it include assessments of their health in its reviews. The conditions of the location, its politics, and its people, also changed the science. Hecht situates it as a,

> "…concept in dialogue with Anna Tsing's notion of "friction,"[22] a metaphor for the creative and destructive power generated by universal aspirations as they travel along changing axes of inequality. The notion of friction calls attention to the unevenness with which knowledge travels, the always-local circumstances that change its content along the way, and the material consequences of its motion. Regimes of perceptibility in African uranium mines, I argue, emerged from the friction between universalizing claims to, or denial of, nuclearity and particular imperial histories, with consequences for occupational exposures, their legibility, and workers' changing political options" (Hecht 2009, p. 899).

After independence in Namibia, SWAPO and the new government worked with and in support of Rössing Uranium. The desire for development and foreign investment changed alliances quickly. However, early independence did not bring desired changes to the mine labour. Union leaders sought external international expertise to support their arguments against working conditions. This extroversion - as Hecht refers to it while drawing from Ferguson (2006) and Bayart's (2000) work on African politics - to scientific authority again brought the global nuclear discourse to Namibia (Hecht 2010). The attention led to extensive monitoring and data collection on site. But, in contrast to expectations of the miners, the science and nuclear exposure argument escaped their local needs and soon was serving its

[22] Tsing, A. L. (2005). Friction: An Ethnography of Global Connection. Princeton, NJ, Princeton University Press.

own ambitions in an international scientific arena. The use of extroversion according to Hecht illustrated "agency and structure" and "the creativity and limits" of African politics, and arguably their development as well. But, she points out the particular technical nature of these politics, "like other 'universals', in order to gain traction, technological and scientific standards must acquire local meanings that articulate with international discourse and institutions" (Hecht 2010).

The sum of the effects these technological changes brought to the lives of workers and development policy is discussed at length in chapter five. Here the issue is instead raised to highlight what Hecht does not do in her work: "Readers will find neither a detailed discussion of the labor process nor an extended analysis of the relationship between the political economy of mining and the dynamics of state formation. Rather, this article finds inspiration in the urging of Ferguson and others to explore political circuits that escape the boundaries of the nation-state. I seek to understand the kinds of politics made possible by engagement with science and technology, along with the limits of those engagements" (Hecht 2010, p. 216). In presenting the history of the mining industry to understand the work of corporate foundations, and their use as organizations for private sector involvement in development, this thesis works to relate the political economy of mining and state formation *to* the technical and scientific specificities of mining and regional development that concerns Hecht.

The missing link in Hecht's account of scientific extroversion is an articulation of the coordination of policy and practices across multinational corporations. Scientists compared different national mining policies, but there is little mention of technological zones (Barry 2006) of communication about health and safety development within corporations. These are the channels or spaces that do not conform to international nation-state boundaries and instead link certain multi-national industries, such as the mining or oil industry, across their

many places of operation. Practices, procedures, and forms are transmitted through these spaces and help communicate common forms of measurement, standards, and qualifications of technical practices. Given the evolving relationships with the corporation – with South African control and then with Namibian independence - corporate operations existed in a rather isolated technical establishment, linked most closely to other development in mining practices and productions.

The historical flexibility of corporate political allegiances did little to manage the local development impacts or the technicalities of operations. In the case of radiation exposures, local site specific initiatives lost effectiveness in the wash of national and international political and scientific ambitions (Hecht 2010). But, during this time of technical labour dispute, the Rössing mine took on the slogan "Working for Namibia", and mine management travelled with government officials to promote the purchase of uranium and further foreign investment. Unfortunately it is difficult to determine what these international connections and incoming profit brought to the people affected by the mine, and to the general citizens of Namibia who neither worked for the mine nor were government employees.

The final recommendations in the UN Council for Namibia's Perspectives for National Reconstruction and Development makes several specific recommendations for managing future economic growth from the mining industry (Namibia 1986). The first two are the creation of a mineral stabilization fund, and better management and awareness of ownership structures. Executing each is possible by the government's Department of Mines. However, the a selection of the other recommendations are as follows:

1) Training and education for the Namibian people to engage in the higher levels of mine operation and management.

2) The government should encourage the development of linkages between mining and other sectors. Such linkages should include the establishments of plants to produce essential mine inputs including construction materials, simple tools, explosives and some complex equipment and machinery

3) For national industrial strategies there is a void of the infrastructure skills and institutions for industrialization.

4) A need for entrepreneurial skills, funds, and access to credit – "Success hinging on the availability of natural resources and interdependence (Inter-linkages) between sectors Ex: mining and agriculture"

5) Rural development enterprises closely developed with cooperation and harmonization with the national planning organ.

These points highlight the need to connect national and regional development, and to link that development to existing productive economic features such as mines. These points are all still relevant to development in Namibia today. In part they have gone unresolved because of the difficulty of determining what organizations or government bodies have the responsibility and capacities to manage coordinating these connections. In a way these recommendations articulate the issues that constitute the 'problem'(Callon 1980) of Namibian development. Here the geo-political reordering of Namibia created a series of gaps in the economic development of Namibia, impeding its ability to fully gain development benefit from its economic activities. There is an institutional misalignment and/or organizational absence to build the local capacity and provide for the international technology transfer to make it happen. This absence or failure of existing organizations and institutional cooperation to transition former economic features to a new social order entrenches the inherited economy built to serve the colonial and South African ruled political economy. It leaves the ensuing hopes for an altered economic landscape frustrated.

2.3.3 The Glowing Desert: Namibia' s Uranium Boom

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The Rössing Foundation, presented in great detail in the next chapter and analysis throughout the thesis, has established a series of programmes that work to address the UNCN recommendations. Although started before independence, and the survivor of both failed projects and economies, the Rössing Foundation again faces a new landscape for their operations.

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Improved technology and increased global demand for uranium to fuel nuclear power plants has ignited a prospecting boom. The dessert surrounding Walvis Bay and Swakopmund in the central west-coast of Namibia is a patchwork of proposed new mine sites.

Namibia is careful to make the most of this economic opportunity, termed the Uranium Rush. They are also aware of the need for balancing the mining boom with the strategic needs of the country – including sustainable social and economic welfare (MET 2008). The detail of these latter points is under heated contestation between corporate interests, government, and locals. To manage the process, an extensive Strategic Environmental Impact Assessment (SEIA) has been conducted for the Namibian government and regional government councils (MME 2010). This created a management plan for the expansion of the industry and a number of operating mines. It aimed to provide a framework for sustainable development concerned with "the linkages and trade-offs between environmental, social and economic dimensions".

Some critical apprehensions are the use of common resources such as water, pollution and radiation, and managing the influx of populations seeking labour. The SEA was unique in proactively reviewing the region before the details of specific projects were made clear. In some ways its recommendations provide the opening framework for specific assessment and detailed management plans as highlighted in the External Review of the SEA (Dalal-Clayton 2010). Its approach and extensive stakeholder engagement follows best practice to bring benefit to Namibians from the influx of foreign operations without compromising environmental resources.

Heated debates over mining in protected areas are challenging the terms and designated spaces of conservation land. The NACOMA (Namibian coast conservation and management programme)[23] has established a multi-use protected area that would need to allow for compromises in its current management plans to allow expanded mining (MET and MFMR 2009). In other preserved areas mining has been permitted and sets a difficult precedent for balancing natural resource preservation and use (Swiegers 2012). The SEA makes several

[23] NACOMA website: http://www.nacoma.org.na/FindOutMore/News.htm

proposals to more accurately designate protected areas around endangered species and significant tourist sites and not, as they are often now, due to historic ownership and donations of previous family holdings and game-lands (MME 2010).

Radiation worries still play large in the public conscience. On-going clarification and investigations of practices and exposure are common in public media.[24] To specifically manage the exploration, permitting, and performance standards of uranium mine operations, The Chamber of Mines Namibia has established The Uranium Institute (UI 2012). Its web site offers updated public information of the mine's operations and a review of the impacts and government management plans. The physical site of the institute provides a radiation information centre open to the public and available to address health concern.

The future coordination of mines' social responsibility in Namibia is uncertain. Sites operate under the 'polluter pays' principle; however, the social impact of the mines is a cumulative effect. Currently, the Rössing Foundation is the recognized and nationally established social investment organization. It remains to be seen how other mines will contribute, coordinate or compete with programmes and mechanisms to demonstrate commitment to contributing to broad economic benefit. Moving forward from the recent turbulent history of the area, it will become increasingly important that new economic endeavours such as the uranium boom are managed to provide distributed benefit to perpetuate economic growth while limiting the creation of uneven development and conflict.

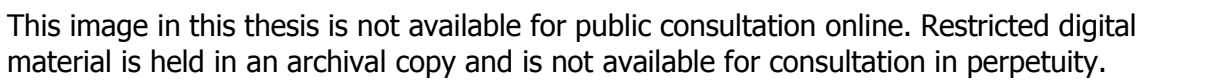
[24] For example, recent news on all Africa: http://allafrica.com/stories/201204120905.html

2.4 Chile

2.4.1 Chile as a political mining country

Dissimilar from Namibia as Chile is, the mineral led economies of both nations present fascinating commonalities. Parallels speak to the power of the overarching economic form of mining despite, or perhaps permeating, their tremendous political and cultural difference. Northern Chile, on first glimpse, is as uninviting a landscape for habitation and surely for prosperity as the Namib dessert. However, like the Namib Desert, the Atacama's buried value has determined the focus and patterns of national economic development. In Chile there are a multitude of mineral resources, as in Namibia, but the most significant of these resources in the Chilean economy is copper.

It is believed that copper was produced by the Atacamanos in the northern Atacama Desert 2,000 years before conquest (Codelco 1975). As one of the critical materials in the course of human history, copper, and its production, have experienced nearly unflagging demand for centuries. However, its earlier use and discovery in Chile was not the primary focus of mining in the Atacama. Instead, explorers were first consumed with interest in nitrate. After Spanish conquest by Pedro de Valdivia in 1540 and subsequent to a series of successful attacks against Spanish colonization by the Araucanians, Chile was held as a Spanish colony. However, the Spanish strongholds of power were in Peru. Chile was not an administrative focus. Without any obvious gold or silver, Chile's central valley was used to provide foodstuffs to Peru. It was not until after Chilean independence from the Spanish, occurring in stages between 1810 and 1816 under the leadership of Bernardo O'Higgins, that the nation's mineral wealth realized its central economic role (Collier and Sater 2004).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The first resource to come to attention was the guano deposits off the coast of Peru. These sodium nitrate and phosphate rich compounds were desired for fertilizer as well as for the use of nitrate in weapons and other explosives. Alexander von Humbolt, scientist-explorer and early bio-geographer, wrote about his experiences with guano on Callao in Peru in 1802. The spread of his writings expanded knowledge and the pursuit for guano (Collier and Sater 2004). Explorations, like that to Namibia, were soon conducted all over the world in search of deposits. The United States even passed legislation, the Guano Islands Act of 1856, to take possession of the newly discovered Guano Islands. Interest in control over these deposits lead to the Chincha Islands War of 1864-1866 between Chile-Peru and Spain. However, the scarce supplies of island guano were soon overwhelmed by the discovery of nitrate in the caliche, sedimentary rocks, of the Atacama Desert. The discovery of these deposits and the profitability of nitrate led to the first mining rush to the Atacama. Young men moved north to prospect for riches, or in the hopes of finding employment in the mines. The difficulties of this boom and early mining settlements in the north are well documented in the fabric of Chilean history. Then the industry collapsed rapidly after WWI. In 1909 Fritz Haber developed a nitrogen fixing process, the Haber-Bosch process, converting nitrogen gas into liquid ammonia fertilizer. The process was purchased and expanded by the Germans during WWI. They had lost access to essential supplies of Chilean nitrate for the production of explosives and needed an alternative to sustain their war effort. However, after the war, the process was so efficient that the Chilean mining industry could not compete. Whole towns were abandoned and mummified in the desert. This period's struggles are romanticized in Chilean literature by such famous authors as Isabelle Allende and her novel House of Spirits (1986). Sudden riches and glamour in the harsh desert, lost just as quickly as they were created, easily inspired wonder of mining's fleeting fortunes. The brief boom, marked by the Chilean seizure of Atacama saltpeter areas after the War of the Pacific (between 1879-1883)

dramatically expanded the national treasury. Despite the collapse of the nitrate mining itself, mining culture and mineral wealth dependency patterns were established.

Considerable foreign investment for large copper mines was underway by 1906 to carry Chile away from nitrate. In fact, copper production had been steadily increasing since 1601 and by 1810 had already increased output fifteen times over (Codelco 1975). The decreased attention to copper in the late nineteenth century was reversed at the turn of the century. The giant, and still operating, mine El Teniente, and the mining town of Sewell were established in 1906, and the famous Chuquicamata mine opened in 1915.

These large mines were modeled after the other mines owned by their largely North American investors. At El Teniente, William Braden and E.W. Nash expanded the small copper mine, already operating for nearly a hundred years, by trekking the ore out of the mountains with animals and by building roads for carts. Braden then joined with Barton Sewell and founded the Braden Copper Company in 1904. They purchased the El Teniente site in 1905 (UNCESCO and WHO 2012). Operated on the American mining model of the time, a town called Sewell was built for the workers to accommodate them at the remote mountain site of the mine.

This curious community's history is well recorded and researched and serves as a window into the attitudes of miners and significance of mine operations in Chile. Klubock (1998) studied the community up to the 1950s and offers a miners'-level perspective of the national and cultural changes to the copper industry. Migrant workers conducted early mining in Chile, and Chileans clung to their mobility and the opportunity for choice in economic activities. This was a rather unique labour population to manage compared to other areas of the world. For example:

> "Mine workers on the copper belt of Southern Rhodesia and South Africa, in the Belgian Congo, and in the Bolivian and Peruvian Andes sustained peasant

> economies and communities that allowed them to counter efforts by mining companies and, in Africa, colonial states to transform them into a dependable industrial workforce. In Chile, both single male and single female workers located their independence in their capacity to move from one sector of the economy to another in deeply rooted patterns of labor transience, rather than traditions and structures of peasant communities" (Klubock 1998, p. 47).

The conditions of Chilean mine work were harsh. Men were separated from families and brought in to work and live on site. Those brought from the rural areas had few technical skills and required training, but the trained men from urban environments adapted poorly to the structures of work as mine labourer (Klubock 1998). Either way, the conditions prompted high turnover.

The all male mining community attracted women seeking economic opportunity by working in bars and brothels along the transport roads to the mine (Klubock 1998). Interested in maintaining a cultural ideal of community at the time, Sewell was expanded into a town of miners *and* their families. An overarching religious and educational welfare programme was established to offer continual self-improvement (Klubock 1998). For example, the working community established at El Teniente in the 1930s and 1940s was based on male-headed nuclear families and a new acceptance of a capitalist, settled proletariat working class (Klubock 1998). The expectations of gender roles and family structure were an imposition on many of the families' previous values. The mine's company town therefore was providing not just for the sustainability of the worker population, but also forging a community in its own vision of community values.

Many of the other large mines established at this time were also in remote areas, and struggled to find a functional balance between male labour camps and the establishment of mine dependent communities. Another notable mining community was established at Chuquicamata in northern Chile. The proliferations of this model of settled communities started to change the traditional transience of mining labour, and it appears that with

commitment or lock-in to the location and work came greater protest and activism to improve working conditions. Communist and Socialist practices of leftist political culture and anti-capitalism took root in the mining labour workforce during the years of the radical party from 1938-1952 (Klubock 1998).

The election of Allende's Popular Unity Party in 1952 was the beginning of dramatic changes to the Chilean copper industry. President Frei slowly acted on the Marxist ideals of his party with the nationalization or 'Chilenizacion' of most major industry in 1967, including the mines. During this time many of the large copper mines were persuaded to sell shares to the Chilean government. El Teniente, then owned by the Kennecott Mining Company, the American copper giant owned by the Guggenheims, sold 51 per cent of the mine for $80 million (HBS 2012). Soon after, under Allende's presidency in 1971, the US copper mines were nationalized and it was determined that the US Anaconda and Kennecott Corporations were owed nothing for the mines due to their excess profits since 1955.

Despite the leftist led strikes and labour views of the mineworkers, nationalization and leftist state control did not serve to appease the mine workers. In 1973 there was a strike over the raises in the costs of living at El Teniente. The mix of social values inhabitants espoused – leftist, yet influenced by the nuclear capitalist family ideal of Braden's moral education - got them branded the "labour aristocracy" (Klubock 1998). Despite supporting socialism, the state control of the mine was little better received than the Kennecott Corporation's. The new national mining programme was pushing for a dramatic increase in production and sought increased productivity from the workers. As Klubock identifies the problem, the workers had "opposition to the authority of capital" and under state control resented the loss of their individual mine labour union rights (1998). Protests such as theirs were manipulated to reinforce international interests in ending the rule of the socialist government in Chile (Qureshi and Gustafson 2012). Eventually, through contested degrees of

international involvement and the U.S. desire to promote a neoliberal state, activism against Allende's rule let to a military coup, and on September 11, 1973 General Augusto Pinochet seized control of Chile's government.

Pinochet kept the copper industry nationalized and formally grouped it under the operation of Corporación Nacional del Cobre, or Codelco. Ten per cent of the corporation's profit went to fund the military. In 1975 Codelco produced 85% of Chilean copper exports (Codelco 1975). During the 1970's, with Codelco's increased production, Chile surpassed Zambia as the world's leading copper producer. Through Codelco the government sought to further incorporate the copper industry with the rest of the Chilean economy. This proceeded through mergers with domestic smelting, refinement, and manufacturing and increased vertical integration (Codelco 1975).

Pinochet's dictatorship lasted seventeen years and is estimated to have murdered 3,200 people, and tortured an additional 30,000. Former supporters of Allende's regimen were hunted and killed around the world. While economic indicators of decreased poverty and expanded international trade marked an aspect of the dictator's operations, it was national fear and horrific human rights abuses that characterized his rule and engaged in processes of accumulation by dispossession in the expansion of newly national industries (Watts 2004; Harvey 2005). In the 1980s conditions slowly began to change. For the copper industry this was seen in the new mining code of 1980, and then in the re-opening of the industry to foreign investment (MMRS 1985). For the people, true governmental change languished until the free elections of 1990 when Patricio Alywn was elected president. Pinochet maintained military control until the election of Eduardo Frei in 1994, who moved Pinochet out of military control and into a senate position. Not until the early 2000s were criminal investigations fully carried out to prosecute the murderers in Pinochet's regime, and attempt to uncover what happened to the many who disappeared. The legacy of political

control since has been perpetually in the shadow of the past. Pinochet died in 2006, having never been formally brought to justice for his crimes. Presidential rule since has embraced moderated forms of socialism while maintaining a free market economy.

Through all of this, and as a result of a relationship with the larger political economy of copper mining, the copper industry continued to expand production. In a report by Codelco in 1975, the copper industry was hailed as a pillar of Chilean development. With its expansion the manufacturing sector could grow, ports could be built for transportation, and there were efforts to develop new models for energy management. Mining was considered a good tradition of the country – part of the people, their intelligence, labour, prosperity, and patriotism (Codelco 1975). The reality of who was benefitting from the wealth of the mines and what communities were harmed to make this possible was not part of the national 'copper narrative'. It was clear that Chile still had many cheap and untapped sources of copper and future economic growth plans were structured around it (MMRS 1985).

2.4.2 Current Chilean mineral economy

Copper is still a leading economic force in Chile today. Increased demand for copper in Asian markets to support rapid industrialization and new technology has allowed for the efficient mining and production of lower grade copper ores and maintained and expanded production (all described in more detail in Chapter 5). El Teniente is now the world's largest underground mine. Chuquicamata has produced more copper than any other copper mine over the course of its operations. Escondida, the new giant established in the late 1980's when Chile re-opened to foreign mining investment, is the world's largest open-cut mine, making a gash through the earth that is visible from space.[25] A multitude of other large and internationally owned mines also have impressive statistics. But, particularly when copper

[25] Codelco http://www.codelco.com/prontus_codelco/site/edic/base/port/operaciones.html

prices are high, there is more growth and new operations from junior and small mining corporations. The industry possesses its own hierarchy of sites and firms. Unfortunately, safety, environmental performance and status follow.

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Most of the copper industry is in the Atacama Desert. Despite generations of miners moving north, the desert and its lack of other economic activities have prevented the same degree of cosmopolitan development experienced in Santiago. For the miners who travel back and forth from the desert to the capital this is of little concern. But, for those indigenous to the area and those for whom it has become home, the disparities are painful. These tremendous mines have had tremendous impact on their fragile surrounds.

Like in Namibia, water is scarce and pollution is life threatening for those living off the land. Traditional ways of life are lost to environmental changes and to interest in seeking work at the mines. Increased technical processes have reduced the need for local labour, and international specialists and consulting firms lead most operations. While safer overall, these changes leave poorly trained and often local miners to smaller, underfunded, and often less experienced mine operations, where they face greater risks.[26]

Seeking to move away from the corporate support of company hostels or towns has proven difficult. Several of the mines - such as Escondida - are a two-hour drive to the nearest city of Antofagasta. The mines exist at high altitude in harsh, isolated locations. Escondida has adapted to work rotations that allow labour to stay and live on site for extended shifts over several days, and then have several days off when they are free to travel home.[27] The migrant lifestyles of the miners harkens back to the patterns of early mine labour. But these employees are not seeking work in other industries or greater economic mobility. Rather, their mobility leaves cities like Antofagasta the responsibility of supporting the industry without the support of a community. Chapter five discusses in detail the circumstances of these regional disparities.

The relationship between the historical development of copper mining in northern Chile and the extreme economic effects of the country's turbulent political past has shaped the structure of Chilean development with that of the copper industry, and vice versa. This is especially true for the northern regions and their current struggle to achieve the same standards of development as the central regions. Like Namibia, these circumstances are in part related to the global politics of the extractive industry, the fluctuation of commodity

[26] Many issues about the discrepancy in safety standards related to the wealth of the owning and operating mining firm were raised in 2010. This occurred after the mining disaster in Copiapó when 33 miners were trapped underground before a rescue at the San Jose Copper and Gold Mine. New regulations and improved monitoring programs were then established; they have yet to be tested by another major accident.

[27] Please see the Appendix for photographs of this landscape.

prices, and Chile's role hosting international firms and their ambitions. But, given the period of Chilean control of the industry and the continued operation of Codelco as a national copper corporation, the disparity in regional development and distribution of benefit is also distinctive and related to Chile's political and economic history. The period of democratically elected socialism has introduced aspects of exceptionalism. The national pride in the mining industry is a legacy of this period. In some ways this appears to have created a shared ownership of the benefit of natural resources. What has perhaps been lost is the failure to share the repercussions and costs of acquiring these benefits. It appears that impact mediation and benefit distribution problems are closely linked to internal political priorities and marginalization of different populations. Seeking a solution to these circumstances, Chile faces its own decision-making past. Many remote mining places that have had a blurred role in national politics because they are so 'far away' are now coming into the focus of current political concerns.

The failure or problem to distribute benefit - much as in Namibia - creates struggles for alternative linkages between sites and local economies. Further, due to the contrast between economic opportunities in the central versus northern regions of Chile – it is difficult to determine what else can be done in these inhospitable environments, especially when mining is incompatible with previously sustainable ways of life. With whom, in these regions, and with what organizations do the institutions for national development coordinate? Chile's strong economy, and its own growing service sector, is starting to seek a new political economy of copper – one in which the labour and economic activity outside the mines is as active as it is within them.

2.5 Conclusion: Bridging the gap for the coordination of the distribution of the economic benefits of mining

Whether at the international, national, or corporate level the institutional coordination and management of organizations that direct the mining industry and its economic benefits is contested and currently challenged to meet new expectations. Yet, within the discourses of private sector involvement in development there is limited research on the *coordination between* the international governance institutions, the industry-linked corporations, and the needs of the communities they both work with. The history of Namibia and Chile, and particularly the development of their respective mining industries, illustrates the influence of the network of organizations and institutions that compose the political economy of mining and its impact on engagement with the local through labour and other economic linkages (Christopherson 2002). This includes the process and obstacles to the even distribution of economic benefits. The tensions and limited capacities of organizations and institutions in these networks present gaps in the coordination of benefit from the mining industry. These gaps draw attention to options to address them. The minimal literature about, and uncertainty regarding how to situate, corporate foundations as a potential option to address these issues suggest an enticing premise for research. Are corporate foundations in the mining industry operating as these apparently absent linking organizations?

The further analysis in the empirical chapters of the thesis attempts to maintain a connection to the significance of the transnational governance structures addressing mining and development *as well as* the national social and political infrastructures influencing the current and future directions and reactions to the mining industry. The language of the organizational, institutional and economic geography analysis in these chapters can produce

an unfortunate distance from the fabric of the societies and economic activities they constitute. The broad background is provided here to extend more of the character of the places, problems, and organizations into the coming chapters. The social, locally specific, and development-focused nature of corporate foundations would be misrepresented without it.

3 Research Design and the Conduct of Fieldwork

3.1 Introduction

This research began with the broad ambition of better understanding the social responsibility of the mining industry. The original focus was to better understand the process of social impact assessment (SIA) using the literature of corporate social responsibility. The scoping for this SIA research involved preliminary communication and a few interviews with experts in social sustainably in the extractives industries. It was through these conversations that it became clear that those in the industry and the communities they worked with, and for, were interested in what else was possible, and what might be next in this endeavour? Where was SIA or CSR going, what sort of things would it cause or could it do? Who would do them?

Early conversations brought up interest in some industry activities with potential to address these 'other' aspects of social impact. One of the most intriguing of these was corporate foundations. It was revealed that while they were 'out there' and often spoken of with great interest, there was little understanding of what they really were or what it was exactly they were doing, despite their recent increasing appearance as a method of socio-economic engagement with populations affected by mining activities. It was unclear if they even really addressed social impacts. Yet, more interestingly it appeared that they may work to address the institutional problems contributing to the failed distribution of benefit from the mining industry. And so, from this hazy 'what' and 'why' of corporate foundations, the field of the research project as well as its aims was formed. Further research design then determined how corporate foundations could best be approached. This included choosing the

balance of perspectives for the research from the foundations, the corporations, the communities and a broader literature.

3.2 The Research Process

The research process took place in three phases. *First*, time was spent mapping the global field of corporate foundations, establishing contacts and organizing fieldwork to visit foundations and the communities they worked with. Research began with few footholds in the industry and required first contacting experts in the literature, some industry contacts made during work on my MSc, and others through individuals in the department and the Oxford University network. Fortunately these contacts provided further contacts through a process of snowballing (Burgess 1990). This work was primarily done from the UK and consisted of many emails and phone calls, attending industry presentations, casual meetings in Oxford, and subsequently formal interviews with individuals in the industry in London.

Interviews were conducted with a range of consultancies working on SIA and projects for social sustainability in the extractives industry. From these it was possible to establish both a baseline of industry socio-economic engagement activities, and the limits of knowledge on the establishment and use of corporate foundations. These interviews were complemented by interviews directly with employees of the mining firms. As several multinational firms are based in London, it was possible to meet with their corporate directors of sustainability and/or community relations. These interviews were critical for understanding the firm's rational for establishing foundations. They also helped to establish contacts with the foundations themselves. During this time, I also sought to engage with other academics conducting research on the social aspects of the mining industry. Very helpful in gaining involvement in this research field was the opportunity to attend a conference, "Mining Across

Generations", at Cambridge University's interdisciplinary CRASSH Centre in January of 2009.

The *second* phase of research consisted of research onsite at several corporate foundations in Namibia and in Chile. This phase was the most intensely conducted fieldwork. Work began in South Africa where I had the opportunity to interview and then shadow the work of the Bench Marks Foundation[28], and their academic research team based at North-West University at Potchefstroom (van Wyk 2007; Cronje, Chenga et al. 2008; van Wyk, Segwe et al. 2008; van Wyk 2009; van Wyk, Cronje et al. 2009). This extended over a week in March of 2010. An interdisciplinary group, they are conducting a multi-national research programme on the corporate social responsibility of industries (including mining) in the South African Development Countries (SADC). The Bench Marks Foundation promotes principles of corporate social responsibility and researches and publicly highlights the success and weakness of mining corporations to attend to the wellbeing of society and the environment impacted by their operations. I had the opportunity to visit them at their offices in Johannesburg to understand their use of information from on-site research and measurements of industry performance to advocate for changes. I was also able to accompany them to several of the communities they work with in the Rustenburg platinum mining region. This introduction to the conduct of their research engagement was very influential in developing my own field research perspective and choice of methods.

Following this experience I travelled independently to The Rössing Foundation in Namibia. It is one of the corporate foundations with the longest operating history and is often used as a model for newer corporate foundations around the world. Established in 1978, The Rössing Foundation is the oldest of this 'corporate foundation' form still operating in the mining industry. The Rössing Foundation was established before Namibian independence

[28] Bench Marks Foundation: http://www.bench-marks.org.za/default1.htm

and works to distribute the economic benefit from the Rössing Uranium Mine nationally. Here I was able to interview individuals who worked in nearly every aspect of the foundation's operations, as well as its directors. I was able to observe work on site in two of their offices, in Arandis and Tamariskia, as well as on-site at several community projects. In order to further understand the context of the foundation and its performance I also interviewed individuals involved in the foundation's projects, and individuals of the communities at large in which these activities are taking place. Further, I conducted several interviews with directors of the mine and their community relations and sustainability department. I also had an extensive tour of the mine itself.

Significantly affecting the role of The Rössing Foundation in Namibia is the on-going uranium boom. A tremendous influx of exploration, along with the establishment of approximately ten new uranium mines in the next decade, is occurring as a result of increased interest in nuclear energy as an alternative to fossil fuels. The arrival of mines is quickly changing the social composition of the areas nearest them, Swakopmund and Walvis Bay. It is also changing expectations for economic development. Living in Swakopmund for the research with The Rössing Foundation, and traveling around this region of Namibia, I was surrounded by conversations regarding these changes. As a result, I also interviewed local activists, individuals working for some of the new mines - including the managing director for the first additional mine now in operation, the consultancy conducting the Strategic Environmental Impact Assessment (SEA) for the region, and the director of the Namibian Chamber of Mines Uranium Institute – charged with coordinating the uranium boom and disseminating information to a concerned and curious public. This current event is still affecting The Rössing Foundation by altering its performance goals, its relationship with the communities, and its scope of responsibility now that several large mines will be operating in the area.

The second part of this phase of fieldwork examined the copper mining industry in Chile. Here, the research expanded dramatically. Research in Chile was chosen to investigate some of the newest and largest corporate foundations. Research was able to explore corporate foundations existing in close proximity to each other within the same region. This contrasts with the newly expanding industry and primary operations of a singular corporate foundation as in Namibia. As such, work with four different mining corporations, and the longer and more complex history of copper mining in Chilean society, advanced the research's interest in the overarching phenomenon of corporate foundations. Further, in considering corporate foundations as a global phenomenon in developing countries it was important to consider corporate foundations' operations in two significantly different representations of an active mining industry in developing countries.

The first month of this part of the research was spent in Santiago. Similar to London, all the headquarters for the multi-national firms operating in the country are based there. While intensively studying Spanish, I conducted interviews with the national directors of sustainability. I was also able to go on two site visits to a mine and a smelter within a day's return drive of Santiago. At these sites I was introduced to the facilities and example programmes initiated by foundation efforts. Through connections established in Santiago, I then ventured north into the Atacama Desert and the heart of Chilean copper mining. Here through persistence and fortuitousness I gained access to four mines and conducted interviews with the range of individuals involved in their socio-economic engagement programme. The scope of interviews was similar to that in Namibia. This part of the research also included a comparative example of a mine owned by the same corporation as the largest foundation in the research, but which did not address any part of its socio-economic engagement through a foundation approach. Each of the foundations researched in Chile was

structured differently, and had different performance objectives for the scope of territory and timetable of their operations.

Unlike the boom of uranium mining in Namibia now affecting the political-social conditions for corporate foundations, the Chilean social engagement is moving forward carrying the legacy of its political history with copper mining. The nationalization of the largest copper mines in the 1970s and the creation of Codelco arguably changed the nation's relationships with its natural resources. The reintroduction of foreign investment in the late 1980s created particular worries about the loss of national benefit from the mines. Corporate foundations in Chile must now navigate this complex interplay of historical legacy and future expectations.

3.2.1 The Most Significant Corporate Foundations in the Fieldwork

The Rössing Foundation, Namibia

Area of Operation: National

A trust established in 1978, one of the longest operating of its kind in the industry. Receives annual % pre-tax contributions from the mine. Run by a board of trustees that includes directors of the mine, foundation and local community. Has recently concentrated its work priorities to improve education in English, Math, and Science to build the future economic capacity of Namibia. It also focuses on helping the mining town Arandis become a sustainable community.

Fundación Minera Escondida, Chile

Area of Operation: Antofagasta and San Pedro de Atacama

A non-profit foundation established in 1994 and operating since 1997. It is governed by a board of directors, including representatives from the mine and community.

Contributing to this governance are the directors and operating team of the foundation and a Citizens Advisory Council. Funding from the mine is determined each year.

Anglo American, Chile (4 sites)

Area of Operation: National and Santiago, Nogales, and Antofagasta

The Anglo-American foundation for Chile established in 1996 is modelled after the Anglo-American Zimele Foundation for Small and Medium Enterprise established in the 1980s in South Africa. While an initiative for all the Anglo American mines in Chile, it operates distinctly with each facility. Through the Emerge programme it assists in the development of SMEs as well as small businesses through a partnership with Fondo Esperanza, an institution that provides micro-credit and business education. Overall governance and administration is through the Anglo American Sustainable development division.

Collahuasi (Collahuasi Educational Foundation), Chile

Area of Operation: Iquique

The educational foundation for the Iquique region was established in 2009. Its focus on education serves one of the areas the firm is committed to addressing. The foundation involves two partnerships to national education organizations through which they have created an educational improvement programme particularly for the schools in the Tarapacá region. It has its own administration under development.

Fondo de Inversion Social, Codelco, Chile

Area of Operation: National

As a national firm, established with the nationalization of several Chilean copper mines in 1976, it provides benefit to the country through the production of its copper resources. Codelco has struggled to find the balance of dedicated development benefit to areas impacted by mining activity and maintain its operating mandate to serve the whole country. Recent efforts have therefore tried to link the national benefit agenda into advancement at individual sites. This is now conducted through the funding of projects across the firm and some mine specific initiatives.

It is not a straightforward example of corporate foundations. There is also tension between Codelco as the Chileans' state firm and what it provides in contrast to foreign corporations. This is a rather unique national rather than private corporation approach to mechanisms like the corporate foundation model for socio-economic engagement.

Cerro Colorado *(Comparative non-foundation site),* Chile

Area of Operation: Iquique

This counter-example is the mine's Human Resource Department. They have experts ranging in experience from the local development of the area to anthropology. Many of their projects are administered and implemented through partnerships with local organizations and NGOs.

Other Corporate Foundations

Awareness of these foundations through available literature from the World Bank and the industry and in conversation also shaped the thesis(Wall and Pelon 2011). They were not personally visited as part of the fieldwork. Some of these foundations are trusts and funds that do not implement development programmes and were less pertinent to the thesis's focus on implementing foundations.

<u>Peru</u>

Fundo Social La Granja
Asociación Los Andes de Cajamarca (ALAC)
Fondo Solidaridad Cajamarca
Asociación Ancash
Fondo Minera Antamina

South Africa and Mozambique and Namibia

Anglo American Chairman's Fund
Impala Bafokeng Trust
Greater Rustenburg Community Foundation
Palabora Foundation
Lonmin Community Development Trust
Namdeb Social Fund

Papua New Guinea

Ok Tedi Fly River Development Programme (OTFDRP)
Papua New Guinea Sustainable Development Programme Ltd (PNGSDP)
Lihir Sustainable Development Plan Trust
Lihir Gold Integrated Benefits Programme

Ghana

Newmont Ahafo Development Foundation

The third and on-going phase of the research is marked first by attendance at conferences where I was able to present my initial findings and receive feedback for structuring the material I had gathered, as well as avenues to gain information from other research that would complement and round out my findings. These conferences included:

The International Association for Impact Assessment (IAIA)
Geneva, Switzerland (April 2010)
Preliminary findings discussed

The OIKOS/UNDP Young Scholars Development Academy

(Special focus on inclusive partnerships for sustainable market innovations)

Turrialba and Alajuela, Costa Rica, (August 2010)

Preliminary findings presented and a case study on the use of inclusive business practices in corporate foundations (McElroy 2010)

Association of American Geographers Annual Meeting (AAG)

Seattle, Washington (April 2011)

Chapter 7 presented (McElroy 2011a)

International Association of Impact Assessment (IAIA)

(Special focus on responsible development for infrastructure, business and industry)

Puebla, Mexico (May-June 2011),

Introduction/Methods overview and reduced 'highlights' of Chapter 7 presented (McElroy 2011b)

Association of American Geographers Graduate and Faculty Development Academy (GFDA)

Boulder, CO (June 2011)

Association of American Geographers Annual Meeting (AAG)

New York, New York (February 2012)

Chapter 8 and an overview of findings presented

International Association of Impact Assessment (IAIA)

Porto, Portugal (May 2012)

Conclusions presented

3.3 Methods and Conduct of Research

3.3.1 Basic Questions, Pragmatic instruments, and Adaptation to Circumstance

Interviews, close dialogue and participant observation are the primary methods of this research project (Clark 1998; Cook 2005; Valentine 2005). The research objective was not focused on giving 'voice' to the respondents, but to understand patterns in the knowledge and values they possess (Clark 2007). The interest in understanding what corporate foundations really are, how they came about and what they are doing now was methodologically challenging. The focus of research in economic geography is to work from empirical material first (Clark 1998) and then work towards a theoretical understanding. As a result, the research process was iterative between gaining the information and opinions the respondents offered and situating that research within the context of the subject and positionality of the respondent. In this way specificities and differences they raised were not lost in the creation of theory or, from the much-critiqued by economic geography perspective, gathered into a stylized fact.

Further, this qualitative methodology integrates research of the internal decision-making of organizations and research of the surrounding institutional environment in which these decisions are occurring. As a result, the thesis does not provide just a structural critique of corporate foundations or the institutional environment, instead, basing its analysis on conceptions of corporate foundations as disparate organizations in a broad intersection of institutional environments. This work continues to advance research of organizational change as an interactive process (Van de Ven, Angel et al. 1989; Slappendel 1996) rather than the result of innovation as understood in early theorizations due to individuals (Rogers 1962; Rogers and Shoemaker 1971) or structure (Zaltman, Duncan et al. 1973). Thus, the

interactive and multi-perspective approach of the fieldwork complements and helps to build the theoretical process.

Interviews in the field were built around four subject areas of discussion assembled from interviews, conversations, and document analysis before arriving. These subject areas were designed to insure that the necessary topics of interest were addressed, but not to order when they were brought up, what the expected aspects of response were, or to interrupt the different narratives that constructed the significance and relationship of each to the other for the respondent. The question areas concerning corporate foundations are discussed below with some examples of the subject matter of conversation in those areas. These four areas were the quadrants of material to address during an interview and discussed in different ways with different individuals. As a result, significant questions areas could be evaluated across the different perspectives the interviews provided.

Figure 5: Visualisation of the significant questions areas for interviews.

Location and network of financial resources for the foundation?	The mechanisms of economic linkages? Identification of the 'problem' corporate foundation projects addressed. (Ex: inclusive business, procurement/local content)
CSR as internal or external?	Learning and knowledge transmission in and beyond the corporate foundation?

These four areas of questions are significant issues of debate regarding corporate foundations in their formation and operations. They were generated from the original ideas for the focus of each chapter and were refined between fieldwork in Namibia and Chile. However, they also speak to significant concerns and themes of interest in economic geography and institutional theory. The expression and discussion of these themes specifically in terms of the empirical subject matter was not originally an intentional match. That these empirical themes naturally emerged from the empirical subject matter highlights the fundamental nature of the theoretical questions. The issues raised by these questions become the grounds from which to evaluate the relationship between the empirical situations and their practical evolution and the theoretical concepts this thesis engages with.

The first quadrant area of questions addressed the location and network of financial resources for the foundation. Discussions related to this question included describing the process of allocating funds each year to the foundation and the management of the funds over time. It investigated how and why this was determined. Other topics included the distribution of financial resources in partnerships with other organizations, with government, and through private lending agreements such as micro-credit. These issues were pressed further to understand why they were chosen, how they were managed, and what was therefore expected. Finally it raised discussion of the international stipulations effecting financing or the existence of funds including: the IFC performance standards and Equator principles, local or national legislation, compensation agreements, and environmental bonds.

The right-upper quadrant area of questions opened dialogue about the mechanisms of economic linkages and specifically what the respondent believed the 'problem' was that these programmes addressed. A critical theme of the conversation was *why* this/these issues corporate foundations addressed were problematic. Then understanding the general nature of the programmes and implementation processes was the umbrella under which more specific

discussion of the type of model (ex: inclusive business, procurement based/local content) and reasons for choosing it took place. Each approach then led to discussion of the areas it impacted from labour work schedules and living conditions to education programmes.

The lower-left quadrant was the most abstract area of discussion. In part it involved providing an explanation of what I considered 'external CSR' and 'internal CSR' and seeing if they agreed. Reasons they did or did not agree led to further discussion of the perceptions of what constitutes CSR and the expectations CSR creates. Very significantly, this facilitated conversations about how the respondent situated corporate foundations in relation to the corporation and their understanding of CSR.

The lower-right quadrant negotiated ways to address the processes of learning and knowledge transmission within and beyond the corporate foundation. Bluntly it addressed the nature of communication and cooperation with different partnerships. These partnerships included work with the, corporation, community, NGOs, and the government. Prompting more reflection for respondents, the second aspect of this subject area concerned what learning they or the operation of the corporate foundation at large has learned from past experiences.

Generally the interviews were conversational, expressing curiosity about their responses and informing them what it made me think about or question, and inviting them to join me in working it out (Whatmore 2003). Including the respondents in what was puzzling about the information they provided generally invigorated the conversation, such that they expressed enthusiasm in working towards solving something with me rather than being the subject of analysis themselves, as an individual. It also appeared to provide more candid reflection on corporate foundations or the particular organization they worked with.

Throughout the research the interview process adapted (Valentine 2005). In part, I became increasingly comfortable with managing the conversation and the nature of responses. I was also able to experiment by adding other ways of being interactive. Sometimes materials I had about the organization were used to open the conversation, or asking to be walked through the informational materials they offered me worked well to relax the interviewee and separate the information from the perspective of the individual about the information. In one of my most interesting interviews, the gentleman I was speaking with was incredibly uncomfortable offering his own opinion about the structure of his organization and critically comparing it others. But, he did want to express himself and was comfortable drawing the relationship – their distance or relative hierarchy, etc. After this experience, I often kept my notebook open to additions from the people I was working with. Sometimes it involved sketching out charts of how I understood things or a flow chart of priorities and so forth for them to comment on, expand or change. Many helped collaborate more than draw or add unprompted, but I did notice that it changed their demeanour. Knowing they could look at what I was writing, they spoke more openly. Sometimes they even asked if I needed more time to get things down, in such a way acknowledging their role in the co-production of knowledge that the notes represented.

The interviews were complemented by many conversations that were more 'close dialogue' than interview (Clark 1998; Clark 2007). I make this distinction carefully because I use close dialogue in part to compensate for the lack of structure these conversations followed. However, they were not *unstructured* conversations, and therefore I align them with close dialogue. These were the situations where circumstances were challenging. Long drives in trucks on rough roads, discussions with miners over lunch in the mine cafeteria, tours of agricultural production or small business - all circumstances where interview formality fails. These are also situations where research questions are discussed, then

something is presented or done and the research discussion expands. But, these were often the most candid and insightful discussions. They involved engagement in the moment and activity at hand first, and then careful interjection of research related questions suited to the conversations. They marked the blurring of methods – different from participant observation and more than interviews.

Participant observation (Cook 2005) occupied a great deal of my research time. However, in recording its strength and weakness as a method, to articulate what it provided the project, I am frustrated with the sterility of a formal methods discussion. Participant observation privileges the researcher's perspective of the events that transpire and cannot be separated from the significance of the emotional response to participation in what are likely unfamiliar circumstances. Even when maintaining formal procedures for initiating research and continually updating and evaluating research notes, the research experience is personal.

Upon reflection, I see my concerns during the fieldwork to avoid biases because of where I was comfortable and who I enjoyed working with, and a myriad of other 'risks' to my objectivity due to personal involvement more generously. Not because they were not useful in structuring a sound research approach, but because focusing on their adherence fails to significantly acknowledge the mutual nature of the qualitative research process. While literature on research theory elaborates on the co-generation and co-production of *knowledge* (Pryke, Rose et al. 2003; Whatmore 2003) it does not fully embrace the significance of the co-created *experience*.[29] The degree of co-creating experience differed dramatically based on the research environment. Conducting corporate interviews in London, I was perhaps more affected by the experience and environment than the individuals I interviewed. But, strolling through a remote indigenous village, my prescene was an oddity and produced curiousity.

[29] This co-experience also concerned issues of power, discussed in the next section. This also affected co-production processes making it easier with some people than others.

Very bluntly, people wanted to know why as a young, white, independently traveling, unmarried female, North-American researcher with British affiliations, I was interested in the mining industry and them. The combination of features above that provoked the most interest of course varied by site.

Looking for other reflections on the significance of the mutual experience I sought literature not pertaining explicitly to ethnography. While in many ways my research was ethnographic in its methods, the short durations of my visits in any one site or with one community precluded me from becoming embedded in a substantial way. The significance of an ethnographer's presence over time does not articulate my experiences well. Instead, I was drawn back to literature regarding the significance of business transactions occuring in person (Gertler 2001; Storper and Venables 2004; Gertler 2008). At risk again of manipulating precise terms for the imprecise descriptions of messy experiences, the tacit knowledge transferred in the production of efficient and trusting business relationships suits the nature of the improved focus on research issues that came with positive shared experiences with those in my research.

There are several particularly strong anecdotes to illustrate this. For example, affecting my participant observation experience when working in Namibia, I drove a rental car that was both astonishingly small and horribly orange. Driving between the mine, Arandis, and the corporate foundation offices rarely involved passing more than a few other cars – typically white desert-worn 4x4s. After only two days visiting, people were keenly aware of my arrival and whereabouts. However, it was not for several more days that I was let in on the joke, if you will. Apparently a quick call to look in the parking lot at the different sites, and who passed me around town to track my whereabouts was curiously amusing. It was a game everyone at the organizations could play, not just the people I interviewed. Although perhaps not personally, I was more 'known' and likely to get greetings from the

gardeners and receptionists. My acknowledgement and acceptance of my silly car made me more approachable, and soon not only were there requests for rides, but a more casual acceptance of my presence and inclusion in ongoing events at the foundation. Being there, and the community bearing witness to my awkward - but not intimidating – presence, provided me with a role. This role was not just a researcher seeking something from them or examining what they did. My misfit was unintentionally made approachable because of my misfit vehicle and softened this 'researcher' identity, and I believe allowed for more open dialogues.

Further other gateway relationships to fruitful research paths were not necessarily initiated or sustained because of the research topic itself. During this study the value of participation to the individual was important. Sometimes it was related to the value of access to the study and its results. However, for most, it fell secondary to more personal experience-based reasons to participate. For some, this research was a trusted outlet for frustrations or concerns with their work, and for others a chance to showcase work in which they had pride. This manifested in many different ways; with some interviewees a common bond over the curiosity or interest in the research subjects perpetuated the engagement. In one instance, a rather paternal appreciation of me as a researcher, and an interest in using his connections and knowledge to help me succeed in my ambitions with the study, while having a positive experience in his country, provided access to new individuals and reinforced my legitimacy.

These experiences - and the wealth of knowledge I gained about the situations I was investigating and the places they were in - came from 'being there'. From friendships to movie going, the contextual understanding of this research permeated the societies in which it took place, and thus my life there beyond formal dialogues (Law 2004). To situate this, I return to the idea that methodology is not ironclad to method. Methods structure the research

form, order, access, and provide organization of data for analysis, but it also is the point of entry rather than the destination of qualitative research.

Furthering the metaphor of a research journey, this research across such variable contexts and cultures was made manageable by adhering to the consistent practice of methods. In conducting visits and interviews, these methods were a vehicle of my routine and access that carried me through the research project. The conceptualisation of corporate foundations as the case study (Burgess 1990; Yin 2003; Gerring 2004; Flybjereg 2009) that I was constructing, rather than the individual countries or foundations, also helped manage the balance of thinking through the research in the field. In the process of analysing/absorbing new information in the field, and simultaneously planning what needed to come next by determining which aspects required further investigation, pursuing the methods of filling out the 'case study of corporate foundations' holistically and evenly across settings was critical.

3.3.2 Reflections on methodology, ethics and difficulties

The inescapably personal nature of qualitative research, as my experiences attest to, is as Thrift says, "an ethically fraught endeavour" (2003). In grappling with maintaining awareness of ethics in research, I was most tested by issues of power and gender (McDowell 2000). In straightforward ways this involved decisions such as when to request the use of audio recording. In the interview setting the decision never proved very difficult. In corporate settings the process of granting permission and its conventions generally suited the formality of the situation. I am tempted to suggest it may have furthered my legitimacy as well (Schoenberger 1991; Thomas 1993). In contrast, in the field interviews and on project sites, the suggestion of recording and its formalities produced great discomfort and anxiety in the respondent. Often it was technically unfeasible given our surroundings. Fortunately, my

interest lay in their information and perspectives on organizations structure and performance. In not seeking to make individual champions, represent voices, or eventually use quotations in my findings, recording was not a necessity. But, without it the quality and accuracy of my notes was more important.

It was here in the management of the interview itself that the balance of gender and power and all the "ethical baggage", according to Richardson (2004), that we each bring into research through the interview process demanded constant reflection on how to proceed with good judgement. In the first instance of addressing power issues, awareness served as an excellent mediator. The variety of environments I worked in allowed me to experience a spectrum of power dynamics in interviews. While working with respondents of clearly greater expertise, authority, and experience – particularly those in obvious 'power' positions - I was aware of how easily the interview agenda could become theirs. I prepared following research advice to recognize the role of each person in corporate interviews. I thought through my reactions if I felt that the role, largely influenced by their motivations for involvement (Schoenberger 1991) - such as the buyer or seller or tester of information - was influencing responses. If you will, I prepared to have flexibility in my own role of interviewer. While a bit clinical, this characterisation helps articulate the rather natural process of 'sussing people out'.

In situations where the power role was equal or potentially greater for me, these characterizations of role based on motivation were less useful. Instead, longer and more informal opportunity for them to 'suss out' me, with me as a willing participant, was very helpful. To reduce suspicion, I was candid about why I was there, what I was interested in, what I thought of the place, etc. Only after this mutual exchange was it possible to have serious and helpful discussion about my research interests.

I attributed this suspicion and guarded initial engagement to several things. Least common, people had previously been interviewed for research projects and had negative experiences with those researchers. Often, people doubted their own authority and opinions and my interest in it. The company line or general acquiescence to questions was perceived as what they were 'supposed to do' in an interview. Mostly it was their curiosity, including about who I was and what I was doing. In the mining industry, particularly in Chile, it is a very 'male' industry. Elsewhere, I was very much an outsider to customs and communities.

Critical reflections regarding my own positionality and issues of age, gender, race, language, and expertise have occupied much time and produced few results. In navigating their muddle, and after conversations with other female researchers in traditionally male industries, we found the challenge and even frustration of this situation rewarding to our research. Mining language itself is gendered and conjures images of both the masculinity of the tasks it involves and the dangers of its engagement. It also builds on the similar language discussed in many wilderness studies about conquering or taming a mother earth or provider (Bridge 1998). These I expected, but when integrated with more traditional gender roles I was initially caught off guard. Over time, I became more at ease with the interest in why I did not yet have children, etc., and how strange the appearance of a small woman drowning in borrowed mining gear must have been to a normal day. In working to manage this role, I realized that in the general lack of knowing how to situate me in the normal hierarchies of mining and community work I was interested in allowed me the space to define my 'role'. Instead of working around a negative attention to gender, I could accept the muddle it created and work to articulate and clarify who I was as a researcher and what interested me. While at first difficult, reflecting back on this process I believe it also served the research well by eventually allowing perspectives unlikely in their candour and descriptive nature to arise from a more coherent blend of interviewer and respondent. I found this an excellent example

of the difficult interplay of method, ethics, and the complexity of situations in which they actually occur.

3.3.3 Moving from data to argument: the process of analysis and writing-up

Here I return to negotiating field notes, but instead of the process of their creation, the challenge of using them. The choice of interview, close dialogue and participant observation was to best access the logic that motivates decision-making and the underlying rationale of an organization (Schoenberger 1991). The complete picture of how the organization evolved, functions, and is changing only is then visible through the verification and compilation of interviews with people providing many different perspectives. As an economic geography project, this ability to take in the spatial scope and diversity of the life of an economic organization and relate it to higher tier process of economic change is paramount (Clark 1998).

This methodology to the research process is premised on a constructivist approach (Moses and Knutsen 2007). The ontological perspective is that concepts that make up the reality of the world we know are constructed from the meaning they are given (Searle 1995). For example, money, property rights and sovereignty exist through the meaning they are given by human institutions. Two of the key points that Searle uses to describe social reality are the imposition of function and collective intentionality. By using empirical material, this research has worked to understand the different functions being assigned to corporate foundations and if or what is the collective intentionality. It works away from confirming stylized facts in the form of pre-determined roles and outcomes for corporate foundations in the larger system of developing extractive economies and ready-made theories about their function (Clark 1998). Instead, the data allows for conceptual and theoretical innovation for

representing how the data – the development and performance of corporate foundations – is occurring and what the data indicates it means.

Tickell, Peck, Sheppard and Barnes (2007) document the variety of methodologies in the field of economic geography. The overall trajectory has been towards greater intimacy with the subject matter. But, it has left significant questions about how to bring these details out to something purposeful if not political. I have certainly found the process of moving from the detail of the research to something that is useful for the future development of corporate foundations perplexing and stimulating.

Specifically the process of moving from notes and field experience to written chapters involved several stages and some difficult decisions. Upon returning from the field the amount of data, information, and visceral connection to the research subject was overwhelming. Notes, pictures, correspondence, books and the feeling of responsibility to best represent the all the information I was entrusted with throughout the process was nearly an immobilizing heavy burden. The first stage to writing-up thus become the process of finding the key themes in all this material that would structure the thesis chapters and be the core empirical material for analysis.

To do this I scanned all of the field notes into the computer, partly for the security of having a digital and reproducible copy, and also to make it possible to mark and re-mark them in different ways without altering the originals. Once printed out I could read through and annotate with abandon. The themes and examples that became the material focused on in the chapters became clearer when re-immersed in the notes. Once I had determined the rough determination of the chapters I was able to colour-code with highlighters different aspects of the notes that would fit each – a process that revealed more clashes and overlaps than singularly suited examples.

While not the most sophisticated of methods given the rise in technology to assist with this process, this 'old-fashioned' way suited this project best for a number of reasons. Before leaving for fieldwork I had taken a course in the use of NVivo research software and had hoped to use it to help analyse my material when I returned. The NVivo software provides the tools to search through notes or transcribed interviews and search for key terms, code sections of text that match specific search terms and aggregate these findings together and away from the majority of the text at will. Unfortunately, even though I discussed many of the same topics in each interview the range of perspectives provided by each individual did not produce responses that would be informatively paired against other responses. For example, a discussion about community representation on a foundation's board did not occur between several people of the same position, but rather from one community member, one mining corporation member, and one member of the corporate foundation's board. The open dialogue paired with the varied perspectives does not fit well into the tool-kit of NVivo. Further, the nature of the questions and subtleties of topics I choose to select for did not fit into the parameters that software can see or judge - an enormous range of language all possible of representing certain characteristics of expression and discourse that may each only occur once defies such systematization. Nor does it handle the strange mappings, charts, and collaborative note-taking moments that offered more valuable insight into an interviewee's perspective than so many more words ever could.

Despite the disappointment of not relying on a method such as NVivo to further legitimize the method and process of moving from notes to writing I do not believe not using NVivo weakened the connection between the written document and the empirical data. Just as with the use of statistics, the most carefully constructed tests can produce misleading results if the original parameters are poorly or strategically conceived. There is similarly a high risk of reaching meaningless 'results' from very structured coding of very un-structured

and non-repetitive data. Moreover, the nature of the interviews for this research was not to engage individual opinions against each other. It was to construct a full contextual understanding regarding corporate foundations in the mining industry. This involved as many varied perspectives as possible to fully texture this contextual understanding. As part of this contextual ambition staying close to the notes and field materials, in this case literally, was a better method of moving into the write-up than an elaborate and formal distillation of the empirical material into other data.

The combination of structure and notes at hand then allowed for the pulling of multiple perspectives into one contextual narrative as part of the writing-up process. Due to concerns for anonymity and not highlighting a particular opinion, unless particularly significant and given permission for, few quotations are used in the text. Instead, areas of the empirical chapters that draw heavily on empirical examples make use of footnotes that indicate the general position and perspectives from which the information came.

Throughout this process it was often more difficult to decide what did not end up in the text or as a useful example. Many valuable aspects of the research were not part of the final analysis and left for a future project. Working from the detail of notes to meaning required attention to the reflexive nature of the writing-up process (Bingham 2003). Review and choice and prioritization of empirical data became nearly as interactive and self-evaluating a process as the interviews themselves.

The different chapters represent these processes and their contribution to understanding the construction of the form and function of corporate foundations. The second stage and conclusion of the thesis addresses how the data challenged the tools of analysis in each chapter, and what these differences mean for our understanding of corporate foundations and the systems of extractive development economies in which they operate.

3.4 Conclusions and lessons learnt for fieldwork design

For future research projects I have found several ways to improve my methodology. I would include a 'de-briefing' sheet that I would fill-out with my own after thoughts. It would help make visible patterns and themes within the interviews during the fieldwork process. This coordination could make it possible to take advantage of more data opportunities in on-going interviews. Also, new interviewees in a cycle of interviews within an organization would bring up topics that had been discussed in previous interviews, making it difficult to determine if they raised the subject and its significance, or were perpetuating what was introduced in another interview. While recognizing that stopping this spread of information and the power of suggestion it can create is unlikely, I thought there could be interesting ways of incorporating this occurrence. For example, if several interview subjects are all known to the interviewer prior to the interviews, an issues scouting email could be sent to each as a preliminary tool to sort out independent thinking. Or, a process could be developed to use the transferred topics as identified markers of the distribution of information, and a way to map the spread of information through the network. This could be explicitly asked of the participants, or attempted through a more subtle approach.

The most important lesson learned throughout the course of this research was the process of improvement through experience. In adapting to the circumstances of the research and finding my own best style, the quality of the research improved dramatically. I am naturally most comfortable in very open rather that structured discussions, and felt the more I made use of this strength, the better my interviews. Knowing this now, interview methods that involved repeated meetings and conversations work well for me. In future research projects I hope to build in more time for this. Finally, this research, with its qualitative nature, was able to determine structures and patterns that now recognized and mapped could be evaluated

through quantitative research. In this process of building up the number of ways a situation is evaluated, I believe it becomes an increasingly useful source of knowledge to inform decision-making and future policies.

4 Social investment and responsible investment: Their relationship in the mining industry

4.1 Introduction

This chapter explores the relationship between the increasing importance and prevalence of the mining industry's corporate social investing in communities as a response to initiatives for responsible investing in financial markets. It does so through the examination of the relationship between social investment practices by the mining industry and the process of managing a mining firm's social performance to make the firm a 'responsible investment' on capital markets. The increasingly varied and rapid establishment of corporate foundations is a complicated response to the multitude of demands for the responsible performance of international mining firms. It is complicated because the diversity of corporate foundations makes it difficult to determine the relationship between their specific drivers and enacted responses. This chapter seeks to untangle this complexity by identifying the nature of different drivers for responsible social performance and the corporate responses they provoke.

In the course of this analysis the chapter presents a critical institutional environment from which corporate foundations have arisen. From the relationship with this institutional environment, the establishment and value of the form of corporate foundations is examined. This understanding of the origin of the form of corporate foundations, its significance as well as limitations, underpins subsequent chapters focused on relating this organizational form to particular aspects of the institutional function of corporate foundations.

This examination starts with the growing international importance of the corporate responsibility and development discourses. They have brought major firms in the mining industry to make significant investment in programmes to improve environmental and social

responsibility. Corporate foundations are a product of this institutional environment. But, it is unclear exactly how. The establishment of corporate foundations is a recent trend and appears to address the demands from activists, communities, and investors concerned with the social risks, reputation, and social license to operate to improve the distribution of the benefits of mining operations. Formed legally as foundations, trusts, or funds, some corporate foundations are restrained to manage funds and administer their distribution. Others are extensively involved in the implementation of development projects. In both capacities, corporate foundations are a mechanism to distribute the benefits of mining at the intersection of multinational corporations and communities with limited economic diversity and capacity for development.

The rapid replication of corporate foundations within the mining industry also reflects the new enthusiasm for the development potential of power and wealth in the private sector, including mining, if it is better distributed and shares the benefits of operations for positive impacts. A popular quote in literature arguing for more sustainable mining is Paul Krugman's statement that "Mining is an issue of social justice. Mining privatizes benefits and socializes costs" (Krugman 2009 p. 207). From 1950-1980 only five foundations, trusts, or fund models for the distribution of social benefits from mining existed. However, there are now forty-one foundations, trusts, and funds connected to mining operations in developing nations alone, twenty-seven of these established after 2000 (Nelson, Bannerman et.al. 2010). Some of these institutions are designed to tackle tremendous societal inadequacies directly including basic sanitation and infrastructure, while others work in partnerships with development organizations and local and national governments for specific education and business development programmes. Major companies in the mining industry have tried to attend to the diversity of their operations by establishing specific foundations at different

mine sites to address the needs of the affected communities, ranging from those in remote locations to those in areas of dense population undergoing swift development.

Mining is historically linked with national development (Ballard and Banks 2003). Advanced mineral exploration and processing techniques have marked epochs of human civilization from the Iron Age and Bronze Age forward, leading to the rise of powerful nations. Today, technological advancements in geology and metallurgy are still important for success in mining (O hUallachain and Matthews 1996; Bartos 2002; Ballard and Banks 2003). In order to benefit from these advances mining firms must have access to capital to invest in these new technologies. They also must expand the geographic reach of their operations into previously unexplored areas.

Increasingly, new deposits are found in developing countries. The firms pursuing these sites are generally based in Canada, Australia, the United Kingdom, the United States and South Africa - countries that have successfully monopolized their own mineral resources and possess the tremendous capital necessary to commence large-scale mining operations elsewhere. The operations of these firms abroad were often historically interlaced with colonialism. But, with the growth of capital in many large developing mineral economies such as Chile and the BRIC countries (Brazil, Russia, India, China), there has been a rise in their national mining corporations. There is also increasing international political will for the equitable distribution of the wealth from natural resources (see: www.ICMM.com). This has led to more stringent investment criteria based on responsible corporate practices (see: www.IFC.org for their environmental and social performance standards). As a result, competition for capital and access to sites of mineral deposits is heightened. Rather suddenly for the traditional structure of the international mining industry, the relationship between access to mineral deposits and access to capital is now fraught with complicated intersections.

As part of the history of the involvement of mining in development, corporate social investing – in many forms - has always been present. Company towns, supplying homes and goods to employees - as well as large philanthropic donations - have historically been methods managing the communities that large mining operations required (Knapp and Pigott 1997; Ballard and Banks 2003). However, social investing in its current incarnation, and what is now under adoption by mining corporations, stems from the field of development work and eschews social benefits under the control of and for the mine. In this sense, social investing places the emphasis on funds going to projects and individuals to enhance what is expected to be local community led development. Strong examples of social investment are found in the abundance of microloan and microfinance organizations for development. Social investing is strategic in its choice of projects, and often requires returns on the original investment. It adheres to the philosophy of hand-up rather than the now tainted corporate philanthropic hand-out (Yunus and Jolis 2003). Most social investment programmes claimed to be driven by development ideals and normative values of social responsibility. The recent commitment to this latter model of social investment by the mining industry and many other high impact industries[30] is considered a strategic response to improve social responsibility. This is a response increasingly embodied in new organizational forms such as corporate foundations.

Out of the milieu of social responsibility discourses, the leading drivers for the adoption of social investment practices are responsible investment initiatives and conditions of financing. In contrast to the original business needs that brought social investment to mining communities, it could be said that responsible investment initiatives have had a reverse evolution. Socially motivated investment choices began in the 1970s to screen out investment in corporations involved with weapons and tobacco for the interest of certain groups of

[30] Other example industries include: Oil and gas, infrastructure construction, energy, and chemicals.

investors. Other screens were applied as political statements, such as divestment from South African corporations in protest of apartheid (Schueth 2003). In some regions such as Scandinavia changing investment patterns appear to correspond to changing social values (Bengtsson 2007). In the past forty years, responsible investing has shed the emphasis of its normative social value origins in favour of promotion through arguments for its business logic. There is now considerable empirical evidence that responsible investment, which takes into account the environmental, social, and governance performance of a firm as part of its financial picture, also contributes to good financial returns (Waddock and Graves 1997; Roman, Hayibor et al. 1999; Lin, Yang et al. 2009). This has created a 'business case' for responsible investment and established a large industry movement for doing well financially by 'doing good' for society and the environment (Waddock and Smith 2000). Both social investment in communities and responsible investing in markets integrate the need for efficient business and social development. But, it is unclear now how seriously major corporations take both practices. It is also unclear what relationship and effect social investing and responsible investing practices have upon each other.

The relationship between social investing and responsible investing developed in this chapter presents the tension between the logic for responsible investing rooted in an empirically based "business case" for corporate social responsibility (CSR) with that of the normative values for CSR driving corporate social investment. In delineating the dichotomy between performances of social investment and responsible investment it then highlights emerging conflicts. These are conflicts based on the need of each motivation – business case and normative values – for the other. The business case of responsible investing is legitimated by its support for and perpetuation of the normative values of CSR. The normative values of CSR, practiced for example as social investment, are enacted in a significant way because of the value and legitimacy they provide the business by reducing

social risks and gaining access to conditional finance guided by responsible investing practices. Through an understanding of these conflicting dependencies, consequences are made visible.

Corporate foundations in the mining industry are used as an example of mechanisms for social investment practices. The chapter concentrates on evaluating social investing and responsible investing initiatives in the mining industry's use of corporate foundations through the broadest spectrum of available literature and select examples of empirical research. It begins by presenting the responsible investing initiatives affecting the mining industry. It then discusses the corporate social responsibility practices of the mining industry, including the effect of business case and normative values on the performance of social investment (Newell 2005).

Based on these performances it is proposed that the strategic business motivation for social investment reduces its utility and legitimacy as a mechanism to demonstrate responsibility to investors and financing conditions. As result, the 'external' nature of corporate foundations, and their distance from the inescapable business motivations of CSR, grants a greater degree of legitimacy to normative values in determining their social investment activities. This potentially rewards the form of corporate foundations as providing legitimacy more so than their actual social investment activities.

From this examination it appears that increased pressures for social investment because of responsible investment has produced a priority on form to provide legitimacy for function. This is due to the need for the business case for responsible investing to find legitimacy in the normative value of social investing. In the case of corporate foundations, this has created a proliferation of the form with little specificity of the social investments for their function.

4.2 Responsible Investing Initiatives and the Mining Industry

The tenets of responsible investing now revolve around the business case argument for CSR. Responsible investing initiatives have adopted three established customs of CSR practice: systems for risk management; processes of external review, including audit and transparency; and managing reflective processes such as reputation, accountability and legitimacy. Following the logic that 'you manage what you measure' (Lowenstein 1996), traditional assessments of financial performance are evaluated with the addition of consideration of the social, environmental, and governance (ESG) practices of the firm. In response, as we will see in the mining industry literature, the measurement of these issues can produce management responses and new practices within firms. Two dimensions of CSR are visible in the structure of responsible investing initiatives. One, the customs employed for responsible investing practices, and the other the influence of these practices, as investors and other firms perceive them.

Several international initiatives operate to use financial conditions to improve corporate responsibility in the mining industry. Different from the well-known Socially Responsible Investment Funds or SRI funds, these conditions are tied to lending rather than equity investing. However, their use in the mining industry is working to reduce the financial risks to mining corporations because of environmental and social risks and thus improve their ratings as responsible firms to invest in.

The IFC performance standards and the Equator principles are the leading initiatives to place financial conditions on access to finance. The International Finance Corporation (IFC) is the private sector lending arm of The World Bank. The performance standards are a

comprehensive set of governance standards and operating principles[31]. They aim to ensure social and environmentally responsible practices in the firms to whom they lend (Barry 2012). By adhering to the standards, firms are expected to reduce their negative impacts and work within their operating environments to create benefit. The standards have just been reviewed, and updated conditions released in 2012. Critiques of the standards focus on enforcement and monitoring. Many of these standards required that corporations meet the 'best practice' standards of their industry and the regulations of countries in which they operated. These standards were often weak because many industries had poor 'best practice' standards. Further contributing to the difficulties of responsible corporate behaviour in developing countries are nascent or inadequate legal structure to regulate corporate behaviour and protect the welfare of citizens. This is particularly apparent in providing for the rights of minority and indigenous groups.[32]

Given these problems some of the most successful conditions of IFC financing to improve corporate responsibility and the distribution of benefit have come from project specific conditions. Fundación Minera Escondida developed from conditions of IFC financing requiring a vehicle for the distribution of financial benefit to the region surrounding the mine. The new standards have tried to bring more universally applicable and specific standards, learning from many of the individual stipulations that have worked well.[33] They have been further supported by the rise of work to develop industry best practice. Within the mining industry this leadership has come from the ICMM.

[31] IFC performance standards: http://www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IFC+Sustainability/Sustainability+Framework/Sustainability+Framework+-+2012/Performance+Standards+and+Guidance+Notes+2012/

[32] Fieldwork notes from IAIA 2011, Puebla Mexico. World Bank and IFC led session on the process of updating the performance standards and explanation of the changes. Friday, June 3, 2011.

[33] Ibid

Concerns over the performed and perceived responsible practices of the mining industry are addressed by the International Council on Mining and Metals (ICMM), which works to improve responsible practices and the reputation of the mining industry. The ICMM was born from crisis in the mining industry over a series of environmental and social fiascos in the early 1990's that drew attention to an industrial legacy of environmental damage and negative social impacts. Its initial agenda was built from the issues raised by the report of the mining minerals and sustainable development (MMSD) research project of the International Institute for the Environment and Development (iied) (MMSD 2002). Simultaneous to this report was a rise of more public and powerful interests directing investors to consider the social and environmental responsibility of firms. The need to address damaging practices and the risk to current and future investments led the largest international mining firms to support the ICMM as a forum capable of providing best practice information, responsible performance standards, and a platform for engagement with other international organizations.[34]

The ICMM now works on several fronts to collaborate with member firms on responsible practice research, offering guidance on issues and practices related to corporate responsibility. It makes this information, and the successes within the industry regarding responsibility, public through its website and distribution networks. Three of their nine work areas address the social impact of mining operations, particularly in developing areas. These include a focus on contributions to socio-economic development, the resource endowment initiative directed to mitigating circumstances associated with what is considered the resource curse, and research dedicated to partnerships for development.[35] Each of these work areas includes information about corporate foundations within the mining industry and covers a range of the social investment programmes they often administer.

[34] Interview with respondent type D

[35] International Council on Mining and Metals: www.icmm.com

This significant attention to practices and the corporate performance of social investment is a noteworthy acknowledgment of the importance of social investment to the ICCM in the promotion of both the improvement of corporate responsibility, and to achieve its aims to enhance the reputation of the mining industry for responsible investment. For example, the ICMM website celebrates the listing of one of its member companies, Newmont, for a fourth year on the Dow Jones sustainability index.[36] There is a clear string of connections linking corporate social investment practices by corporations and the assessed performance of their responsibility in developing countries on market indexes for responsible investing. It appears as if this advocacy is equivalent to the creation of social investment programmes for business reasons. This could mean that over time the promotion of corporate social investing in this way may alter the dominant normative drivers credited for the adoption of social investing practices.

The ICMM conducts many of its projects in collaboration with other international organizations – primarily linked to development and standards of responsible performance. In addition to tangential support to institutional initiatives such as the IFC performance standards, it is involved with the International Labour Organization (ILO), International Standards Organization (ISO), and United Nations Conference on Trade and Development (UNCTAD). Most cooperation concerns the implementation and regulation of standards. These activities are closely aligned with the business case approach for practices of corporate responsibility and have spread to private sector institutions as well. These include the previously discussed Equator Principles and the IFC Performance Standards. [37]

With development organizations, the ICMM collaboration is perhaps more complicated. The World Bank's Oil, Gas, Mining, Sustainable Community Development Fund

[36] ICMM news 27/9/10 http://www.icmm.com/page/51640/newmont-recognized-in-dow-jones-sustainability-index

[37] http://www.equator-principles.com and www.IFC.org

(CommDev) is an organization for social investment led by The World Bank. Regularly criticized for lending to projects in the interest of industrial gain and not, or perhaps even to the detriment of, the societies in which these projects take place, World Bank lending to the mining industry is a particular target of this criticism (Barry 2004).[38] Arguably, social investment at the institutional level is also conducted to improve the responsibility of its practices. This inclusion in their own performance measures highlights the emphasis social investment receives as a priority for responsible behaviour by the guiding global institutions financing the mining industry. This situation offers evidence of change in the value and importance of social investment practices to the considerations of the more empirically based responsible investing initiatives. The inclusion of social investment here is not driven by the normative CSR argument and is complicit in the adoption of responsible practices for the success of the business.

4.2.1 Governance issues

EITI

Some other international initiatives work to improve responsible investing along with other aspects of poor financial governance through programmes of transparency and audit. The Extractive Industries Transparency Initiative (EITI) is an example of this.[39] Started in 2002, the EITI works to certify the transparency of payments made by the oil, gas and mining sectors to the government in the countries where they are operating. This sector specific process is a manifestation of a greater movement for financial transparency to reduce corporate and government corruption (Barry 2010; Weszkalynys 2011). It is a slow process of civil society engagement where implementing countries provide transparent records of the

[38] example critique of The World Bank lending and impacts of national development: http://www.brettonwoodsproject.org/item.shtml?x=320869

[39] Extractive Industries Transparency Initiative: www.EITI.org

revenues received from the extractive sector. The extractives firms operating within the country comply by providing the full record of their payments to the government. It has not been uncommon that corrupt officials take bribes from corporations for access and security at a mine site, or that the government does not report the full extent of the taxes and royalties it is receiving from the mining industry. For example, checking the payment records of what is sent from corporations and received by government could make visible the absence of funds that are directed to personal coffers, indirectly funding civil war, or to buying special access for particular corporations. The implications of these events ranges from civil conflict, such as that funded by the diamond industry prior to the Kimberly Process (Wallis 2005), to quietly hindering the development and opportunities of populations that never see the value of mineral activities returned to society. Some versions of the resource curse theory argue that with or without corruption, poor redistribution of mineral wealth impedes national development. It is hoped that while not part of the performance of the EITI programme, implementing countries are made more aware and responsible in their behaviour through inquiries into where and how their revenues are invested.

The ICMM is actively involved in supporting and promoting the EITI and through it the responsibility and responsible reputation of the mining industry. The process of implementing countries agreeing to abide by the principles of the EITI, and then be subject to its review, is similar to the framework of some of the leading organizations for responsible investing, such as the Principles of Responsible Investing (PRI) - the United Nations' investor initiative publicly committing signing firms to the practice of six principles for responsible investment in their business. However, these procedures explicitly protect against investment that perpetuates negative environmental and social impacts. The EITI also implicitly promotes the normative value of accounting for the social investment of mining revenues. In this instance responsible investment initiatives operate at an aspirational level to

use their leverage to promote the practice of programmes and CSR driven by normative responsible social values.

Not in the specifics of information in these programmes, but in the nature of their presentation, intended audience, and internal referencing, does a rather dialectical discourse lurk. Its cumulative existence alludes to the influences of responsible investing in the promotion of social investment practices. It highlights industry response to them as an increasingly important consideration in the conduct of business for MNCs in developing countries. It also begins to map the process of creating and institutionalizing enactments of corporate social investment, such as corporate foundations, to meet the challenges presented by responsible investing initiatives.

In each example evaluated here, responsible investing initiatives are the instigating forum of the CSR discourse for the mining industry's involvement in social investment. However, with each degree of separation from the corporation, the original drivers for the promotion of social investment as a response to pressure from responsible investing initiatives are altered. Instead they are executed and judged by the normative value of the benefits they provide.

4.3 CSR in the mining industry

4.3.1 Theory of Motives

CSR as a response to responsible investing initiatives is a product of that institutional environment in combination with the motivations and resources of firms at the organizational level. Campbell (2006; 2007) has constructed propositions regarding the ability of the institutional environment of a firm to constrain or enable corporate behaviour. These propositions help situate the ways CSR in the mining industry reflects the environment

created by responsible investing initiatives. The first two of these propositions are: 1) less CSR will occur in weak financial conditions (of the firm or the economy); 2) that there is a curvilinear relationship between CSR and competition. In the mining industry this helps explain why CSR is primarily conducted and pioneered by the largest firms. Not only do they have the available capital, they also have the internal resource base (Branco and Rodrigues 2006), or institutional slack (Bansal 2005) to engage in the development of CSR. It also reinforces the significance of CSR in maintaining competitive advantage. When there is improved access to funds and mine sites due to positive perceptions of CSR, firms will have an advantage. The type of sites these major firms are capable of operating are similar. With few other ways for landowners to differentiate the firms, their social and environmental performance becomes a critical aspect of competition.

The following six propositions from Campbell address institutional dynamics that motivate CSR by constraining corporations and those that drive the adoption of CSR by enabling corporations. Those that constrain are: state regulations, self-regulation within the industry, and behaviour monitoring and pressure for modification from NGOs, finance sector and civil society (Campbell 2007). In their work on CSR as social change in many levels of organizations, Aguilera and Rupp et al (2007, p. 855) argue that the nature of these influences on the corporation are each different particularly because "the power of the relationship among actors is contingent on the environment". In this case examining responsible investment initiatives, not only is the relationship between each field of actors to the firm significant, but so too is their relationship to each other. Pressure from the finance sector creating conditions of responsible practice come in the absence of state regulations that are perceived as necessary to reduce the investment risks**.** The presence of these conditions then encourages the creation of industry self-regulation to utilize the resources of firms to stay ahead of state or legal interventions (Campbell 2007).

In contrast to features of the institutional environment that create constraints on corporate performance to encourage CSR, other aspects of the institutional environment enable CSR through: 1) the normative institutional environment of the industry such as common trade publications and training; 2) the participation of firms and employees in trade associations that promote CSR or responsible values; and 3) institutionalized dialogues with unions, investors and stakeholders (Campbell 2007). Most of these institutional environment associations provide for the transfer of shared values between organizations and work beyond the largely market based incentives of corporate constraint (Galaskiewicz 1991). In some ways these groups are formed by the mining industry's self-regulation initiatives while others result from the intersections with other industries and a growing CSR community (Sadler and Lloyd 2009).

These views of the antecedents for CSR come from a social more than an economic perspective of strategic CSR (Aguilera, Rupp et al. 2007). Different from literature that has concentrated on the financial benefit of CSR, the outcome determinants of this analysis consider what CSR provides the firm in social capital, reputation, and legitimacy. Each of these is likely to improve a firm's financial performance, but their formulation is contingent upon a relational reception and iterative development within the institutional environment. Thus embededness in the responsible investing institutional environment shapes the nature of corporate responsibility performed within the firm through its reception by investors. It influences firms' strategic decisions (Aguilera and Jackson 2003).

The impact of these institutional relationships in terms of their effectiveness in promoting CSR follows a downward hierarchical ordering of motives (Donaldson and Dunfee 1994; Aguilera, Rupp et al. 2007). This order starts with promoting strategic CSR because it provides instrumental value to firm performance; this is then supported by relational motives and lastly moral motives. This hierarchy of motives from the institutional environment

matches the distribution of literature that discusses the nature of performing CSR and attempts to organize the diversity of CSR theory and practices.

While many scholars have tried to organize the volume and diversity of CSR literature (Pava and Kruasz 1997; Margolis and Walsh 2003; Cramer, Jonker et al. 2004; Garriga and Mele 2004; Whitehouse 2006) it is primarily reducible to two arguments. First, the normative argument where explanatory reasons and evidence aligned along normative beliefs for the social imperative of responsible behaviour (Carroll 1996) and stakeholder inclusion (Donaldson and Dunfee 1994; Donaldson and Preston 1995). This is the argument in conflict with Friedman's (1970) view of the 'business' of business as business only. The normative argument supports corporate philanthropy and a perspective of the corporate relationship with society extending beyond the existence of corporate operations themselves as social benefit.

The second body of literature addresses the business case argument, with instrumental and strategic arguments demonstrating the competitive, managerial, and financial benefits related to improved CSR practices (Waddock and Graves 1997; Porter and Kramer 2006; Peloza and Papania 2008; Lin, Yang et al. 2009). These arguments encompass the logic of CSR, as a motivation for the uptake of new responsible practices for better corporate performance.[40] They have come to dominate much of the research and arguments of organizations promoting CSR.[41] Part of this business case logic concerns the growing significance of risk management in areas of corporate reputation and legitimacy. Interestingly these socially constructed concepts of reputation and legitimacy are highly

[40] This advocacy for better business is also addresses by a critical literature that views advancing the business as the goal, even if at the expense of society Rajak, D. (2011). In Good Company, an anatomy of Corporate Social Responsibility. Stanford, California, Standford University Press.

[41] Two example organizations that work across business sectors include: BSR http://www.bsr.org, an organization of member firms as well as private sector CSR research and the World Business Council for Sustainable Development (WBCSD) a CEO led organization to foster sustainable development and responsible business practices http://www.wbcsd.org/home.aspx.

dependent on the perception of shared values. For example, firms in the mining industry benefit from a 'good' reputation if they are profitable and socially and environmentally responsible because these aspects of performance are both valued in the institutional environments in which they operate. This attention to reputation and legitimacy creates an intersection with the normative value antecedents of CSR.

4.3.2 Legitimacy

Concerns for the legitimacy of CSR practices has affected its development in several ways. The social construction of legitimacy has affected the motivation to engage in CSR as presented in the dynamics of constraining, enabling, business case, and normative value drivers. At this level the decision to engage in strategic corporate responsibility ranges between commitments from firms not to behave irresponsibly to firms that practice such comprehensive CSR that they dramatically alter the role of the firm in society. Along this spectrum the mining industry has worked to balance past extremes - from extensive and controlling engagement with development to enclave operation in isolation from any engagement at sites of operation - with a contemporary view of the corporate social responsibility of the firm.[42] They seek to operate in the middle of the spectrum by performing CSR beyond the level of not behaving irresponsibly, yet not altering the image of firm into that of a development agent. The reasons for this position come from both the practical abilities of the firm, limits to incurring substantial costs away from the function of the firm, and from the nature of CSR performance that provides the firm the most legitimacy. Notably, there is also little desire or establishment of an executive track or career within the mining industry for this work.

[42] Interview with respondent type D

Practically, mining firms do not have the capacity and internal resources to serve as a development agent. Firms that have brought this expertise into the firm found it very difficult to engage with the larger development community.[43] Also, development led by the firm has undergone intensive scrutiny over the legitimacy of the development process in contrast to the ambitions of the firm to maintain and expand operations. The failure of many projects conducted this way has resulted from investment in programmes without effective evaluation of the community needs or the sustainability of projects (Esteves 2008; Esteves 2008). Rajak's (2011) recent work examining the social responsibility practices of large corporations' operating in South Africa's platinum belt provides other examples of the ways CSR projects directly and indirectly are used to further corporate power and perpetuate a particular narrative of capitalist expansion.

One example raised in Rajak's (2011) critical approach to evaluate CSR programmes is corporate participation in and deployment of the HIV/AIDS treatment. The corporate provision of drugs, health training, and infrastructure is one of the South Africa's primary development goals. In working with state led-initiatives she highlights the increasing control the corporation gains over its employees and ways this engagement creates dependency on the corporations to continue the state initiatives. According to Rajak the range of CSR programmes, particularly social investment and those that fit a model of CSR as the corporate 'gift':

> **"**Far from CSR leaving intact the unchanging workings of the neoliberal market, it plays a vital role in offering a replenished source of strength to corporate capitalism, by endowing it not only with an ethical countenance, but with a moral purpose. As TNCs incorporate sustainable development within their projects, they gain access to a powerful social resource: partnership. …enabling them to incorporate social challenges and counter-hegemonic voices, and pave the way for development to be reframed according to their interests" (Rajak 2011, p. 62).

[43] See chapter seven for the analysis of learning and development skills within the corporation and within corporate foundations.

The legitimacy of the CSR conducted as social investment directly by corporations is more complicated than that based in the outcomes of the projects narrowly viewed. In performing CSR as the mechanism of distributing benefits, can corporations provide these services and not co-opt advantages to the firm that negatively impact, or make negative, the benefit provided? The institutional conflict of interest makes the legitimacy of these projects contested.

Another difficult aspect of the involvement of mining in development, and threat to the legitimacy of their CSR, is the risk of corporate paternalism. If firms become responsible for the construction and operations of local infrastructure and social services the role of the state is displaced. Unlike the state, the mining firms will only be present to provide these services as long as the mine is profitable. Once the mine ceases to manage and fund these operations, the communities who relied upon these services are often in a very difficult position (Gaventa 1982). Even long-term perspectives of the industry are not the same as the inter-generational long-term of the state. The mess these development investments leave in their wake paired with loss in state-capacity building is generally viewed as irresponsible corporate engagement (Kapelus 2002; Sasse and Trahan 2007).

However, the illegitimacy of direct corporate development projects does not exempt large mining firms from responsibility for the impact of their operations. The other extreme of large mining operations in developing countries involves no engagement with the surrounding communities. Operations in remote areas are particularly capable of insulating the site from the surrounding environment. Labour is brought in, often fly-in fly-out, and the physical space of the site is secured by fencing and security (Storey 2001). The ore itself then also moves in

and out of the country directly through the mining industry's transportation and trade networks making the site of operation an enclave that only the mining industry has access to (Ferguson 2005). Some political and economic discourses (Harvey 2005; Martin 2010) discuss the costs and benefits of isolating powerful institutions or seeking improvement in international development through the activities of powerful, and often corporate, institutions. For the mining industry, the costs of continuing with a model of strict neoliberal expansion posed risks to future financial performance because the societies and governments in developing countries increasingly responded to inadequate distribution of resource value by taking measures to withdraw the corporation's social license to operate.[44] In order to be accountable to the interests of responsible investors, and demonstrate a positive relationship in their community, this isolated operation model is no longer sustainable.

Given the practical limitations of the mining industry for involvement in development, contributions to development must work strategically to align with the dimensions of legitimacy recognized by the different institutional environments in which they are embedded (Granovetter 1985; Jones 2008). In Suchman's (1995) analysis of organizational legitimacy he identifies both strategic and institutional approaches to legitimacy management. The primary difference between the approaches is the direct use of symbols as part of strategic management and the detached use of 'structuration dynamics', across sectors rather than organizations, to influence social responses. Within both he identifies three forms of legitimacy: pragmatic, moral, and cognitive. These forms are well aligned with the construction of business-case and normative values based motivations for CSR. The cognitive form of legitimacy suits the practical needs of the industry.

[44] Social License to Operate (SLTO) refers to any collection of activities by communities or government that allow corporations to continue to practice and without which their business activities in the location are in peril. Loss of social license to operate can occur through the formal revoke of mining rights or the informal protest strike or violence from the community. For some further discussion please see: Schumpeter, J. A. (1987). Capitalism, Socialism, and Democracy. London, Unwin Paperbacks. Witt, U. (2003). The Evolving Economy Cheltenham, Edward Elgar.

4.3.3 Social Investment as CSR

The social responsibility of corporations is not as clearly defined as environmental responsibility. Due to different views of the role of the business in society, the range of ways social responsibility is performed goes from the role of corporations doing no harm through to creating positive benefit. The recent expansion of private sector involvement in development has raised the standards for corporate behaviour to not only provide, but facilitate social benefit. Many programmes such as micro-loans and innovation for the base of the pyramid (Yunus and Jolis 2003; Prahalad 2010; SNV and WBCSD 2011) have especially linked the capital and competencies of large corporations with development projects. As the number of these programmes expands, mechanisms to determine their benefit to development and the legitimacy of corporate involvement are following.

Assessing the social impact of mining operations has become more important with increased public resistance, and a focus on the social license to operate. Given these risks to operations, and therefore to investment, responsible investment initiatives and lending terms are including greater emphasis on the process and scope of Social Impact Assessment or SIA. Social impact assessment, or SIA, is considered the social partner to Environmental Impact Assessment or EIA. Only recently are they performed as separate processes. Environmental and Social Impact Assessment (ESIA) was the first stage of specifically acknowledging social impacts. In the past twenty years the state of the art of SIA has changed rapidly and gained increased significance, often no longer just an addition to EIA in regulation standards and permitting processes. (Becker and Vanclay 2003; Burdge 2003; Burdge 2004; Vanclay 2006). Accordingly this is the most recent definition from Esteves, Franks and Vanclay (2012) in the Impact Assessment and Project Appraisal journal's issue on the state of the art of impact assessment:

> "Social impact assessment (SIA) is now conceived as being the process of managing the social issues of development. There is consensus on what 'good' SIA practice is – it is participatory; it supports affected peoples, proponents and regulatory agencies; it increases understanding of change and capacities to respond to change; it seeks to avoid and mitigate negative impacts and to enhance positive benefits across the life cycle of developments; and it emphasizes enhancing the lives of vulnerable and disadvantaged people" (P. 34).

The adoption of SIA has been slowed by institutional conflicts with both the firms' whose projects it is assessing and with the socio-cultural and political traditions of communities surrounding the mines. SIA encourages public participation in the project planning process, but Rickson, Burdge et al. (1990) highlight institutional conditions of bureaucratic rigidity and disciplinary inertia as well as rancorous conflict, extreme poverty, and ignorance as barriers to public inclusion in the decision-making processes (Burdge 1987; Burdge and Robertson 1990). In the process of conducting an SIA, social engagement is already occurring. Ideally, the SIA helps create the groundwork for improved social capital and (Gagnon, Hirsh et al. 1993; Buchan 2003; Burdge 2003) social empowerment for involvement in the imminent changes that accompany mining operations.

While the original focus of the SIA concentrated on direct impacts of operations such as human rights issues, altered livelihoods, noise, resettlement, and increased population, the increasing use of social investment practices used for development oriented projects have also come to undergo analysis through the SIA lens. In this way SIA as a practice is becoming differentiated from the performance ESIA required as a formal legal requirement. Many experts within the SIA consulting community see this use as a specific diversion from the use of SIA as the analysis of the direct social *impacts* of mining operations.[45] As such, it requires different tools to effectively address social investment (Esteves 2008; Esteves and

[45] Interview with: Golder and Associates 2/6/09 Oxford, ERM 11/10/09 London and 5/5/10 Oxford. Also ongoing conversations with Synergy and participants of the International Impact Assessment (IAIA) conferences in Geneva, Switzerland 2010, Puebla, Mexico 2011, and Porto, Portugal in 2012.

Vanclay 2009). These new evaluative metrics should help to create social investment decisions that best benefit the recipient communities. But, with the increasing expectations for private sector involvement in development and its conflation with responsible business practices, SIA has expanded farther to encompass the relationship between firm governance, management, and using CSR to distribute economic benefits. For example, this includes supply chain management and procurement practices that integrate local practices and firms – expanding stakeholder participation and economic linkages to the mining project.

The strategic analysis of social investment practices as CSR, rather than the legal requirement approach to SIA, is critical for the legitimacy of CSR practices. Intimately related with development sector programmes, motivation for social investment is most closely related to the normative value drivers of CSR. The challenge to address stakeholders in developing countries that lack the social infrastructure to facilitate the distribution of benefit from mining projects has brought social investment under the umbrella of CSR practices used to reduce social business risks and maintain the legitimacy of the firm's social performance. Through engagement in capacity building and social investment to improve economic linkages between mining and the surrounding community, firms are able to facilitate the distribution of economic benefit of the project. But, as is often highlighted by SIA reports, these social investment projects face the same risks of capacity practicalities and legitimacy as confronted by other models of corporate involvement in development.

Due to the association of these social investment practices with CSR, changes to address these issues include strategic integration with the firm's core competencies (Prahalad and Hamel 1990 ; Kaplan and Norton 1996; Waddock and Smith 2000; Porter and Kramer 2006; Esteves 2008) They also include changes to the governance of these practices. Improved CSR is managed through the structures and methods of corporate governance. The aspects of operation and performance that are measured are managed (Lowenstein 1996).

The emphasis from several responsible investing initiatives on management guidelines follows this principle – only the issues firms are measuring are fully managed. Audit and transparency, from corporate reporting to the EITI, are principles of the CSR discourse that are supported by business case and normative value drivers (Power 2003). The evaluation of performance through audit is buttressed against criticism of the legitimacy of the audit process through transparency. The transparency of audits and corporate behaviour in making information visible makes it contestable (Barry 2012). Gaps in performance expectations are evaluated both to ensure compliance and conduct risk assessment (Power 2003).

These governance practices serve the process of legitimating CSR as much as they do to manage it. Using the example of audit, these are socially constructed practices particular to certain institutional environments. Power (2003) argues the communities of knowledge and practices in which they occur, and the shared assumptions they address, define their legitimacy. Following Pentland (1993) Power elaborates that "auditing is a process of giving 'comfort' at the micro-level, which in turn makes possible systemic functions of legitimation" (p. 385). In performing social investment as CSR, the process of addressing the CSR motives and achieving legitimacy is similarly rooted in the legitimacy of their CSR governance practices for the institutional environments in which they are embedded – in this examination, responsible investing initiatives.

4.4 Conflicts and Dependencies: Corporate Foundations

The relationship between responsible investing initiatives and social investing in communities by the mining industry, is now examined based on the understanding of responsible investing initiatives and social investing as CSR thus far in the chapter. The need

for mining corporations operating in developing countries to address their role in contributing to development, and to meet the standards of responsible corporate performance expected by investors, is clear. The increasing prevalence of corporate foundations appears to serve as a response to these needs. As a result, they serve as an excellent case to investigate the relationship between responsible investing initiatives and the performance of social investing.

4.4.1 Governance, legitimacy, and corporate foundations

Continuing with the significance of governance and legitimacy, social investments performed by corporations as part of their CSR are easily related to the corporate business interests and motivations for CSR. They help provide a social license to operate, contribute to the distribution of economic benefit, and demonstrate a role in private sector development all reducing the risk that mine operations will be stopped for social or political reasons. However, the close relationship between social investment and normative values for contributing to development provide social investment, as a specific CSR practice, its greatest legitimacy. Other CSR activities to achieve similar social benefit such as procurement practices or local content policies also foster new economic linkages local to the mine to facilitate the distribution of benefit. But, as CSR practices originating from corporate business practices, their business case objectives are consistent with their business practices and suffer no conflicts that raise questions about their legitimacy. In contrast, due to the relationship between corporate ambitions as described by Rajak (2011) underlying many CSR practices, and the dominance of the business case rather than normative values as motivation, the practice of social investment directly by corporate foundations is in conflict with its relationship with its normative value antecedents. Further, social investment requires particular development expertise and long-term commitments beyond the life of most mines.

As a result, the legitimacy of direct corporate social investment programmes is often contested (Pava and Kruasz 1997; Brammer and Pavelin 2005).

The responsible investing initiatives that seek social responsibility in the corporations they invest in are largely advocated for because they reduce investment risk - a business case for CSR activities (Allan, Letourneau et al. 2012). But, when this social responsibility is carried out through methods that lack legitimacy or are not effective this risk reduction cannot occur. The articulated need for the mining industry to engage in social investment as a critical component of its social responsibility and yet, the negative consequences of directly performing social investment as CSR creates a significant predicament. Responsible investing initiatives depend on the performance of corporate level CSR. But, because of the business case they help establish for its performance, they create conflict between the legitimacy of practices correlated with normative values such as social investment and conducting them for business case reasons.

The organizational form of corporate foundations potentially has to mediate this conflict and dependency relationship. It does so because of its governance structure. Corporate foundations administer their finances and social investment programmes separately from the management of individual mines and MNCs.[46] The degree of distance, or governance independence, between the firm and the foundation varies widely and depends upon the purpose of the foundation, the local context, and the overall corporate strategy. These factors also influence the way the foundation is funded. The degree of foundation independence depends upon the distance from corporate influence necessary for the legitimacy of the social investment programmes of the foundation.[47]

[46] Confirmed in several interviews with type B and type A and A1 respondents

[47] Chapter 6 analyses these different models of the corporate foundation governance form and their effects on the corporations.

To conduct social investment projects these models of governance in corporate foundations create the opportunity for a different pool of resource capabilities within the organization of the foundation (Teece and Pisano 1994; Branco and Rodrigues 2006). The perceived independence of the foundations from the influence of corporate interests determines how legitimately their work with social investment programmes is seen. The perception of greater legitimacy from the development sector allows for partnership, with organizations and individual experts, who are averse to working with a large multi-national mining firm. The work conducted by the foundation is managed for the success of its projects and their goals. The form and distance from corporate interests allows space for the normative values of social investment. The corporation nonetheless benefits because the social investment work of the foundation helps distribute economic benefit and mediate the social impact of presence of the mining operation. The existence of the foundation arguably improves the impact of the firm and minimizes its social risks, thus achieving the goals sought by responsible investing initiatives.

4.4.2 Corporate Foundations: Form and Function

The form of corporate foundations in relation to their legitimacy and functions are illustrated in examples from empirical surveys assessing the range of existing corporate foundations. Similar to the range of enactment of CSR, some corporate foundations operate strictly as administrative trusts while others implement programmes (Wall and Pelon 2011). For those that are administrative trusts they provide the financing for social investment projects outsourced to NGOs or given to support on-going projects of other organizations. The scope of their beneficiaries is often specifically defined in the establishment of the trust. Implementing foundations operate similarly to development organizations. The scope of their beneficiaries is often determined by the geographical reach of the foundation's projects rather

than particularly identified stakeholders.[48] The form of foundations (or sometimes legally trusts) in both models of operation is constantly identified by the separation of its governance from that of the corporation.

The different degrees of engagement are conditional on the contextual needs of their operations (Wall and Pelon 2011). Significant factors include the presence of government policy for social investing and the duration of experience with the mining industry in the country. For example, South Africa and Peru both have government requirements or guidelines for social investments from the mining industry. They also both have long histories with large scale mining operations. The use of social investment funds for development programmes is clear and expected. In contrast, the absence of experience and government policy in Papua New Guinea (PNG) has conflated demands for compensation with expectations for development (Wall and Pelon 2011, p. 49).

As a result, foundations in PNG such as the Lihir Sustainable Development Plan Trust is charged with delivering an integrated benefit package (IBP) agreed on in 1995 including compensation payments, royalties, and community investment projects (Wall and Pelon 2011). The mixed-purpose reduces the positive impact of social investments for development when they are easily confused as requirements of compensations. In this instance the form of corporate foundations, their governance, independence and transparency are well suited to the management of compensation payments. However, when mixed with social investment programmes, the foundation and associated corporation risk losing the normative value of the projects if they are all perceived as compensation. There are few examples of corporate foundations that also include compensation payments and most new corporate foundations

[48] There are case studies of grant-making/administrative foundations (Ex: Asociación Los Andes de Cajamarca, Peru and the Greater Rustenburg Community Foundation (GRCF), in South Africa) and implementation foundations (Fondo Minero Antamina, Peru and the Rössing Foundation, Namibia) in the World Bank Source Book: Wall, E. and R. Pelon (2011). Mining Foundations, Trusts and Funds, A Sourcebook. Extractive Industries for Development, The World Bank.

are explicitly focused on social investment for economic distribution of benefit via development (Wall and Pelon 2011).

The rise of corporate foundations in the mining industry is particular to the increased need for the form of corporate foundations to legitimately meet the need to deliver social investment. Further, many large corporations have foundations, even within the extractive industry (for example the Shell Foundation, www.shellfoundation.org). The change that has made the corporate foundation a desirable form to replicate in the mining industry is the innovation of pairing corporate foundation form with strategic social investment functions to produce a new legitimacy. This is a legitimacy conferred on the corporate foundations in two ways: one way by the stakeholders it benefits and the development community it works within; the other way, by the reception of its spirit of service along the normative values of CSR by the responsible investing initiatives.

This celebrated form of corporate foundations has a surprisingly limited role in the designation of foundation functions. Their specific governance features, such as board representation - if not leadership - from civil society and governance, bring the considerable influence of the political economy in which the foundations operates to bear on their functions. Wall and Pelon (2011) highlight the role of political economy over the legal structure and form of the corporate foundation in determining their key attributes. They identify these key attributes of the corporate foundations as their programmatic approach, financing, geographic reach, participation, governance and influences, programming focus, and timing.

These differences and the impact of political economy are evident in the corporate foundations examined on-site as part of this research. At the Rössing Foundation in Namibia, the development of education programmes and capacity building has been a consistent focus

of the foundation's programmes.[49] However, over the course of national development the nature of these educational programmes has changed considerably. Early projects were linked with education around capacity for small enterprise such as a crafts business. Currently the Rössing Foundation has an extensive system for maths, science and english education consisting of curriculums, teacher training, and learning centre facilities (Grobler 2008). The programme works with national development programmes to focus development on capacity building as well as preparation for the development of industry related to international science and technology.[50]

In Chile at Fundación Minera Escondida (FME), also a foundation involved in the implementation of social investment programmes, but usually through partnerships, the programme focus reflects the Chilean state.[51] In addition to sharing in many partnerships with the government, other programmes are aligned to the emphasis on market-based development. An extensive programme has just been initiated in the San Pedro de Atacama region based on an inclusive business model.[52] The programme will provide capital to local industries and crafts to maintain the traditions they use, and scale up production for sale to the growing local tourist market. The businesses' work with the tourist industry prevents dependency on the mine and is consistent with the larger national emphasis on building capacity through market transactions.[53]

Further, Wall and Pelon (2011, p. 56) highlight the case of the Palabora Foundation in South Africa. Here social investment practices were initially focused on brick and mortar projects. Although the development field is now more focused on development through capacity building than donations of infrastructure, the foundation needed to gain community

[49] Interview with respondent type B

[50] Interview with respondent type B

[51] Interview with 2 type B respondents

[52] This is the northern altiplano region near the Bolivian border. Many indigenous communities still live here and are increasingly affected by mining operations. FME has a second branch office here.

[53] Interview with 2 type B respondents

support necessary for engagement in capacity building programmes through successful infrastructure investments. This example also presents a distinction between the process and institutional environments in which legitimacy for the form of corporate foundations is established and that of the practices.

Discussing the practices versus legitimation, Power says of audit, "practice is itself permeated and constituted by strategies of representation" (Power 2003, p. 392). The structure or form of corporate foundations that provides one type of legitimacy does not only not define the types of programmes corporate foundations focus on, it also does not necessarily provide them efficiency or legitimation in the environment in which they are performed.

The determination and legitimation of function, which works with the established legitimacy of the form, is the focus of the upcoming chapters. Building on the findings of this chapter it contributes significantly to a changing dialogue of form and function within institutional economic geography (Dixon 2012). For corporate foundations the establishment and changes in the representation of form have evolved to suit a particular function. However, that function of social investment as perceived by the institutional environment that constructs its legitimacy is not per se the function as the nature of specific acts of social investment in the institutional environments in which they are operating. Similar to the findings of Dixon (2012) in the financial system, function although a significant part of form does not necessarily follow from form. This is in contrast to the Varieties of Capitalism (VoC) framework (Hall and Gingerich 2009; Hall and Thelen 2009) that argues function follows form.

Following Dixon's caution to avoid overemphasizing the differentiation of form at the risk of missing the similarities of function across different institutions it is important that further examination of corporate foundations accounts for the origins of the form. Both the

form of corporate foundations and social investment are inherited and only through adaptations to the new needs of certain institutional environments and the market have they been re-presented. But, similar functions are still performed outside of the form of the corporate foundation and it is important to investigate what and if differentiates their performance from the organizational form of the corporate foundation.[54]

4.5 Conclusion and Further Research

The relationship between responsible investing initiatives and the mining industry's engagement in social investment practices producing conflict and perhaps granting more legitimacy to form than function is also applicable to other corporate responsibility activities. Used for example here is the practice of corporate reporting. Following from the brief discussion of audit, reporting for corporate responsibility is a process of external review as well as the publication and transparency of internal reviews. Reporting is another practice that is heavily advocated for by responsible investing initiatives. Providing the information on corporate social responsibility practices allows investors the ability to make informed decisions about the practices of companies. It also follows that if corporations are required to present this information they must measure it and pay attention to it in their operations, ideally thus improving them. However, there is considerable concern that the reporting is more substantial than the practices or green-wash (Hamann and Kapelus 2004; Munshi and Kurian 2005).

A new method to analyse the significance of the reporting form over the changes and value of the functions they report upon is possible by applying a similar analysis to the one

[54] Several major mining corporations, including those with corporate foundations, also operate social investment programs in other ways such as through the human resources department or outsourcing to NGOs.

presented here. A case to start with includes such mainstream reporting procedures as the Global Reporting Initiative (GRI). [55] The GRI has made industry specific supplements including the mining and minerals supplements part of their assessment criteria. Firms must complete these supplements in order to apply for the highest grade of evaluation. In spite of the benefits of standardization of the issues addressed in the reports, it is debatable that focusing accountability on particular issues is really motivation for responsible practices or consistent with the holistic operation interests of the responsible investment initiatives. It does demonstrate the time and expense corporations are devoting to reporting their social and environmental activities, and in that regard reflects the increasing significance of responsible investing initiatives.

4.5.1 Private sector involvement in development

To conclude it is important to situate these findings as an event in the deployment of private sector involvement in development. This chapter finds that the connections between the investment sector and practices of social investment are mediated in several ways. However, even the existing relationship is permanently enmeshing the private sector in development activities and outcomes. The forms and functions of this engagement are not yet established. Rapid changes are occurring in search of the best combinations, as seen here with corporate foundations in the mining industry. But, the more difficult and consequential question of what private sector involvement in developments means – for development, corporations, and the shaping of the political economy is at an even more nascent stage of unravelling.

There are several cautious, if not critical, voices regarding the consequences of private sector involvement in development at all levels. These are briefly acknowledged here

[55] GRI: https://www.globalreporting.org/Pages/default.aspx

so that assessment of the functional role of corporate foundations in the following chapters may be evaluated in light of these risks or mechanisms to avoid them. For example, Aguilera and Rupp et al. (2007) advocate that future research address the different types of CSR performed not only for the different ways they affect social change, but also whether these different types of CSR firms are called upon to perform are in conflict with each other or the firm. As this is an issue for the performance of social investment for the mining industry it is likely occurring in other industries as well.

Not yet explored by this examination are also larger questions about CSR and private sector involvement including what development approaches it pushes out or replaces. At what cost? Rajak argues strongly about the negatives of CSR led development:

> "The process of co-option, achieved both through the persuasive moral discourse of partnership and the coercive power of giving and withholding funding where the donor sees fit, facilitates the wider expansion and uptake of the kind of business-driven approach to development that CSR advocates. Other alternatives, which once might have been the domain of development NGOs, now disappear from the picture as does the fact that, in many situations, the demands of social and environmental justice require the development movement to challenge rather than endorse the interests of big capital" (Rajak 2011, p. 61).

She is not alone in the critique of CSR as mechanisms that promote neoliberal ideologies. Sadler and Lloyd (2009) argue that CSR is an industry of consultancies and institutions of self-regulation. An industry that while growing rapidly is self-referencing and unregulated. The establishment of systems of CSR governance outside of state regulation occurs in the spaces "in between" other political and social institutions. Sadler and Lloyd believe that in these spaces CSR activities work to advance a neoliberal agenda or hegemony. As a result, they caution about the consequences of the short-termism of the model of the neoliberal corporate citizen. A risk that may inhibit stronger governance or mean CSR is impermanent.

The changes in organizations and institutions studied in this research are cast within this backdrop of evolving state forms and institutional values. The intersection of institutional values has crafted the organizational form of corporate foundations. Moving forward into the functions of corporate foundations these institutional interactions multiply.

5 The Resource Curse: Political Economy and the Mining Industry

5.1 Introduction

The institutional challenges encouraging and complicating corporate engagement in development address half of the 'problem' of the failure of the mining industry to distribute economic benefit. Responsible investing initiatives, social investment programmes, and the corporate social responsibility of corporations is one context of institutional change. The second context is the institutional environment in which mining occurs in developing countries. These two contexts operate co-dependently. Changes within the corporate institution and its performance affect and must be managed by the institutional environment. Changes within the institutional environment require adaptations by the corporation. The problem identified as the failure of the distribution of the benefits of the mining industry is perpetuated by the breakdown of responsiveness and coordination of these co-dependent institutional contexts.

As discussed in the previous chapter, the discourse of CSR is slowly addressing the distribution of benefit 'problem' by advocating improved social engagement. Social investment programmes coordinated by corporate foundations are a particular mechanism in this process. Work to address the same problem of the failed distribution of benefit in the institutional environment context has attempted to evaluate the nature of the problem in order to create change. Most of this discussion has occurred at the national or transnational levels and circles around the proposed theory of the resource curse or the Dutch disease (Corden 1984; Auty 1993; Sachs and Warner 1995, revised 1997, 1999 ; Auty and Mikesell 1998;

Sachs and Warner 2001). The resource curse argument follows that development is impeded in countries with large natural resource-based economies. Countries without large natural resource endowments are forced to diversify their economies and thus stabilize their development. A common example is why Japan, with few natural resources, is well developed and Nigeria, with abundant natural resources driving its economy, is struggling to develop. The Dutch disease (Corden 1984) is somewhat similar and furthers the formulation of the resource curse with its articulation of the economic dynamics of natural resource based economies. It argues, based on the experiences of the Netherlands in the 1960s after the development of a large natural gas field, that concentrating economic activity primarily around a resource extraction boom brings an influx of foreign currency, affects inflation, and makes the manufacturing and other export sectors less competitive. Over time the economy ceases to diversify, and the lagging manufacturing sector shrinks and does not keep pace with international innovations. If the price for the resource drops or the supply runs out, the national economy has no competitive alternative economic activities. During the resource based boom rent-seeking behaviour and desire for control of revenues often leads to corruption and conflict. Many of the transnational governance mechanisms presented in Chapter 2 work to address the resource curse and Dutch disease processes. This includes the EITI and its efforts to make revenues from the extractive sector transparent.

Despite these transnational governance initiatives there is a also a literature critical of the resource curse theory (Gylfason, Herbersson et al. 1999; Papyrakis and Gerlagh 2004; Wright and Czelusta 2004; Rosser 2006; Brunnschweiller 2008a; Williams 2010; Murshed and Serino 2011). This chapter expands upon and contributes to this literature. It presents an argument that articulations of the resource curse fail to adequately account for the significance of regional economic growth through linkages to and benefits from the mining sector. Specifically, the resource curse does not address the failure of socio-economic

adaptation to changes in the technical processes of the mining industry. These changes alter the way the mining industry engages with the local and also national economy. Failing to adapt to these changes limits or prevents the distribution of benefit, or contribution to development, from the mining sector. This argument is a diversion from the focus of the resource curse as a national institutional problem. Instead, it argues any articulation of a 'resource curse' must be more closely related to the coordination of the institutional environment, local and national, with the technical processes of the mining industry. This coordination hinges on specific regional benefit from the industry rather than reliance only on the distribution of resources through national governance (for distribution through national governance see: (Collier 2010)). This chapter thus highlights another component of the institutional challenges to the mining sector's involvement or contribution to development. This argument also indicates gaps in institutional capacities that could be addressed by the functions of corporate foundations.

The chapter will first present an overview of other critiques of the resource curse and position this new challenge. It will then support this argument by providing examples of failed regional socio-economic responses to technological changes in the mining industry and the impact on national development. It concludes by extending the 'problems'(Callon 1980) in this institutional context into the choice of functions for corporate foundations to change them.

5.2 Critical Perspectives of the Resource Curse

Perspectives of the relationship between natural resources and development has undergone two substantial shifts (Rosser 2006). The first shift occurred in the 1980s. Academic literature until then had focused around a positive relationship between natural

resources and development (Rostow 1961; Balassa 1980). This positive approach was increasingly questioned, and by the early 1990s the work of Sachs and Warner documented a 'resource curse' and a negative relationship between resource-based economies and development (1995, revised 1997, 1999 ; 1997; 1999). Their work built on Corden's (1984) analysis of the Dutch disease processes. Rather quickly, the resource curse literature spread into three areas: economic performance, civil war, and political regimes (Rosser 2006). Most pertinent to the argument of this paper is the literature on economic performance, and some of the literature of political regimes and the resource curse as it pertains to mineral economies.

The second shift in the perspectives of the resource curse, based on the research for this chapter, is arguably occurring now. Within academic literature regarding the resource curse and economic performance new statistics are testing the original findings and the choice of inputs used by Sachs and Warner (1995, revised 1997, 1999). Some of the work has questioned measuring resource economies by their resource exports rather than the physical abundance of resources (Brunnschweiller 2008a; Brunnschweiller and Bulte 2008b) or resource wealth per capita (Stijns 2005; Stijns 2006). Others have taken into account the transmission channels for the direct and indirect effects of the resource curse (Papyrakis and Gerlagh 2004). These include impediments to the development of human capital through skills and education (Gylfason 2001; Torvik 2001; Bravo-Ortega and De Gregorio 2005). Still more have emphasized the relationship between the judgement of resource quantity and changes in technology that expand estimations of accessible resources (Wright and Czelusta 2004). The changing understanding of available resource wealth has the potential to quickly change national economic policy. In different ways each of these approaches to re-evaluate the 'resource curse' all speak to the institutional capacity to identify or manage natural resource based wealth.

These issues of economic performance and measurement are rooted in institutional dynamics and therefore also concern the nature of national political regimes. Rent-seeking behaviour creates struggles for control of the resource revenues and fosters corruption and instances of civil war (Leite and Weidmann 1999; Baland and Francois 2002; Torvik 2002; Collier and Hoeffler 2005). The difficult choices in creating economic models to measure the resource curse's effects reflect the multitude of formal and informal institutional contexts involved in resource extraction, export, and development from the returns. Acknowledging these many interacting choices for the governance of a resource economy makes it difficult to view the problem of the resource curse as a cause and effect relationship. According to Rosser (2006, p. 6) the focus of research curse literature is asking the wrong question:

> "…rather than asking why natural resource wealth has fostered various political pathologies and in turn promoted poor development performance, they should have been asking what political and social factors enable some resource abundant countries to utilise their natural resources to promote development and prevent other resource abundant countries from doing the same."

This, the political economy of resource wealth, is best addressed through literature that relates the significance of institutional quality to the persistence of the resource curse (Ross 1999; Jensen and Wantchekon 2004; Wright and Czelusta 2004; Ross 2008).

New studies are increasingly addressing institutional quality. There are now examples in the literature that is critical of the analysis of the resource curse (Brunnschweiller 2008a; Brunnschweiller and Bulte 2008b) where the results lead away from simple economic figures and more towards the nature of their management. For Brunnschweiller (2008a; 2008b) the resource curse is a problem of resource *dependency* rather than resource *abundance*. They argue that mineral deposits themselves lead to positive growth; it is the combination of resource abundance and the national constitution and institutions that determine resource dependence. Robinson, Torvik, and Verdier (2006) further support this perspective in their

argument for the political foundations of the resource curse, while Ross (1999) discusses the nature of the political economy of the resource curse itself. The increasing attention to the political and institutional aspects of the resource curse is working to bring together the economic performance research with more political and socio-economic perspectives such as Bebbington et al.'s (2008) work on the institutional constraints to achieving the development benefit from mining and Weszkalynys' (2011) work to articulate the way the resource curse is enacted as an economic device in relation to the particular 'politico-economic and socio-cultural' environments of resource economy nations.

The analysis of the performance of good institutions and governance of resource economies has focused on national management. The literature that is critical of measuring resource abundance by the percentage of the resources that compose a nation's exports highlight that the degree to which natural resources dominate the economy is a policy choice (Brunnschweiller 2008a). Also in the political realm, decisions to manage resource wealth are contingent on recognizing the need for a diverse economy as well as adaptability to the shifting parameters of available resource abundance as technology changes, rather than seeing resources as fixed stocks (Krautkraemer 1998; Wright and Czelusta 2004). Maintaining economic diversity to avoid the resource curse through the processes of the Dutch disease requires a commitment to specialization away from the production of raw materials. Murshed and Serino (2011) argue that this specialization can include investment in further processing of natural resources as long as it requires continual improvements to human capital, through skills and education, and investment in technological innovations. The transfer of education and skills is also considered a primary channel of transmission of the resource curse and its failure an indication of weak institutions unable to prevent the negative effects of resource wealth (Gylfason 2001).

These assessments of the institutional capacities necessary to manage development from resource wealth look at the issue through a national comparative lens (Acemoglu, Johnson et al. 2001). However, the enactment of good governance of resource wealth including the identified factors of building human capital, investment in diverse economic activities, and adaptation to technological innovation largely occurs at the regional level. The examination of the resource curse as a process contributing to uneven development between nations is not supported by literature examining the significance of the resource curse on uneven development within these nations. Nor has it addressed the internal or regionally negative consequences of resource economies within nations that overall appear to have 'beaten' the resource curse. The argument in this chapter pushes for a greater inclusion of a critical *regional* perspective of the resource curse.

To evidence the need for this perspective among the growing literature that is re-examining the nature of resource wealth as a 'curse', two examples of the regional significance of institutional capacity to manage changes within the mining industry are presented. They reflect the national political economies' concern with the coordination of national policy with institutions at the regional level. Each demonstrates that the failure of regional adaptation to technical aspects of the mining industry breaks down the development of further human capital, diverse economic activities, and technological investment – all critical components of avoiding the resource curse nationally. Moreover, it demonstrates that these failures are the consequence of the inability to evenly distribute, especially locally, the economic benefits of the mining industry.

5.3 Technology Change and Chilean Copper Mining

The first example of the significance of the regional level of coordination with the benefits of natural resource wealth is a reflection on the process of technology change in the copper industry. It highlights the consequences of decreased regional participation in the industry through labour and economic linkages. Uniquely, the local dimensions of the resource curse presented in Chile have not contributed to impeded national development, but in creating uneven national development producing political tension between the mining regions and the central government (Cademartori 2002; Ramírez and Silvam 2008; López and Figueroa 2011). To understand the current situation it is necessary to introduce the history that has produced the current political economy of copper mining in Chile.

5.3.1 SX/EW technology and new patterns of operation for Copper Mining

While copper mining is a global industry, Chile is responsible for close to 30% of global production with mine output in 2009 of 5.4 million tons (ICSG 2010). The copper industry is 10% of the Chilean GDP, the strongest export commodity, and contributes one third of government revenue (CIA 2011). These figures have ebbed and flowed from the 1950s forward with the dominance of the copper industry driving Chilean development in the 1960s, to the nationalization of the largest copper mines in the 1970s and the eventual re-opening and boom of foreign investment in the late 1980s. Many of these changes were the result of politics more than available minerals and technological development. However, even under shifting political tides the industry has remained a central feature of the Chilean economy and a regionally specific enough industry to allow for excellent assessments of the regional effects of changes in production. Included in this are specific technologies that have changed the make-up of accessible ore, labour, and linkages with other economic sectors.

The variability between national (Codelco: Corporación Nacional del Cobre) and private mines also provides interesting comparisons regarding the contributions of the mining industry to Chilean society.

The nationalization of the Chilean copper industry in the late 1960's until 1970 contributed to a dramatic change in the global copper market. The copper industry had previously operated as an oligopoly able to control and balance the supply and demand of copper. Then, under the control of the Chilean government, several of the world's largest copper mines such as El Teniente, (formerly owned by Kennecott Copper) and Chuquicamata (formerly owned by the Anaconda Copper Company) were increasing production without regard to the 'control' of the copper markets crafted by their previous US owners. Similarly, other major copper producing countries such as Peru, Zambia, and Zaire were also nationalizing their copper mines. The overall effect of uncoordinated production flooded the market and drove down the price of copper. For Chile, the cost of production was so much lower than in the US that furthering production even with the reduced prices still provided returns to the country, and at the time, particularly to the Chilean military (O hUallachain and Matthews 1996). This political reorganisation of the copper industry forced the US copper industry to restructure in order to remain competitive in the new market structure. The long-term strategy to adjust to an altered market structure (Clark 1993; Clark 1994) included changes to technological processes, labour relations, corporate strategy, institutional structures and inter-firm relations (O hUallachain and Matthews 1996). The technological changes were the driving force in shaping the parameters of the other changes to the relationship between the mining industry and the distribution of local benefit.

The key piece of this technological change was the introduction of commercially viable leach solution-extraction and electro-winning processes or SX/EW. Developed in the US to reduce processing costs and provide a mechanism of processing oxide based copper ores,

SX/EW altered the input components of the copper industry and changed the requirements for economies of scale. Types of copper ores that previously could not be processed were now able to be part of copper production and the process of their refinement did not require enormous capital investment and thus could be performed in small-scale operations. Through improvements linked to this technological development, the US slowly returned to production of copper at internationally competitive prices. In 2007 SX/EW use had grown to account for 43% of US copper production. Endowed with higher copper content ores and cheaper production costs, Chilean operations did not begin to adopt SX/EW until it had proven cost saving and contributed to the competitive price challenge from the US (O hUallachain and Matthews 1996). Further, while Codelco - the Chilean national copper corporation - was aggressive about increasing production, the vast organizational structure and scope of operations made implementation of large-scale innovations difficult. SX/EW was not fully embraced in Chile until after the copper industry was reopened for foreign private firms in the late 1980s, many of whom brought their SX/EW expertise from other investments in the US to their operations in Chile (Bartos 2002).

The increased use of the SX/EW process and an increase in production was rapid. Chile was producing 170,000 tonnes of copper in 1993 and over 1.35 million tonnes six years later in 1999 (Bartos 2002). Before the addition of SX/EW technology, copper was most commonly produced through a pyrometallurgical process of grinding the ore to a fine powder, concentration through floatation, and then smelting before it was refined (Bartos 2002). This process requires *sulphide* based copper ores. The process of crushing, grinding and smelting is extremely energy intensive. Further, the by-product of high temperature smelting is sulphur dioxide. No longer released into the air, the sulphur dioxide is now contained and converted to sulphuric acid. These processes and their long history of use do require skilled labour, but do not depend on those with advanced degrees.

The SX/EW processes is best understood, and most economical, as a continuation of the smelting based process of refining sulphide based copper ore. It makes use of the sulphuric acid produced by smelting for a leaching process to refine copper from *oxide* based copper ores. The leaching is a hydrometallurgical process occurring at ambient temperatures and in aqueous solutions. This technology opened up a new range of oxide copper deposits that previously were not easily refined. Further, old tailings and mines believed of no greater value (especially if the sulphide ore remains had been long exposed to the environment and oxidation processes), are reclaimable for SX/EW processing. The SX/EW process is also less energy intensive. In 2001 estimates were for approximately 65MJ/kg with traditional smelting in contrast to between 15MJ/kg to 36Mj/kg for heap leaching (differing by pumping costs) (Dresher 2001). Based on the mine site, the leaching process may require little or no transportation costs as it can be performed in situ as copper is removed in solution and the sulphuric acid is neutralized by its transformation in the process of moving through limestone in the ore into calcium sulphate (gypsum). This is particularly significant to allow for the processing of waste piles without creating further contamination.

The chemical process of heap leaching requires expertise in chemistry to adjust the process to particular mine sites as they each require specific organic extractants for the metal found there. Put simply, the solution received through the leaching process is mixed with an extractant that is an organic solvent used to remove or extract the copper from the solution. This is the solvent extraction or SX phase of the operation. The resultant copper-bearing aqueous phase is then brought to the electro-winning or EW stage. During this process the copper is reduced to copper cathodes of equal purity to copper cathodes obtained through electrorefining at the conclusion of the smelting process. The process of electrowinning is slightly more energy intensive at 8MJ/kg than that of electrorefining at 1.5MJ/kg, but the

processes of SX/EW are possible with smaller deposits and require investing less capital than necessary for the infrastructure needed for smelting.

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Discovered somewhat per chance at the Bingham Canyon Copper Mine in the United States, bacterial leaching capable of dissolving copper from sulphide ores is also increasingly a commercial possibility. The development of technology for the use of specific ferrooxidans and thiooxidans injected into the leach piles and supplied with oxygen provides smaller mines the opportunity to process both sulphide and oxide ores without a smelter. This technology is now mostly used in the Southern hemisphere including Chile, Peru, and Australia.

The changes as a result of this technology have expanded Chilean copper production and its attractiveness to foreign investment. Many of the private foreign investment mines that

were established in the late 1980s and early 1990s make extensive use of oxide deposits and ore grades previously considered too low and without enough value for production. By 2009 SX/EW production provided 3.3 million tons of global copper production previously not able to be processed (ICSG 2010). The timing of this 'expansion' of the resource base occurred in concert with more changes to the global structure of the copper market. Chilean production was affected as Asian, and particularly Chinese, demands for copper increased drastically in the 1990s. By 2002 China was the world's largest consumer of copper, so much so that it made up for decreases in demand for copper in the US and Europe (Nishiyama 2005; Radetzki 2009). Increased production in Chile from 1990-1999 accounted for 70% of the world's copper increase to supply this need (Nishiyama 2005). During the course of this increased production the effective use of SX/EW has raised estimated reserves of copper in Chile by expanding the grade of ore economically mined. Today 45% of the copper mined comes from ores below .5% copper (RMG 2008). This resource and industrial expansion with SX/EW has involved lower capital costs, faster start-up, and the ability to process small deposits and waste piles (Radetzki 2009).

However, this expansion of the industry and the possible available resources has not lead to a proportionate rise in labour or expanded participation in the benefits of the industry. The introduction of the technology and changes in the industry structure reduce the need for labour overall and requires a pool of more highly skilled employees. From the first evidence of these changes in the Arizona copper industry where SX/EW was most rapidly adopted, increased automation reduced unskilled labour between 1980 and 1994 from 45% to 37%. However, the need for professionals and craftsmen increased from 37% of the labour force to 47%. These changes occurred with an overall 39% reduction of labour (O hUallachain and

Matthews 1996). The nature of these changes in Arizona most affected the unskilled Hispanic population drawn to work in the mines.[56] Their experience of the changes in the

[56] This decrease in labor was possible as between 1982 and 1992 there was a 150% increase in the productivity of Arizona copper mining – occurring simultaneously to an overall reduction in the quality of the ore mined from .58% to .44% copper. Statistics, A. B. o. M. (1979, 1983-4, 1992-95). Non-ferrous metal data. New York, Port City Press, Resources, A. D. o. M. a. M. (1983-4, 1994). The primary copper industry of Arizona. Phoenix, Arizona Department of Mines and Mineral Resources, Census, U. S. B. o. t. (1990). 1987 Census of mineral industries. Washington, DC, Government Printing Office, Census, U. S. B. o. t. (1995). 1992 Census of mineral industries. Washington, DC, Government Printing Office.



Plate 1: Heap leaching field, Chile

Author's photograph taken 30/6/2010



Plate 2: Electrowining Process, copper cathodes removed from bath viewed through safety glass, Chile

Author's photography taken 30/6/2010

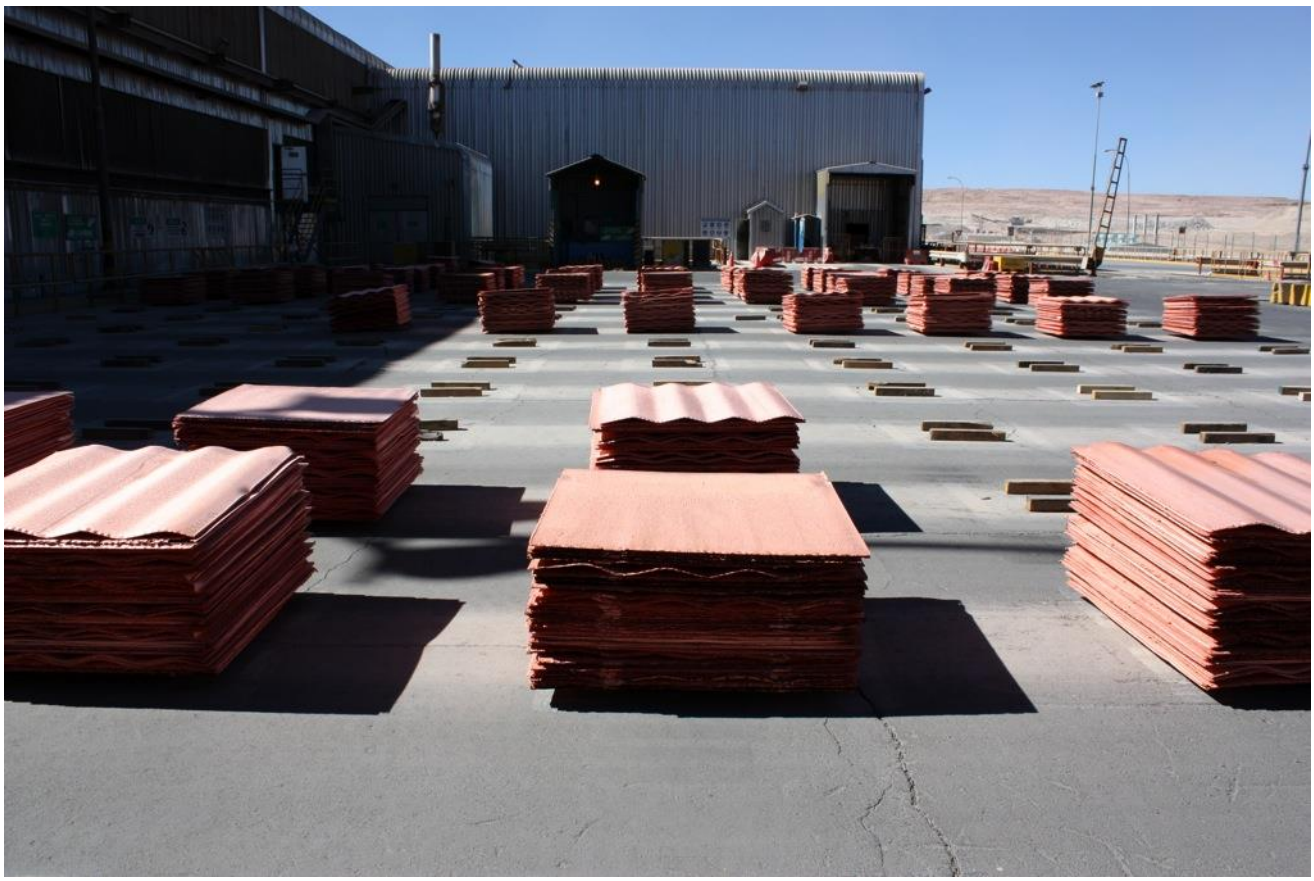

Figure 2: Copper Cathodes awaiting transport, Chile

Author's photography taken 30/6/2010

industry is similar to effects of technology change that occurred on a large scale for unskilled labour in Chile.

Garcia, Knights and Tilton (2001) have examined the rise of copper production in Chile particularly during the 1990s to evaluate the contribution of increases in labour productivity versus the opening of several new, large mines. They found that "despite the opening up of a number of world class copper mines in Chile during the 1990s, innovation and new technology still accounted for nearly a third of the tremendous growth in labour productivity…" (Garcia, Knights et al. 2001). As a result, need for local labour near the mines did not increase. Demand for skilled labour required employees from other regions. Both of these consequences of the copper mining boom are critical factors for the minimal positive regional development effects of the mines.

Unfortunately for regional development, much of the skilled labour came from areas far away (500km +) from the mining region and through long-distance communing have continued to live there (Aroca and Atienza 2011). As a result the wages earned by these employees is largely spent in the regions where they live with their families and not in the mining regions. Aroca and Atienza (2011) argue that there is a pattern of centripetal forces supporting centralization of living and development in Chile to the central three regions, and thus a need for policy to promote the peripheral, also mining, regions (2011). In Chile, the city of Antofagasta, up in the Atacama Desert in region two, has the greatest national proportion of commuters from outside the region. They were estimated in 2007 at close to 17,000 people, and nearly all related directly to the mining industry, or indirectly to mining through construction, electrical or financial employment. The largest group of commuting labour in Chile is for the mining industry, which has thirteen times the national average of commuting employees (Aroca and Atienza 2011). The nature of the work, particularly after

adopting technological changes, requires increasingly specialized labour not available outside of the well-educated labour groups often found in urban areas. However, these same employees are drawn to the services as well as opportunities to build social capital in the central regions and urban centres more than to migrating to the remote areas surrounding the mines with rather inhospitable climates, poor services, and insufficient infrastructure.[57] As a result, the mining industry has accommodated to commuter labour. Shifts have been adjusted to accommodate for several days spent continuously on-site followed by several days at home. Further, the mines have found that commuting is more cost effective than building towns and services for the mine as it reduces unionization, reduces conflicts, and simplifies mine closure (Storey 2001 ; Bell and Brown 2006).[58] But, the consequences of wages spent outside the region remove opportunities for further regional economic linkages.

5.3.2 Impacts on regional development and failure of local socio-economic adaptation to technology change

Ways to examine these effects are often studied through the spatial redistribution of the economic benefits of mining. A key method is examining the redistribution of taxation throughout the country which, done well, can improve national well-being and, done poorly, can incite tremendous conflict (Ross 2008). There are also several studies that have investigated the potential agglomerations created by the geographic concentration of the mining industry and the potential for spillover effects and impacts in other regions (Aroca 2001; Rosenthal and Strange 2004; Lagos and Blanco 2010; Aroca and Atienza 2011). Mining regions are found not to create large agglomerations or urban centres. This is particularly true in Chile where the cities in the northern two mining regions of the country

[57] Interview with 2 type B respondents and 1 type A respondent
[58] Interview with type A respondent

are intermediate in size and "occupy secondary conditions in urban hierarchies" (Aroca and Atienza 2011, p. 196).

The regions at large appear to benefit from the industry, but much like the US where the benefit goes mostly to individual states, these effects do not extend to the smaller geographic units of local mining areas (Rosenthal and Strange 2004). The large percentage of commuting labour contributes to the difficult local development around the mines when they spend their higher than average wages elsewhere. In 2007 the National Fund for Regional Development (FDNR) that distributes government funds to reduce regional disparities provided seven times less funding than the amount of money leaving the Antofagasta region with commuting labour (Aroca and Atienza 2011).While this spread of the income from mining demonstrates that the potentially positive externalities of mining have an extensive geographic reach, they also reinforce many of the "curses" of practices of extractive industries on local populations and the difficulty of skills improvement, diversification, and sustainability of the economies local to the mines.

This is most evident in an examination of the productive linkages created between the mining industry and the region of operations. The mining sector, while the most significant aspect of the economy of the Northern region II (56.3% regional GDP in 2008, (Lagos and Blanco 2010)) is not well connected to forward-linked economic activities in the region providing inputs to the economy. The main linkages are with the utilities sector, construction, and financial services, all directly increasing related to their work supporting the mining industry (Lagos and Blanco 2010). If the regional economic system were a closed-loop, that is the money earned in the region through production and by employees stayed there, there would be considerable benefits to development. However, given the large number of commuters and the out-flow of taxes distributed nationally, regional indicators of development and well-being are below expected for such high per capita income. This is particularly true for health

and education in the region, where overall rural conditions are poor and the indigenous populations particularly struggle (Lagos and Blanco 2010).

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The weakness of linkages to the local economy from the mining industry is politically fraught to correct. The state mining corporation, Codelco, contributes the most in taxes, even

though now producing less copper than the private sector. However, these taxes are for the national coffers and often do not particularly benefit the mining regions. For example, the city of Calama - in the mining dominated Chilean Region II built to support the giant Chuquicamata mine - was surveyed in 2007. The results indicated that no inhabitants were very satisfied living there and 30% were very dissatisfied (Lagos and Blanco 2010). Problems of pollution, public drug and alcohol abuse, and lack of green spaces were cited as reducing the quality of life. Yet, to address this community explicitly is difficult under the national welfare mandate of Codelco. Recent efforts to improve the region have included short-term donations and subsidies to encourage local housing.[59]

The private sector faces different challenges to address local development concerns. Private corporations receive several tax benefits created to promote foreign investment in mining and thus pay fewer national taxes. But, they do pay a mining patent based on land usage and this fee goes to the FDNR and it is received back to the local region. This has helped to offset the increasing demands of specialization from non-local labour. Since the early 1990s the private sector has increasingly outsourced specialized labour through contractors. The firm then has less involvement with the conditions of their employment and it is more likely that these employees are not from the local region. For example, Outotec is a firm specializing in SX/EW processes and working for Minera Escondida, but also using their expertise at several other large mines across the country (Outotec 2011). These contracting firms are a positive sign of the development of new businesses and the potential for entrepreneurship. They also further a model of the mining industry behaving more like a cluster industry with connections to the economy rather than a closed enclave of operations (Lagos and Blanco 2010).[60]

[59] Interview with respondent type A1

[60] Facts confirmed and supported by an interview with a type B and a type A respondent

In the desire for local development it is difficult to argue for a reduction of taxes or benefit to other parts of the country, especially when copper is strongly held as a national resource.[61] Aroca (2001) suggested addressing the failure of strong regional forward linkages by improving backward linkages. The recommendations largely pertain to increasing local content in procurement practices, including: developing medium and small supplier programmes, more local technical education opportunities, and moving more executives from Santiago to the mining regions. These activities are within the scope of corporate foundations and are already target projects of Fundación Minera Escondida, the foundation founded and supported by Minera Escondida.[62]

The ability of corporate foundations to serve a role in facilitating the formation of local, particularly backwards, linkages makes use of the gap in the coordination of extractive production and local development without disrupting the balance of traditional state income and benefits. Corporate foundations can work to build economic links to supplement activities and labour that no longer occur as part of the production process. The introduction of organizations, such as corporate foundations, working this way could affect the development impact, particularly for sustainability beyond the life of the mine, of the mining sector.

The changes in the mining technology that affected the social and development engagement dynamics also fit into a broader dialogue about changes in the spatio-temporal patterns of mining. Increasing specialization has made the process of production occur in segmented stages that is potentially separated by ownership and the time and place where it needs to occur (O hUallachain and Matthews 1996). SX/EW technology particularly redefined industry structure, in some instances with very large multinational firms increasing

[61] Interview with respondent type A1
[62] Interview with respondent type B

vertical integration of the process and gaining contracting specialists to work within the corporate structure. Yet, by SX/EW also allowing the opportunity for production at smaller sites and corporations without global infrastructure, it has altered the economy of scale necessary for production in both directions – both increasing the possibility for larger and smaller scale production. These somewhat dichotomous consequences of the technology both diminish the 'place' of mining as a very specific value to the area around it. When it becomes part of a larger infrastructure of production the local is overstepped, and when reduced to a smaller efficiency site there is a return to the enclave mentality of confined and internal demand (Ferguson 2005). These patterns of the exclusion of the 'space' of the local region in production furthers the effects of technology change by limiting the ability for benefits of mining to create local engagement and potential positive local development effects. It also creates another argument for a mechanism to re-craft this 'space' of the local and provide a means of integration into local economic systems. Corporate foundations may do this by fitting into the vertical hierarchy and coordination of multinational firms and into the local economic system to bring them together. In this way corporate foundations could potentially work to foster regional agglomerations though the existing network and conditions of the mining industry, and as a representative of the local 'space' create partnerships with central government funds. This process builds the much-discussed linkages, but also creates opportunity to build a greater diversity of economic activity beyond mining by investing in alternative economic activities and innovation, and fostering skill development and education.

In this example, the changes resulting from advancing technology in the copper mining industry have reduced the number and ways of traditional economic linkages between the mining sector and local region. Reduction in unskilled employment and less local social infrastructure for employees or support staff who largely commute to the mine site, has not

been replaced with alternative connections or mechanisms for local benefit distribution. The regional area is considerably less developed than the country at large and suffering its own resource curse. If the functions of corporate foundations are aligned to facilitate re-creating linkages between the mining sector and the local region, this regional curse, and the consequences of uneven national development potentially could be reduced.

5.4 Labour, Health, and Namibian Uranium Mining

Through a discussion of changes in the uranium mining industry in Namibia, this second example of the relationship between specific processes of socio-economic adaptations to changes in the technical process of the mining industry presents a more socially based example. In this illustration, technical knowledge of the health risks of working with uranium were confined to industry elite and mine officials. The mine labourers were denied information concerning their own health. The segregation of those with access to health and safety knowledge divided the white mine owners from the mostly black labourers and established walls between a 'secretive' mining industry and the general Namibian population. As a result, rather than producing beneficial linkages between skills gained working in the mine and its diffusion in the regions the workers came from,[63] the spread of skills and knowledge was greatly hindered by social and political paradigms that affected how technological knowledge was disseminated. The consequences of this knowledge divide are one factor in the uneven distribution of development benefit affecting the country regionally.

The experience of this separation between industry and the Namibian population secured the importance of access to knowledge and the education to interpret it as a necessity of

[63] Due to the distribution of the Namibian population because of the country's aridity, most people, and most of the mine labour, came from communities in the more habitable and wetter north of the country.

development and receiving benefit from the mining industry. The Rössing Foundation has recognized these needs and addresses its functions for promotion of knowledge in technical skill, math, science and English language learning. Its work has facilitated the distribution of the benefits of the uranium mine beyond direct employees of the mine by particularly working in the communities in the north of the country where many labourers come from.

The rise of interest in nuclear energy in the 21st Century due to concerns over the difficulty of obtaining fossil fuels, and concerns over climate change, have raised the demand and price of uranium. As a result, there is now money available for investment in the rather low-grade uranium ores in Namibia. With sufficient infrastructure for processing, and the use of open-pit mines – and as long as prices stay high – it is now economical to mine uranium in Namibia. There are now several new uranium mines under development in the area surrounding Swakopmund and Walvis Bay. The locals joke that the desert must be glowing with Uranium given the swarms of prospectors coming to explore mining options.[64]

The new assessment of mineral wealth is enthusiastically received as a path forward for the economic development of Namibia. Aside from tourism and coastal fisheries, the arid country has few major economic pursuits. The 'Uranium Rush' as it is termed is nonetheless considered a strategic opportunity and one that must be carefully managed in order to provide benefit. Measures to manage the development of the industry have thus far included a comprehensive strategic environmental assessment (SEA) for the region in which the mining will take place (Dalal-Clayton 2010). While these measures and oversight by the national government are working to prevent the resource curse in Namibia, they do not thoroughly appreciate the relationship between the regional cumulative impacts of the uranium boom and

[64] The exploration and development plans have slowed, but not stopped with the reduction in uranium prices after the Fukushima Japanese nuclear power disaster in 2011.

coordination with national benefit.[65] The activities of the Rössing Foundation's current focus will require transformation into a cooperative plan to coordinate the distribution of mining benefits from several multi-national firms.[66] The legacy of historical barriers between the mining industry and Namibian society threatens to greatly complicate such a process.

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5.4.1 Nuclear knowledge and Namibian Mine Labour

As in the copper industry, advances in the science of mining and processing uranium ore have changed the skills required for the work and make-up of mine labourers. However, the

[65] Interview with 2 type E respondents
[66] Interview with 1 type B respondent

specific focus of this section is on events rather unique to the uranium industry and significantly its role in the production of Namibian techno-politics. To do this, Rio Tinto's Rössing uranium mine, as the only long-term major uranium mine in Namibia, is the focal point. In the mine's early history, before Namibian independence, the Rössing mine was already the central focus of uranium mining, politics, and policy in Namibia. Its history and role in shaping the Namibian economy are intertwined with defining the significance of resource extraction to the country and the power of access to knowledge of the process.

This history begins with an understanding of the circumstances of labour at Rössing and the relationship between the mine and the state. This review moves from the historical events between the mine and its labourers to the current significance of the functions of the Rössing Foundation's operations. The course of uranium mining in Namibia has spiralled from a fight for inclusive knowledge and transparency *about* the industry to a demand for knowledge *from* the industry for use beyond it. The distribution of knowledge about the uranium mining process was the axis of power relations between the mining industry and the local Namibians, although it is has often been controlled by international participants with fickle intents. Uranium mining in Namibia prior to independence was enmeshed in international controversy over the health and safety of uranium mining, the politics of protecting labour, and the power of secrecy afforded to 'nuclear' interests (Roscoe, Steenland et al. 1989; Brugge and Goble 2002; Hecht 2009; Hecht 2010). In this way the genealogy of mining as a national interest in Namibia is very different than the context of the prominence of the mining industry in Chile. Controversy about the safety of uranium mining and the politics of subjecting workers to different dangers based on race, power and the privilege of access to knowledge about the mining process restrained the industry.

Unlike the discussion of the effects of the changes of technology in the mining industry that occurred within the space of the mining industry, such as SX-EW technology and

copper, the technology changes affecting uranium mining were developed in international scientific discourses that were carefully kept away from uranium mine employees. As more information was discovered about the dangers of radiation and research was conducted on mine workers in the uranium industry, those very workers were denied the information about their health and the risks they faced (Hecht 2009). Nuclear science, including the health risks of mining uranium, was addressed only by an elite group of scientists with little agreement on standards for the limits of exposure (Hecht 2009). Further, mining firms, and even governments, did not wish to inform workers and increase costs, raise fears, or present knowledge of risks without clear options to limit them.[67] Changes in acceptable levels of exposure were established away from the mines and only slowly made available for changes in industrial practices.

Particularly within Africa, new safety measures from international firms were rarely explained (Hecht 2009). At Rössing, although Wotan Swiegers, the doctor for the mine, (Hecht 2010 and personal interview) created one the most sophisticated mine health assessment programmes in the world at the time, the employees were not fully informed of the process or the results. It was claimed this information belonged to the mine (Hecht 2010). As a result, information and technology to address radiation risks were developing outside the mine. If they were brought to employees it was only through unexplained procedures.

The ability to maintain power through this knowledge was eroded when employees at Rössing, through their union, sought information about their health and safety on site through their own external experts. With Namibian independence, the value of the mine for the new country's development became more significant and mine labour activism became a national concern. The workers' union created partnerships with international experts to gain

[67] US Atomic Energy Agency also was involved in securing information about the risks to miners and not disseminating their knowledge about the dangers of radiation and radon gas Brugge, D. and R. Goble (2002). "The History of Uranium Mining and the Navajo People." American Journal of Public Health **92**(9): 1410-1419.

legitimacy in their search for information. Unfortunately, many organizations and research partners such as Greg Dropkin of PARTiZANS aimed to use the information about the mine to other ends such as his own ambition for the closure all of Rio Tinto Zinc's (RTZ) mining operations (Hecht 2010). For example, the report he wrote, *Past Exposure*, (Dropkin 1992*)* presented information to support the workers' arguments for radiation exposure, but went too far by arguing to close the mine – not the desired outcome for workers or the new nation. Hecht (2010) carefully documents the continuing process of creating, disseminating, and legitimating knowledge about the safety of the mine. In each iteration the international scope and the available scientific technology used was expanded. The power of these connections and scientific legitimacy empowered different voices to participate in shaping the role of the mine for the country at the intersection of Namibian labour and international corporate practices. Consequently mining uranium in Namibia was always a larger issue than that of the mining itself or the environmental and financial impacts and benefits it created. It was a anvil upon which to beat out, re-forge and again beat to re-form the nature of racial labour practices and corporate-political-power relationships performed in the mine's operations and international connections.

By engaging in this cycle of gaining power through knowledge, the employees slowly obtained the necessary skills for ensuing labour negotiations. They too entered the knowledge debate outside of the space of the mine. However, their involvement also brought the techno-politics of uranium mining back to the physical space of the mine (Hecht 2010), since research about exposure and health impacts was conducted on site and with the mine employees. Particular emphasis was placed on the nature of specific high exposure jobs and who was performing them for long-periods of time. These tests resulted in increased health and safety measures that required more skilled employees and increased mechanisation. Consequently over time there were fewer employment opportunities.

It is with this backdrop of diminishing employment, and yet increasing national prominence and expectation, that the mine recognized its integral part in the nation's development *and* stable national development as critical to its continued operation.[68] Although the establishment of the Rössing Foundation is credited to the mine leadership at the time of founding in 1978, it was designed to fill in the 'gap' of engagement that the government could not facilitate to distribute the benefits of the knowledge, expertise and funds the mine brought to the country. After the experience of debating the public knowledge of technical safety measures and the employees' role in scientific debate, skill in science and technology were considered essential to economic development and political participation. The early years of the foundation were a series of trial and error projects, but the objective that the foundation was working for national development was always clear.[69] National politics were at work to protect the existence of the mine as a national asset and it followed that benefit should be national as well.

Additionally, other than in Arandis, there were few people living in the area of the mine, and reaching the population centres where the employees came from was the best way to manage the desire to provide development support from the mine without offering direct employment. Access to economic opportunity was contingent on possessing new knowledge. The Rössing Foundation found its focus in providing support for learning in science, math, technology and English. Through this knowledge base, the same that was needed to gain a voice in the international conversation of mine safety and operations, could be greater access to not only mining jobs, but also to other economic activities.[70]

Given the remote location of the Rössing mine, and efforts to improve the quality of life for mine labourers, the town of Arandis was built to provide a home for employees. It is a

[68] Interviews with 2 type B respondents
[69] Interview with type B respondent
[70] Interview with type B respondent

microcosm of the changes to the mining industry and its relationship with the local community. The mine provided the town with most of its needs, including an education system for children and the import of goods and necessary services. With employees drawn from across several regions and with different language and cultural traditions, Arandis is a remarkable assembly of residents. Early on, the living conditions of the town exceeded opportunities for modern comforts found elsewhere in the country. Now however, with increasing specialization of mine employees and a boom of other uranium mines in the area, the town is no longer ideal.[71] Many residents of the new generation cannot get work at the mine and the town suffers from a lack of other economic activities. The grip between the town of dependent employees and the mine has released because of changes in mining practices and expanded mining opportunities, but also because of increased activism, knowledge, and external - including international - involvement. [72]

The future of Arandis and the process of creating an identity beyond the mine is now guided by the Rössing Foundation. Established in 1978 The Rössing Foundation is one of the longest operating institutions of its kind. In improving the self-sustainability of Arandis, it aims that the town will be self-sufficient by 2016. The Arandis Sustainable Development programme (ASDP), received 2.6 million Namibian dollars in 2010 (Rössing Uranium 2011). It is working within five key areas: agricultural development, capacity building to support the Arandis town council, community education, recreation and culture, and support of Arandis's economic development. There is also an extensive area of work through an enterprise development programme. This includes micro-credit, agricultural training, community based natural resource management (CBNM), and youth skills development. Education, formal and informal, underlies the growth of these programmes. For example, Arandis is home to the

[71] General sentiments from interviews with type B and type F respondents as well as participant observation in the Arandis FME office.

[72] Interview with type B respondent

Namibian Institute of Mining and Technology (NIMT). These same skills in math, science, business, and English language necessary to gain employment as a skilled mine worker are also necessary to create more diverse economic opportunities. These programmes represent the transfer of the need for education in Namibia as a way to increase involvement in the mining process to now move beyond it into other economic pursuits. This reflects the trend of national development.[73]

Global social and political change is considerably impacting Namibia's resource attractiveness. Interest in nuclear power as an energy alternative to fossil fuel intensive processes has renewed the search to source fuel grade uranium. Just as with copper however, ore grade and availability as a resource are variable with changes in technology and demand. The fragile Namib Desert is now crawling with international exploration teams. The influx into the nearby cities of Swakopmund and Walvis Bay has local residents both excited and anxious that their desert is now glowing with the prospect of uranium riches.[74] It is in this future focused context that the current effects of changes in the techno-politics of the uranium industry are affecting socio-economic engagement between the mine(s) and national development.

The 'Uranium Rush', as it is being called, is heralded as the answer to Namibia's need for a leading economic activity other than tourism. As the diamond mining industry in the south of the country is largely closed, uranium is the next best exploitable natural resource. While, this boom involves many multi-national corporations, it is also in part the first large-scale economic endeavour directed by Namibia as a country seeking its own welfare. Pride in the opportunity to do this is conflated with fears that in moving too quickly and without sufficient knowledge and planning for the influx of uranium mines, the country will be taken

[73] Information from 4 type B respondents

[74] Personal conversations with Swakopmund residents as well as an interview with 2 type E respondents

advantage of. One concerned resident expressed doubts about what would happen when the boom was over, including if the mines would then be sought out as sites for the deposit of spent nuclear waste.[75] Further, the other leading national industry is tourism, and protection of natural resources as sites of beauty and wildlife are potentially placed at risk with increased mining. Namibia is now challenged to create the right balance of industrial economic activities and substantial environmental protection.[76]

5.4.2 The glowing desert, national development, and regional impacts

Even with awareness of these issues, the potential future national dependency on the wealth of uranium is problematic across several levels of society. It is here that we return to the resource curse theory. Planning to avoid the resource curse will require answers to these questions: What other investments will be made outside of the uranium industry to create a diversity of economic activities throughout the country? How will the government manage the wealth immediately and in the long term? What employment opportunities does mining bring? What are the social impacts of migrant and sudden population increases in areas of mine activity? In order to maintain operating conditions and the political support of Namibians many of the changes to the quality of life wrought by the mines must be addressed. Critically this process must be conducted in cooperation with the state as the relationship between the mine and local communities and employees is complicated by the increasing number of invested parties. The previous model of mine and dependent town of employees largely unmediated by other interests created a type of engagement with the mine that is no longer feasible.

[75] Dinner conversation while traveling through at Bulls Creek, Namibia

[76] Please see Appendix 3 for photos of the Namibian landscape and specific geographical features threatened by mining activities.

The change that occurred as part of the simultaneous maturity of Namibia as a nation and the knowledge, dissemination and international involvement regarding the dangers of uranium mining and radiation exposure changed the power of the mining industry so that it can no longer behave as either an economic enclave or isolate the knowledge about industry from integration with its surrounding society. The historical techno-politics of statehood and extraversion to international scientists for legitimacy at the local level catalysed the need for a new approach to social engagement between mines and communities in Namibia. The legacy of this engagement model is now challenged by the involvement of an active state, several more multi-national mining firms, and many NGOs working in Namibia and serving as international watch-dogs. There are now new needs as well as opportunities for corporate engagement with the community. The primary focus of new policy is to avoid the creation of dependencies in the process of facilitating development. In doing so there is a need to coordinate the competition between the different groups involved for access to resources, employees, state granted benefits, international recognition and potential partnerships. These vied-for elements must be balanced against the negative impacts for which responsibility is a burden and avoided. This includes the use of water, wear on infrastructure such as roads, and especially the consequences of in-migration of employees and those seeking work in the support industries of the mine. Coordinating the responsibility of impacts is the new regionally specific "gap" in engagement between the mines and community.

Returning to the microcosm example of the town of Arandis, its path to sustainability offers indications of the coming needs of the country as a whole. On the small scale of the town, and with the help of the Rössing Foundation, linkages have been created between the economic benefits and stimulus provided by the mine to create small and medium enterprises. Often starting with the use of local content for aspects of the mine's procurement produces spillover economic benefit that can bolster the creation of non-mining economic activity from

capital available because of the mine. In Arandis, self-sustainability is contingent upon the establishment of such enterprises so that together, and in drawing in other businesses, they create an agglomeration (Rosenthal and Strange 2004) of economic activities independent of the mine. This is a very difficult process in an area unlikely to have sustained a population at all without the mine. To coordinate this all involved parties must contribute. It has been the role of the Rössing Foundation to coordinate their involvement.[77]

This is a similar, but different task than that of the foundation role in Chile to facilitate the linkage of economic benefit directly to the region of impact now that most money from employment and to the state is taken elsewhere. In Namibia the national development focus requires greater attention to the fundamentals of economic development and as such returns to the primary infrastructure of building knowledge through education. The current increase in the number of mines, corporations and competing interests contributing to the uranium boom bring the promise of development and benefit more than the single Rössing mine. However, it is also a greater threat to the long-term economic growth of the country if economic specialization is concentrated in the uranium industry and the benefits are not reinvested in additional human capital intensive economic specializations (Williams 2010; Murshed and Serino 2011).[78]

As organizations to fill the regional development-engagement 'gap', corporate foundation functions could fill three critical roles: 1) creating linkages to create industrial agglomerations around the mine, 2) expanding specializations, and 3) maintaining a financial resource base for the distribution and management of benefit beyond the life of the mine. For Namibia, the Rössing Foundation has set an example of the process of building linkages with

[77] Interview with 2 type B respondents

[78] Transparency and economic diversification against over specializing in one extractive industry are two of the current concentrations in research about the resource curse. For a wider history of the theory of the resource curse see: Auty, R. (1993). Sustaining Development in Mineral Economies, the resource curse thesis. London, Routledge, Sachs, J. D. and A. M. Warner (2001). "The Curse of Natural Resources." European Economic Review **45**: 827-838.

the mine and through them, and education promoting specializations beyond the mine. With the influx of mines the need for coordination will likely continue to reduce direct engagement options. Intermediary institutions will likely play an increasingly important role in sharing the responsibilities of the mines and accounting for the distribution of benefit to future generations.

In preparation for these changes, and in addition to the regional SEA, past experiences have created an on-going emphasis maintaining the public availability of information about the uranium industry development process. Wotan Swiegers, the first doctor of the mine at Rössing who created the first radiation exposure testing, now directs the The Namibian Chamber of Mines Uranium Institute based in Swakopmund. The institute is committed to health care, environmental management and radiation safety. It is based in Swakopmund next to a newly built health centre. The institute is a location of information access and dissemination about the safety of uranium mining. Out of the legacy of hidden and mis-information, transparency about the health and safety of the industry is a major concern of Namibian citizens. There is still an air of mystery about the industry and what people "really" know.[79] To provide answers and quell rumours there is an information centre at the Uranium Institute and a nurse available to answer related health questions. It is believed that the greater the available information about the process the less likely it is to create conflict.[80]

The techno-political debates, and particularly their international engagement, defined the history of uranium mining in Namibia and created the stimulus for this process of public planning, multi-party participation, attention to transparency and coordination of the expectations and responsibilities contingent with increased uranium mining. The combination of the experience of knowledge-power conflict, successful development engagement, and

[79] Interview with 1 type E respondent and conversations with local residents while living in Swakopmund

[80] Interview with type E respondent

management of a resource development boom, highlight a new significance for the transparency of knowledge. Not 'transparency' with the connotations of transnational governance and the EITI. Instead, transparency such that information about the mining processes - especially its effects on the environment, labourers, and local community - is easily available. Without full inclusion of the knowledge of the mining event, conflict born of existing tensions and uncertainty is likely. Knowledge is also the gateway to engagement. More advanced education increases the opportunity for employment in the mine and expands the possibilities to create other economic linkages with the sector.

The nature of this knowledge exchange must occur specifically with the mine (or in this case soon to be mines) and their current practices. This is thus a definitively regional or local condition for the distribution of mining benefit. Without it the anti-resource curse indicators such as alternative economic linkages, diversity of specialization, and human capital improvement cannot be facilitated. The regional performance of these processes are essential for the nation to improve overall development and distribution of benefit – to escape the resource curse. For Namibia and the historical patterns of uneven development furthered by racial and tribal conflict, equal access to knowledge of the mining industry's activities is also important to reduce uneven social - in addition to geographically uneven - development.

5.5 Conclusion: Institutional change, the political economy of mining, and the functions of corporate foundations.

These two complex examples of technological and techno-political changes in the mining industry highlight distinct changes to the socio-economic engagement of mining firms. Areas of particular concern are changes to the nature of employment, regional development and mine contingent economic activities. The arrival of SX/EW technology in Chile increased

the need for specialized workers and reduced the overall amounts of labour. It resulted in an increase sourcing of commuter labour from non-mining regions and greater use of contractors who work across several mines in one particular service. The loss of economic benefit from wages and population growth contributes significantly to slow regional development and reduced diversification of economic activities from linkages and spillover from mining. New efforts are necessary to facilitate alternative linkages with the mining sector and coordinate development initiatives in the mining regions with those of the more developed regions. These are issues with the potential to be addressed by the functions of corporate foundations.

In Namibia employment in the uranium mining industry was controlled by the power dynamics of a racial system of access to information about the health and safety of working conditions. Through both international developments in nuclear science and appeals to international experts to review and legitimize the science of working conditions at the Rössing mine in Namibia, a political process of power in technological information emerged. After which, the relationship between mining and employment was increasingly about establishing a new inclusive society with equal access to development opportunities. Only through the establishment of the Rössing Foundation, and then the independence of Namibia, did the relationship between development benefit and the extractive industry emerge. Now, with the on- going uranium rush, development benefit is at the centre of interest in the growing uranium mining industry. As the industry can offer limited general employment opportunities and will produced tremendous regional impact where it is concentrated, it is crucial to plan for and create ways to manage the relationship between the mines and contingent economic activities that can produce alternative economic activities nationally. The dissemination of knowledge about mining process and impacts to those employed by the mine and regionally affected is critical to allow any further mediation or distribution of development benefits. The hybrid form of corporate foundation could potentially facilitate

the dissemination of knowledge about mine operations as mediator between the mine and the public.

From these examples we return to the recent research into the resource curse hypothesis and the significance of institutional dynamics for managing natural resource economies. The instances of the responsiveness or adaptation of institutions in Chile and Namibia to changing conditions in the technical process of the mining industry reveals some unexpected outcomes. Chile, a country considered to have escaped the resource curse in part through sound economic policy, is struggling with disparities in regional economic development and a lack of economic linkages and diversification. Namibia, potentially positioned for future dependence on the uranium mining industry, has demonstrated a necessary and significant relationship between the dissemination and availability of information about technical mine processes to the regional population and the opportunity to further engage in activities and linkages to facilitate the distribution of economic benefit.

Three sites of failure to manage the resource curse at the regional level appeared in both empirical examples: 1) the difficulty of the creation of industrial agglomerations around and from potential linkages to the mining industry; 2) finding capital, financial and human, for the development of other economic activities from spill-over from the mining industry; and 3) issues of managing the transparent governance of socio-economic engagement at different levels of corporate involvement from international, to those with the state and the local community.

These particular sites of failure to transfer benefit from mining activities to the contribution to national development are best seen as ‘gaps’ in the socio-economic engagement of the mining industry. Several instances of corporate foundations have been presented in this chapter as organizations designed to provide the services, skills, and locational specificity to bridge ‘gaps’ of this nature. These gaps are also institutional

weakness or mis-coordination in the management of the national and regional political economies managing natural resources. Based on the nature of the examples presented here, it is possible that on-going problems of the resource curse are related to the under valued significance of regional benefit from mining operations as well as the nature of the impacts occurring there.

This chapter has examined the specific conditions of the failures of socio-economic engagement for the distribution of benefit from the mining industry in the institutional environment. It has also identified needed functions that could be performed by corporate foundations, and it is necessary to further examine their fitness for this purpose in a variety of ways. This includes how the mining industry adopts them, the process of their implementation, their ability to affect regional development, and how specifically this type of structure could assist the development of sustainability beyond the life of the mines. The next two chapters of the thesis examine these issues, and continue to pursue the overarching theoretical investigation of the thesis into the nature of organizations affecting institutional change.

6 Adaptation and Path Dependency: The Role of New Organizations in Institutional change

6.1 Introduction

Throughout its long history, the mining industry has drawn heavily on past experiences and patterns when determining policies for the future. While this is perhaps most obvious in relation to policies for production and the prediction of mineral prices, this penchant for projection and solutions to problems from an existing toolkit of experiences has also been used to manage changes in government policies and changes in social expectations. Composed of small independent to large multinational firms, the mining industry is a global operation, and as such, it presents an excellent example of industrial change as a global process occurring across many spaces and through time.

The challenges to the mining industry now are also global change processes about environmental and social responsibility. They push beyond the scope of past experience and expertise within the industry. Primarily growing from the international attention of activists, NGOs, and organizations championing responsible business, environmental and social conflict with the mining industry over the past twenty years has been made very public and demanding of change - increasingly spurring the mining industry to respond (see chapter 4). During this same time period, advances in the technical processes of mining have changed the industry such that it requires fewer and highly trained employees. This has further distanced mines from involvement with local populations (chapter 5). As a result of the combination of these processes, the mining industry now must substantially re-address its social responsibilities just as the industrial process is increasingly removing options for a local business employment relationship as a basis for engagement. Cornered by the demand

to change, the mining industry must adapt. This chapter examines this adaptation process. It investigates the relationship between adaptation and the history and management of the mining industry. Given the apparently divergent paths of social pressure and industry change, it is difficult to see how the mining industry could respond in keeping with its past experiences. The chapter questions the influence and persistence of path dependence in this adaptation process. It then investigates the relationship between path dependent evolution and institutional change. It does this through an examination of if, and how, the presence of corporate foundations within the institutional environment of the corporation affects change.

To do this, the chapter focuses on the rise of corporate foundations in the mining industry as a major visible response, and arguably adaptation, to pressure for change. The chapter begins by situating the mining industry within a path dependent theorization of change. Next, the processes of solution search and resource capacities within the mining industry are presented to structure the industry's propensity for and limits to adaptation. Following this theoretical exploration, several examples of the creation of corporate foundations, highlighting their rise in the Chilean copper industry, are presented and discussed. While the majority of examples fit well with a path dependent understanding of the mining industry, one example of a Chilean mining corporate foundation stands out as distinctly strategic. This example highlights an on-going practical and academic uncertainty regarding the relationship between evolutionary processes and path dependency. Further, it questions the dimensions of the window for innovation in these theoretical constructs.

The chapter closes with an analysis attempting to explain this emerging theme of uncertainty between adaptation and innovation, particularly within the context specific example of corporate foundations in the mining industry. The analysis focuses on elements consistent between all the examples. This includes: 1) the place specific development of corporate foundations - yet critiques of the regional application of path dependency and states

of equilibrium – and 2) the resource capacities of firms and the social capital of the region. The argument of the chapter is ultimately that the relationship between adaptation and innovation is not rooted in the phenomena representing the change – here the corporate foundations – but rather that adaptive innovations exist contingent upon the processes behind their establishment and management. Innovative strategy is not marked just by evolution within a part of a heterodox corporation still displaying an overall path dependent model of the corporate evolution. This strategy must be embedded across the organizations of the corporation. In this way strategy is distinct from an adaptation for survival that, crutch-like, occurs in just one part of the organization.

6.2 Evolution and the Mining Industry

To further understand adaptation in the mining industry, it is important to see how the mining industry itself has 'evolved'. Even keeping to the rather recent three hundred years of history, changes in the mining industry are marked by events and 'shocks' to technological knowledge and social systems that have increased the scope and complexities of the mining process. As previously stated, recent changes to production technology, and the growing interest for and advocacy of social responsibility, has punctuated this equilibrium in the industry and is forcing adaptations (this context is examined in the preceding two chapters). These are both endogenous and exogenous 'shocks'. Following an evolutionary theorization of change in the mining industry, the new selection filter - environmental determinant of survival - is society's observation and action towards mining operations. 'Society' as an inclusive term for stakeholders, shareholders, investors, transnational governance, activists, local populations and so forth is increasingly using a multiplicity of 'powers' to grant or deny social license to operate (Nelson 2006; Howard-Grenville, Nash et al. 2008). As a boom in mineral prices continues to grow the industry, it also is drawing operations to increasingly

remote locations and further heightening both the difficulty and significance of obtaining a social license to operate. Achieving and maintaining social license to operate is now a field of competition for survival in the industry. Firms with a sound reputation and policy for social responsibility become choice operators and partners in new projects. They survive.

Having established a structure of evolutionary change in the industry, we are brought to the process of adaptation internal to firms. Assuming path dependency also within the firms of the mining industry, the search for an adaptive solution is informed or guided by past responses. Unfortunately, past responses to social issues have largely been contained within the scope of the direct profitability of the mine - such as wages and working conditions. There is little history addressing social issues outside the purview of mine labour management. Firms increased philanthropic donations to communities affected by the mine, and engaged in partnerships with government programmes, NGOs and development organizations to help fund the practices of their respective expertise in areas affected by the mining industry. All of these approaches to social responsibility were already in practice amongst pockets of more precocious, normatively socially responsible firms. But, each of these approaches only provided a limited involvement between the mine, its business, and its relationship with society(MMSD 2002). Further, a multitude of firms all drew on these same approaches, providing very little variety and differentiation for competition.[81] This lock-in of models to address social responsibility across the industry reached a critical mass (Witt 1997). Firms remaining within the lock-in technologies of distanced engagement with social responsibility are missing competitive opportunities for enhanced performance. Adaptation to address social responsibility within these lock-in approaches is incomplete and/or ineffective.

[81] There are research fields especially espoused by Porter focusing on CSR as part of the firm's skills, for their competitive advantage and "shared value" with society.

In this metaphorical relationship to the idea of evolution, the history of the mining industry also fits well within the discourse of evolutionary economics (Alchian 1950; Nelson and Winter 1982; Witt 2003). Since the turn of the twentieth century (Veblen 1898), and cropping up in accounts of economic processes and change (Schumpeter 1987), the relationship between the process of evolution in the natural environment has been used as an extended metaphor, as methodological heuristics (Nelson and Winter 1982; Nelson and Winter 2001), and ontological conceptualizations (Hayek 1971; Hayek 1988; North 1990; North 2005), all to provide analysis to economic phenomena (Witt 2008). Critical to these discussions, just as it is central to the biological discourse of evolution, is adaptation (Elderidge 1995).

Adaptation is the explanatory process for the evident changes from one state of an organism or institution to the next, and is itself not deliberate or strategic. Encompassing the biological processes of natural selection - such as blind variation, selection and retention (Witt 2008) - evolutionary economics uses these as heuristics for theorizing change. As a result, models of adaptation conform to the circumstances of their processes, including periods of stasis and punctuated equilibrium (Elderidge 1995). Much of evolutionary history indicates that adaptation does not overwhelmingly occur through incremental change, but "far from being inevitable, adaptive change comes not with the mere passage of time, but seems to be concentrated at particular times and places with the history of all lineages. Adaptive change more often than not seems to come as discrete events in evolutionary history" (Elderidge 1995). Such events in evolutionary history are arguably mirrored in economic change. Excepting the need to respond to changes in social requirements or technological change, it appears the mining industry has largely operated in stasis (Lynch 2002). The current call for social and environmental responsibility for the mining industry now constitutes a shock, triggering adaptation.

Within an evolutionary approach to economic geography - and intermingled with evolutionary economics - the concepts of path dependence and lock-in are staples to account for history and the bounds of adaptation (Hall 1994; Martin and Sunley 2006; Martin 2010). Path dependence suggests that an industry's past, including its choices of technology, locations, competencies, labour, and even learning practices, is "embodied" in its present decisions and directions (Walker 2001). It is considered a dynamic of cumulative causation conceived as the effects of increasing returns (Arthur 1994) and systems moving with their own historical momentum (Scott 2006). It is also seem slightly differently as network externalities (David 1993). Lock-in is often considered a consequence of the cumulative causations of a path dependent industry or region and the related self-reinforcing expectations (David 1993; Arthur 1994; 1994) that perpetuate certain practices and technology over consideration of others.

Path dependence and lock-in are obvious models to investigate change processes in the mining industry for two reasons. First, biologically, stasis is often maintained due to habitat tracking - the movement of a species from one location to another during changing environmental conditions rather than physically adapting to new environmental regimes (Elderidge 1995). Yet, given the nature of mining as place specific, with an immovable location of operations, it makes adaptation necessary in instances of place based environmental change. Combined, the elements of path dependency and lock-in can help structure the scope and logic of response in a place-bound case of adaptation. Second, the 'shock' of present concern to the mining industry for social responsibility is focused primarily on the social impacts and the regional return and distribution of wealth from the mine. Framed this way, it is a problem of time and place specific adaptation to socio-economic challenges. Thus, investigating adaptation from an economic geography perspective, there is a direct connection between an academic interest in evolutionary,

institutional and relational approaches to economic studies and the strength of path dependence and lock-in to address the "context-specific, locally contingent nature of self-reinforcing economic development" (Martin and Sunley 2006). Particularly for our focus on a response with corporate foundations, and a situation aligned with what Martin and Sunley (2006) call "the 'quasi-fixity' of geographical patterns of technological change, economic structures and institutional forms across the economic landscape", there is alignment for analysis through theorizations of path dependency and lock-in. However, it is important to note that while the investigation of the evolution of corporate foundations is place bound, there is also a multiplicity of events of the phenomena occurring simultaneously on a global scale. Thus, there is an on-going coordination occurring across the globally interconnected mining industry. This situation complicates analysis through path dependent analysis, because these seemingly specific instances of corporate foundations are also components of unfixed 'building blocks' of institutions that are most advantageous if generic and replicable.

6.3 Processes of solution search and resource capacity

Unlike biological evolution, in a human driven evolutionary process stages of solution-seeking for adaptation are deliberately occurring. Following an evolutionary theory of institutional change put forward by Clark and Urwin (2010) change in the environment and adaptation by institutions is represented by a signal response model. Change in the environment serves as the signal for institutional response via adaptation. However, given institutions that are qualitatively different but perform the same tasks, "the impact of the signal-response mechanism is mediated by the inherited form and structure of the relevant institutions" (p. 65). Here then, path dependency is part of the adaptive response, specifically enacted by certain aspects of the nature of the institution and the reason for adaptation. The extent to which path dependency determines the search and response to an environmental

change is conditioned by circumstances of competition, the governance resource capacity of the institution, and perceptions of context.

Competition between firms in the mining industry occurs over access to sites, efficiency in production, and access to capital. Inertia to adapt is overcome since the environmental signal for social responsibility affects access to sites and capital, but inertia as lock-in determining the scope of available responses is still possible. The power of lock-in and extent of path dependent consistency in response resides in the resource capacities of institutional governance. These consist of time, expertise and collective commitment (Clark and Urwin 2008; Clark and Urwin 2010). Starting with the latter, collective commitment as organizational strength is critical in responses for social responsibility in its ability to communicate and coordinate the challenges to competition at the international headquarters level regarding access to capital *and* to the management of individual mines, and to future planning regarding continued access to sites. Management of these interrelated elements, although distanced by space and by governance of different expertise, is critical for a comprehensive institutional - not fire-stomping - response. This response is contingent on the coordination of existing expertise, but in this instance also on finding and/or learning expertise in the area of social development concern. As a process of great expense and time, this brings us back to the first capacity – time.

Time is not only instrumental as a budgeted resource of governance capacities, but also pivotal in perceptions of context and the environment in which change is taking place. As Clark and Urwin (2010) point out, drawing largely from research in the financial industry, there is evidence of difficulty determining the scale of an environmental change across time (MacKenzie 2006; Clark and Urwin 2008; Clark 2008). Within markets it is difficult to determine whether volatility will be short or long-term, and thus what actions are the appropriate response. For the mining industry the scale of investment in response to calls for

social responsibility is weighed against the degree and duration of public support and attention to these issues.[82] Drawn more broadly, perception of context contingent upon time is also situated within the chosen understanding of the scale upon which path dependency is acting. For example, path dependence viewed as institutional hysteresis is a process of co-evolution between institutions and the economy (North 1990; Setterfield 1993; 1995; 1997; Martin and Sunley 2006). Institutions in use provide stability for transactions of social agency and frame current economic activity. In this way, in a short-term time scale, they are 'exogenous' to changes in the economy. But, over time, the incremental changes in the institutions responding to their current interactions alter the institutions themselves. Over long-term time scales these institutional modifications contribute to changing the institutional structure of the economy in a way that is 'endogenous' to it, and by embodying the history of their performances in these recursive changes, are path dependent. For our use in investigating the theoretical logic of the mining industry's search for adaptive solutions, this distinction in the relationship between the time-scale and scope of path dependency would suggest that responses are executed with caution. This caution concerns the patterns of use that are generated, or more relevant here, the expectations created. In the long-term, through processes of path dependency, these uses and expectations may restructure the institution/(s) of the mining industry in non-deliberate ways, potentially creating undesired lock-in.

Specifically for the mining industry in the process of addressing social responsibility, there is the potential to assume roles of leadership and provision that are the remit of the state and the community itself. Creating organizational roles that foster paternalism by the mine quickly create lock-in to duties necessary for the sustainability of the society. In the establishment of such organizations in the past, the mine's objectives were to address relatively short-term consequences of social interaction during the course of mining activity.

[82] 2 interviews with type C respondents

However, there was limited recognition how the changing role and significance of these institutions to the affected society was changing the scope of potential economic opportunity and expectations for the society in the long-term. Some examples include the lack of growth in the government's ability and willingness to provide services, and a regional dependence on the mine as the keystone of economic activity – as the hub providing the jobs, homes and extended service industry in support of its operations. Notably within theses cumulating dependencies is often a lack of expertise to manage the consequences, and a lack of collective commitment to address the effects of dependency in the long-term. [83]Nonetheless, many modes of assistance and inclusion of the local society created by exogenous changes to the businesses and region serve over time as an endogenous transformation of the economic character and field of economic options for the region. In this way the multi-dimensional changes occurring over time from choices consistent with prior and path dependent options to address socio-economic engagement (particularly through philanthropy) create an economic lock-in of dependency on the mine's economy. This is a most precarious lock-in, given the magnitude of short-term change produced by a mine – inherently not a long-term event.

Perceptions of the context of change are further shaped by more factors than the confluence of collective commitment, expertise and time. The effects of and discourse about the bounded rationality of individuals and an industry are particularly relevant to shaping the search process within the mining industry. Bounded rationality (Kahnemen and Taversky 1970; 1974; Simon 1990; Schiller 2008; Clark and Urwin 2010), most reduced, is the human cognitive process, or rationality, structured within manageable variables for decision making. Extended to our interests here it suggests that decisions in business, such as solutions to the need to adapt, are actually drawn from a rather limited spread of options. In addition to the natural cognitive limitations to human decision-making, individuals' personal capabilities to

[83] Drawn from interviews with several type C respondents

synthesize complex information and incentives that may draw them to the decision of others (herd behaviour) further reduces their field of choice. In many ways bounded rationality is rather similar to path dependency, but specific to the human decision-making process. Pertinent to the mining industry, it is easy to see how the perceived possibilities for social engagement are narrowed by the judgments of the firms' competencies in these areas, and an unwillingness to take risks in ventures beyond this scope in ways inconsistent with their industry peers.

Even within the limitations of resource capacity and perceptions of context, outcomes are certainly not determined nor are adaptive solutions obvious. As Martin and Sunley emphasize, path dependency is "a probabilistic and contingent process" (2006). They quote North regarding the relationship between probability and current decision-making, who asserts that with path dependency "at every step along the way there were choices – political and economic – that provided real alternatives. Path dependency is a way to narrow conceptually the choice set and link decision-making through time"(1990). The agency this choice provides creates opportunity for two very different approaches and models of adaptation as signal response (Clark and Urwin 2010). First, simple non-reflexive signal response can conform to narrowed limitations of options in response to environmental change (Rachlin 2001). But second, even given narrowed options, adaptation "can be forward thinking and fine-tuned in relation to intended outcomes (now and in the future) being a strategic response to the limits imposed by existing resources" (Clark and Urwin 2010). Referring back to the potential strategic significance of short versus long time scales for the effects of adaptive responses creating exogenous or endogenous change, strategic responses can have long term goals such that in using the options available at the time, other resources may accumulate over time which could eventually provide a break from the 'inherited form and functions' (Bowles 2004; Lo 2004).

The nature of these limitations and the opportunities they present for agency and strategy are significantly different from random biological adaptation. Analogies to biological change and evolution are helpful, but incomplete even with complex elaboration processes over the last fifty years (Penrose 1952). Looking forward to analysis of the solution seeking process in the mining industry, three guiding evolutionary themes are consistently relevant, even when inclusive of the possibilities of agency and strategy. They are: one, that diversity/variety/differentiation are valued; two, the emphasis on the individual above the group and relationship to others in the food chain; and three, the need for balance between competition and stability between relationships (Elderidge 1995). Several theories attempt to synthesize the way factors such as these work together through interdisciplinary approaches to economics including sociobiology (Wilson 1975) and Lo's application to financial organizations that considers the success of governance as dependent upon its adaptive capacity (Lo 2004). Also, Beinhocker's 'complexity economics' pairing the agency of "agents, behaviour and endogenous institutional development" with a 'fitness landscape' descriptive of the context for agentive actions and their effects (Beinhocker 2006; Clark and Urwin 2010).

The range of factors presented here to situate the influence and bounds of path dependency in an adaptive search process, and the complex models attempting to incorporate these factors with dimensions of agency and strategy, are proposed to fit conceptually within Nelson and Winter's enriched search model (Nelson and Winter 1982). This model of search is determined by the topography over which search happens and the decision rules for the level and direction of the search. The factors presented above each contribute greatly to the structure of decision rules within firms and the process of exploring a new technology. However, the exploration of the technology over a topography that affects the outcome is context specific and necessarily situated and explored with empirical examples. This

necessitates the turn now to the mining industry and the process of the emergence of corporate foundations. Brought to this investigation are the complexities of the previously discussed defining parameters used in the creation of decision rules in the mining industry. They also affect path dependency in search processes. They are: first, the integral international entanglements of the mining industry and yet its spatially bound practices. Second, that in adapting towards social responsibility, competition and the 'filter' for survival are occurring in areas of expertise beyond the traditional competence and experience of the mining industry, including the parameters for determining and executing the search process - such as the recognition of effects over different time scales. Further, introducing a third component made visible in the empirical cases, that while pursuing variety as a competitive strength in the choice of adaptation – the adaptation will ideally have little to no impact on the highly efficient, industry consistent, productive processes of mining itself.

6.4 Corporate Foundations and Socio-Economic Engagement in Chile

The copper industry is one of the largest economic forces in Chile. The dominance of this industry and the technological changes it has undergone has contoured both the current physical as well as social landscape of the country. Development in Chile related to the copper industry has ebbed and flowed in relation to turbulent political ambitions (Rector 2003 ; Collier and Sater 2004). As a result, both the ownership of the mines and the flow of wealth from the mines have created a national co-identity with the necessity, power, and inequalities of the mining industry. It has created great discrepancies in the level of development and benefits from mining received by the miners and communities surrounding the mines, and the owners and government officials in the capital of Santiago (Lagos and Blanco 2010). The recent re-dominance of international firms in the copper industry brings

with it heightened sensitivity to the national tensions surrounding the benefits and impacts from the operations. Consideration of this tension, paired with increasing international pressure for corporate attention to social responsibility (see chapter 4) and the particular intersection of mine development and indigenous communities, have cast the context for the rise of corporate foundations.

Several of the multi-national mining firms operating in Chile have or are in the process of establishing corporate foundations. Most of their operations are within a few hours of Santiago, or in the northern two regions of Chile and the heart of the Atacama Desert. These foundations face consistent challenges to account for benefit from the operations to the surrounding communities and all those most impacted by the operations.[84] Further, in the Atacama locations, it is likely that the populations affected by mining practices are also already disadvantaged by the combination of location and ethnic or indigenous background that has limited their participation in the benefits of the general growth of the Chilean economy. To address these challenges and demonstrate benefit from the projects affecting these populations, the mining firms often go beyond contributing to the wealth of the nation through taxes and royalties, and focus on processes to distribute the wealth of mining operations specifically to the populations most affected and least supported by national programmes and investment in infrastructure.[85] The remote location of many mines in the rather inhospitable Atacama desert, a national growth focus on the central regions, and the intersection of many new mining operations with already threatened indigenous subsistence and ways of life are not particular to Chile, however; these circumstances are representative of some of the socio-economic conflicts produced by mining operations in many countries. Usually, they are found at stages of developing or emerging economies.

[84] Interview with type 2 type B respondents and 1 type A1 respondent
[85] Interview with 1 type B respondent and 1 type A1 respondent

Corporate foundations, including those initiated and operating more as trusts or funds, are able to focus financing and development programmes to specific regions and projects. Being local and specific, they are well suited to address issues of focusing the distribution of benefit from mining operations. From the corporate perspective, foundations enable direct mediation with populations dramatically affected by mining operations, and the most likely to challenge the firm's social license to operate. For the population addressed by the foundation, the organization is designed to exist beyond the life of the mine. The employment and partnerships of the foundation aim to provide economic and social programmes sustainable without the mine as well.

6.4.1 Adaptation: Survival and Environmental Response

Within Chile there are existing models of corporate foundations including the Fundación Minera Escondida, officially established in 1997; emerging models just underway within the last year and still in stages of developing their mission and projects; and distinctively, there are the foundations as part of strategic approaches to competitive advantage through expertise in the socio-economic contributions the firm can provide. The cacophony of these corporate foundation models now all jangling to engage as recognized social benefit providers is an excellent landscape, or topography as previously presented, over which to investigate their paths of establishment and adaptive purposes. That is, how they are evolutionary adaptations to address socio-economic conflict, and the extent to which, as adaptations, they do this within a path-dependent and lock-in constrained model of evolution for the mining industry.

Fundación Minera Escondida (FME) is the foundation for socio-economic improvement and benefit from the Escondida copper mine. Initiated by one of the largest foreign investments in Chilean mining since the state nationalized foreign owned mines, a

process concluded under the presidency of Salvador Allende before the 1973 coup d'état, Escondida is one of the world's largest open pit mines and is Chile's greatest copper producer. The investing partners are BHP Billiton (57.5%), Rio Tinto (30.0%), JECO (Mitsubishi Group and Nippon Mining and Metals joint venture) (10%) and the IFC (International Finance Corporation, the private sector lending arm of the World Bank, 2.5%, also now bought out by JECO 2 as of 2010). The organization of capital and site development occurred in the late 1980s and the mine began operating in 1990. Conditions of the IFC contribution to the project (initially larger and bought out by JECO and JECO 2 by 2010) included establishing contribution and benefit to the Antofagasta region where the mine is located. Even from the outset, the scale of the Escondida mine alone would create regional upheaval due to both its draw for employment opportunities and as a hub of profit in a long struggling region. The decision to address this through a corporate foundation responsible for the distribution of allocated social funds and management of projects and partnerships was the first of its kind in Chile.

Establishing the structure and legal status of the organization commenced in 1994 and FME officially opened in 1997. Its purpose is to create social innovation and networks to contribute to community development of the Antofagasta Region. An autonomous non-profit, FME receives funding from the mine, but is governed by a diverse board of trustees with representation from the mine, the community, and honorary members who are individuals of significance for projects and leadership of the Antofagasta region. Crucially FME seeks to create benefit and opportunity for the region separate from the mine. [86] They have engaged in several partnerships with the national government to bring sponsored programmes to the region. For example, FME is partnered with the national government initiative for early childhood education, and supports several nursery schools and infant day-care centres in

[86] Facts reinforced and complemented through an interview with a type B respondent

Antofagasta.[87] These centres participate in a national early childhood education and well-being programmes Chile Crece Contigo ('Chile Grows with You') put forth under the presidency of Michelle Bachelet. FME funding helped established the centres, but the government partnership will maintain their operations. Further sectors of involvement in the city of Antofagasta include the Centro de Entrenamiento Industrial y Minero (CEIM). This is a technical school in the city of Antofagasta offering training on equipment and engineering skills necessary for work within the mining industry. Other mining firms and equipment companies, such as Caterpillar, are also involved in helping to support the centre and sending and hiring graduated students.[88]

In addition to these programmes, FME has a branch office in one of the more remote regions effected by the mine, and near the popular tourist site of San Pedro de Atacama. In this area many indigenous communities are struggling to maintain their way of life as young men leave their families aiming to gain work at the mine. Discussed more in Chapter 7, FME has started to create an inclusive business programmes using capital investment from the mine to purchase local food and handicrafts in order to scale-up the businesses so that they can eventually supply the tourist industry. In this way they develop business that does not require the mine for its continued sustainability, and re-creates value for customs and products de-valued by the regional fixation on the economic opportunities from mining.[89]

The mission of these foundation led programmes is towards socio-economic development independent of the mine. This helps escape the potential lock-in of paternalism and dependency of short-term "mine economies".[90] However, given this objective for the relationship with society, what is the relationship between the foundation and the mining

[87] Interview with 2 type B respondents, also participant observation on site with FME and visiting the site and operation of each discussed programme. Conversation at each programme site contributed to better understanding their operations and relationship with FME

[88] Interview with respondent type E

[89] Information about the San Pedro branch of FME from 3 type B respondents as well as a site visit

[90] Interview with respondent type B

corporation? In seeking to address the local needs of distributing economic benefit, a capacity building foundation is certainly a solution to the external problem. But, in addressing the pressure upon firms to themselves demonstrate positive social engagement in the process of their work, what does the foundation approach achieve?

FME is adamantly independent from the mine itself. The good relationship between the foundation and community is not used to soothe conflicts or mediate in cases of unexpected impacts, such as the unexpected leak at the Coloso port in 2010. The foundation is "The Good Guy".[91] The mine has its own community relations group and human resources department to address direct impacts from mining operations and the employment of individuals from the local areas. This segregation of tasks emphasizes the importance of independence of the foundation to manage the funds as they feel best fit the needs and requests of the community, and not to serve the mine's interests. The unfortunate backside to the benefits of this separation for the foundation is that the same distance from the corporation limits the opportunity to create, affect or in some way participate in change within the corporation's socio-economic engagement.[92] Seen this way, the foundation is an additional institutional sub-organization in a corporation made-up of a complex heterodoxy of organizations. As an adaption, the independence of the corporate foundation and programmes to build capacity beyond dependency fits within the organizational path dependency of previous methods of philanthropic donations and funding NGO projects. What is perhaps different is the closer governance structure between foundation and firm provides the foundation greater access to assistance and knowledge of mine developments, while at the same time allowing the firm more risk management of the foundation's presence and activities.[93] As such, the foundation is consistent with a lock-in model of externalizing socio-

[91] Interview 7/1/10, respondent type B
[92] Interview with 2 type B respondents
[93] Interview with 2 type B respondents

economic engagement from the core activities of the firm.

However, the presence of a new organization such as FME, which through its considerable funding has created visible change and a positive reputation in the Antofagasta region, has reverberated back to the mining industry in Chile and Escondida in unexpected ways.[94] For the firm itself, the consequences of the past thirteen years of FME operation are hard to distil. Bluntly, the reputation of the organization is now part of the national co-identity with the necessity, power, and inequalities of the mining industry, but as a place where these issues are publicly acknowledged. This very public position and considerable operative presence of FME is accepted as part of all that is grand and unique about Escondida as the world's largest copper mine, along with being a great contributor to the Chilean GDP, and not least - visible from space – brings with it. However, several hours north of Escondida, BHP Billiton has a 'smaller' large copper mine also in the Atacama and above the port city of Iquique at 2,600m. Although also remote, this mine, Cerro Colorado, is located within a network of indigenous communities, several Aymara and Quechua villages in particular, dependent on a very delicate balance of the scant resources in the area for their survival. Here however, there is no corporate foundation, but only the Cerro Colorado human resource department team. It has selectively hired many social experts, individuals with psychology to development backgrounds, and more critically, leaders and youth of many of the communities surrounding the mine.[95] Aside from scale, it is important to investigate what is different with Cerro Colorado's socio-economic engagement without a foundation and that of FME with Escondida.

Arguably, the decisions regarding funding and investment do not benefit from the presumed independence (see next chapter 7) created by distance and autonomy of a

[94] Interview with 2 type B respondents

[95] This information about Cerro Colorado's human resources team and approach is from an interview with an A1 respondent, it was supplement with on-site visits to communities and interviews with two other A1 type respondents on-site at the community development projects they manage.

foundation "outside" the mine's operations. However, the necessary expertise for engagement and participation in the partnership for development between the mine, government and other social organizations and NGOs has been brought into the firm.[96] The region immediately surrounding Cerro Colorado suffers similar difficulties as that of Escondida. Also, the ambition of most projects is still to create sustainability independent of the mine. Increasing the level of engagement has become an increasing priority of the mine, consistent with the increased investment in corporate foundations at other mine sites.[97] The persistence of the in-house rather than corporate foundation model, particularly within the same multi-national firm at mines within the same country and facing similar problems, is perplexing. What is supporting and maintaining the divergent models, and to what effects?

Two ways to assess the difference are: first, what is the difference between the two models for the effectiveness of distributing benefit and managing local impact? Second, in what ways does the utilization of these different approaches affect the firm? These questions each necessitate consideration in the short and long term, within local and global spaces of operation, and regarding the opportunities their utilization creates and limits for the firm. While there is no consensus on how to measure the benefit of socio-economic engagement or know "if it is working", the projects conducted by Escondida and Cerro Colorado have received similar amounts of support and indications of progress.[98] Continued discussion of the metrics of evaluation of impacts of private sector led development is a further challenge occurring across a range of sectors. The second question, however, is most pertinent to the exploration of the choice of adaptive change model as part of the evolutionary transformation process, and its constraining factors, within the firms of the mining industry. Further, it necessitates a continuation of the theoretical analysis that allows for recognition of

[96] This perspective is the consensus of the A1 respondents interviewed (same as above footnote).
[97] Interview with A1 type respondent
[98] Interview with A1 type respondent.

corporations as composite institutions (Martin 2010) that may experience change within one institution and yet as a whole persist within a path dependent model of change. This is the same as presented earlier for the difficulties of applying path dependency and lock-in to understand the impacts of the presence of corporate foundations, and other types of socio-economic engagement, over time in a regional economy.

Applied to the relationship of the model of approach to socio-economic engagement and impact over the firm, the definition of composite institutions within a corporation is here structured such that a department within an organization of a firm, the HR department of the Cerro Colorado mine, is a weak separate organization in part of the heterodox make-up of the firm itself. However, the corporate foundation model, due to its independent governance structure and methods of distance and decision making with autonomy from the firm, constitutes a strong individual organizational component of the firm. Some differences between effects and possibilities for evolution in the firm between the strong (FME, foundation) and weak (CC, human resources) model are presented in the table below.

This table reflects the composite understanding from several different interviews of the performance of the two types of organizations serving to improve the distribution of economic benefit from the mine.[99] It attempts to draw out the core features of several conversations about the strengths and weakness of engagement in socio-economic development through delivery by corporate foundations or through the human resources department of a mining firm.

The construction of this table required carefully mapping the key points of the

[99] This table was primarily constructed through the compilation of several dialogues discussing this issue in interviews with 2 type B respondents and 4 type A1 respondents associated with the relevant organizations. However, the issue was raised again for discussion in interviews with 1 type E and 1 type D respondent as well as 2 type C respondents.

conversations. To make these very specific discussions relevant for a border discussion of the use of the two types of organizations the key points were focused to issues of the difference between their performance in the short-term/long-term and global/local. Short term is defined as occurring between the present and five further years of operation. Long-term is beyond five years of operation and critically looking toward the site-specific time of beyond the life of the mine. As these to dimensions help frame much of the analysis throughout the thesis it was hoped that the focus would make these points more relevant to the overarching narrative. Further, the individual factors have each been drawn from specific examples and presented in a neutral fashion here. This way they may more powerfully relate to the decisions many different firms are facing.

Table 4: Effects on the firm of the performance of socioeconomic engagement I: Examining socio-economic engagement through institutions of strong and weak organizational independence. (Compiled from the information of several interviews)

This table was primarily constructed through the compilation of several dialogues discussing this issue in interviews with 2 type B respondents and 4 type A1 respondents associated with the relevant organizations. However, the issue was raised again for discussion in interviews with 1 type E and 1 type D respondent as well as 2 type C respondents.

- = negative effect, + = positive effect

Effects on the firm of the performance of socio-economic engagement through institutions of strong and weak organizational independence	Escondida - FME *(Organization of strong institutional independence)*	Cerro Colorado – HR *(Organization of weak institutional independence)*
Short-term	+ new reputation and basis for partnerships, including the ability to draw expertise. - large investment/s with reduced outcome control (particularly at start-up).	- difficulty gaining partners to work with mine, the degree to which is contingent on the operations legacy, reputation, and degree of power over projects (specifically what is done and how) by the mine. + staged control of investment/s and greater control of resource use and access.

Long-term	+ the foundation institution can exist beyond the life of the mine for as long as the served community and independent governance requires and maintains it. Projects do not lose their organizing hub and cooperative relationships are maintained. - the firm does not regularly participate in engagement practices and thus loses the opportunities for other working areas to face challenges and potentially indirect change.	- only the established programmes and projects may exist beyond the life of the mine. The HR 'hub' for coordinating and directing them will not. + the close relationship of the HR department to the firm's operations and the need to continually communicate and work cooperatively to carry out programmes has the potential to educate other parts of the firm about socio-economic engagement activities and potentially affect their involvement and participation.
Local Operation	+ distinct regional focus and expertise without mediating MNC. Specifically regional partnerships for development likely. - the distinct identity of the foundation can distance or not allow consistency with the firm's objectives (mission areas and reputational benefit).	+/- perpetual identification of programmes with the mine. Commitment to the region is dependent on the dedication of the particular mine to engagement and the individuals involved in the process. + More easily in line with broad firm objectives.
Global Operation	Foundations, contingent upon management and incorporation within the larger organization (see next section), may or may not contribute to participative learning between sites and the creation of a strategy or firm wide specific engagement goals.	The specificity of projects and potential management approach intermeshed in the governance of the individual mine is not easily evaluated comparatively to other sites or replicated at other locations.

The different effects articulated above are largely consistent with the components of time, expertise and collective commitment key to Clark and Urwin's (2008) resource governance budget. Adaptation to address socio – economic conflict and distribute benefit conducted through the use of existing organizational features that are strongly path dependent, compared to those conducted through the creation of new organizational forms such as corporate foundations which are somewhat path dependent in mirroring the relationship with previous philanthropic partnerships, are both defined by the performative effects of governance resources. It is however, *the use* of these resources within the different adaptive approaches that determines their success in socio-economic engagement. Also of note for this discussion are the effects of the performance of the adaptive solution on the firm as a whole and the transformations and evolution that may follow.

It is important to note that this analysis is based from particular examples which indicate progress in their work and appear to function much as expected by their design.[100] However, the difference between the intended configuration of organizational independence through the governance structure and the actual enactment of independence are potentially very different. This is a persistent theme in the process of understanding the institutional challenges of private sector involvement in development and manifests in different forms in several other chapters.[101] Similarly, of relevance here is the adoption of corporate foundations by many other mining firms now operating in Chile. Collahuasi - an operation also in the northern Atacama near Iquique - has for example just established Sociedad de Instruccíon Primera (SIP), a particular foundation for educational improvement.[102] Even Codelco, the Chilean national mining corporation, is advancing with socio-economic engagement models

[100] Interview with respondent type A1 and type B

[101] Independence of operation and governance issues are further discussed in the following chapters: 7: hybridity and learning; what the objectives of/for the foundation and how do presumptions of independence affect performance.

[102] Interview with type A1 respondent

that are somewhat similar to the foundations of different firms.[103]

Both models help the firm to survive by adapting organizations and/or dedicating organizational focus to engage in providing socio-economic benefit. Neither is necessarily nor explicitly a tool for their competitive advantage. They are 'reactionary' responses to the environmental pressures (endogenous and exogenous) for change in the signal-response model.[104] Within the path dependent model of addressing socio-economic issues, and exercising caution not to create a lock-in of dependency on the mine for regional economic sustainability, corporate foundations and similar institutional organizations are an apt solution. If and how change occurs because of their use is a process of evolution that was not selected for the firm at large.

In contrast, the example presented next illustrates adaptation to address socio-economic issues with similar institutional forms, along equivalent time-lines and within comparable industry structure; but, this adaptive process is strategically using the necessity to adapt to include practices of socio-economic engagement as a strategy for competitive advantage. Within this example of 'strategic' adaptation the same questions of effect on the firm transformations apply. However, strategic use of adaptation prompts the question, is this use an innovation? Further, if so, does this break from path dependency or undermine the application of path dependency to articulate the situation? How does or can innovation occur within path dependent organizations and does this allow for or account for evolutionary change?

[103] Interview with type A1 respondent

[104] This is not to say that the nature of the projects performed and partnerships engaged in by the performance of these models are not potentially innovative or strategic.

6.4.2 Adaptation: Strategy and Competitive Advantage

Similar to BHP Billiton, Anglo American plc, a multi-national mining corporation, has been operating in Chile since the 1980s and owns, partners and operates in five large copper mines and associated processing facilities. Several of these including El Soldado (132 km from Santiago in Region V area of Nogales) and Los Bronces (65 km from Santiago and in the Metropolitan region), are mines that are closer to Santiago than the large mines owned by other multi-national firms. These mines face different socio-economic impact challenges than other Anglo American copper mines in Chile such as Mantoverde and Mantos Blancos, which are located closer to the other large copper mines in the northern desert regions of Chile. While problems of the distribution of economic benefit affect each, the contexts are different due to issues of population density, that when increased, intensify the effects of impacts, but also provide a greater local social capital from which to build new capacities. Anglo American addresses these different impacts through site-specific initiatives, but these stem from and are supported by nation-wide programmes under a corporate wide 'umbrella' policy for socio-economic engagement. A strategic commitment to the value of socio-economic engagement programmes for the performance of the corporation is clearly articulated.[105] It is stated on the corporate web site as: "Anglo American strives to be the leading global company and the best mining company in Chile. Our strategy is to become the investment, partner and employer of choice. To attain this aim, we drive the highest standards of operating safety and sustainability excellence, boosting corporate values and policies." (Anglo website: http://www.angloamerican-chile.cl/, accesses 7/2011).

The commitment to sustainability and creating local value expressed here is similar to that made by other large mining MNCs including those discussed such as BHP Billiton. This

[105] Interview with type A1 respondent

examination is not yet questioning the effectiveness of serving local needs and creating sustainability in the projects conducted, but looking at how different approaches to these same end goals are attempted and alter the organization and its structural and governance capacities to address socio-economic engagement. Ultimately, this contributes to understanding another part of the potential effects or evolutionary changes within firms and industries as a result of socio-economic engagement practices. The differences in what is here discussed as a 'strategic' approach by Anglo American in contrast to other firms in Chile is subtle, but significant.

For example, Anglo American like other firms has a foundation, The Anglo American Group Fund, run at the corporate level to contribute to NGOs and provide support to a range of service providers.[106] The Anglo American Group Fund is similar to BHP Billiton's UK based fund of 1% of pretax profits (based off a rolling three year average) and dedicated to social investments. Further, BHP Billiton has a clear code of conduct from which metrics of key sustainable performance objectives are derived from all areas of the business. Meeting these objectives is managed as a priority to the holistic operation of the firm.[107] However, the mechanisms of meeting these objectives have considerable site-specific discretion. The parallel level of sustainability and socio-economic engagement policy at Anglo American consists differently of the SEAT, Socio-Economic Assessment Tool-kit, and national funds such as the Chairman's fund in South Africa and a newly developing fund for programmes in Chile. SEAT, as an assessment programme, is conducted at each operating site and creates uniform standards of assessment and comparisons between programmes. The SEAT reports, conducted every three years at each site, also contribute to the production of a plan of programmes to address impacts and needs. The national fund model used to support these programmes is affiliated with specific countrywide organizations, for example in Chile with

[106] Interview with type A respondent

[107] Interview 6/18/10, type A respondent, and corporate website.

Un Techo Para Chile (A roof for Chile) and Enseña Chile (Teach Chile) and a micro-loan and business training programme Fondo Esperaza (Hope Fund). The partnership with Fondo Esperanza for the areas surrounding Anglo American mines is coordinated through the Anglo American EMERGE programme, which primarily helps the development of small and medium businesses through loans and education programmes.[108]

These programmes and the ambition to build capacity, social capital, and do so with groups of expertise and partnerships with government and organizations that will exist beyond the life of the mine is similar to those previously discussed, especially with Escondida. However, it is the structure used to coordinate these efforts across the firm that differentiates the effects of their use on the firm itself. The corporate commitment to the creation of the SEAT programme and the individual identity of the Anglo American Foundation, specifically across the nation as the operating theatre, forces integration of socio-economic engagement activities, and the cooperation necessary to conduct them, throughout many operating units of the firm. This is evident in the organization of jobs across the Chilean operations and frequently articulated by both the leaders of socio-economic engagement programmes and employees typically far removed from such projects. This is expressed in terms of being the "best" mining company in Chile or being the "favourite". [109] Further, these emotional metrics are linked to the ambition of increasing opportunities and site access within Chile. It is a way to expand the business and a 'strategy' for corporate growth.[110] By managing adaptation in response to a risk as an opportunity, this approach is perhaps more overtly evolutionary for the firm.

Please see the table below highlighting some of the effects on the firm from the different approaches to using corporate foundations as a) adaptations in ways that are

[108] Interview with type A1 respondent
[109] Interviews with several type A and type A1 respondents
[110] Interview with type A1 respondent

'strategic' and holistic and b) those that are reactionary and changes within composite parts of the firm. Note that this table represents a continuation of the effects of the degree of separation between foundation and firm presented above.

Similar to the previous table, this table is the result of the compilation of information from a range of interviews. The majority of interview discussions that contributed to the information in this table took place in Chile and with respondent types A1 and B. Upon return from the fieldwork and through follow-up this discussion was raised again with type A and type C respondents.[111] Much like the sister table in this chapter, this table has worked to make the differentiating features highlighted in the table relevant and applicable to the larger analysis. As such it has maintained the categories and definitions of shot-term/long-term and global/local operations.

Table 5: Effects on the firm of the performance of socio-economic engagement II: Institutional survival response motivation for corporate foundations vs. use of corporate foundations as part of a strategy for competitive advantage. (Compiled from the information of several interviews)

The majority of interviews discussions that contributed to the information in this table took place in Chile and with respondent types A1 and B. Upon return from the fieldwork and through follow-up this discussion was raised again with type A and type C respondents.

- = negative effect, **+** = positive effect

Effects on the firm of the performance of socio-economic engagement through institutions maintaining a firm's ability to operate/survival vs. as part of a strategy for competitive advantage	Strategic Competitive Advantage Innovation? Ex: Anglo American Plc., Chile	Reactionary Survival Consistent with Path Dependency? Ex: Preceding discussion
Short -Term	□ Provides guidance for project selection. Builds	□ Without coordination needs there is the potential for

[111] Interviews with 2 type A1, 2 type B in Chile. Also interviews with 1 type A and 2 type C.

	partnerships through conducting projects and the communication channels across different parts of the organization.	more immediate responses to particular needs/situations. □□□ there is no need to alter or involve other operating units in the firm.
Long –Term	□ Builds firm wide coherence to socio-economic engagement approaches. Consistent programme commitment (similar programmes) at many sites creates recognizable institutional values and standards of expected performance as future choice operators.	- Less institutional gain (coordination or competitive advantage) across the firm from investment in socio-economic engagement. □ No embedded commitments and great flexibility in project choice and autonomy.
Local Operation	□ potential for network of projects to collaborate and coordinate resources. More closely associated with the larger firm. - Potential limitations on scope of local problems that are targeted for engagement.	□□□ Very/only specific local objectives receive the most attention. +/- Individual sites have considerable autonomy from corporation as whole, but also potentially less guidance and access to the resources of the whole.
Global Operation	+ Promotes coordination throughout the firm and positioning within the industry based on advancing non-traditional metrics of performance.	+/- Does not dramatically affect the firm in obvious or immediate ways.
Opportunities	Makes necessary operational adaptation also for the advancement of both the individual performance of foundations as well as setting in motion attention to transitions in corporate identity and positioning within the industry.	Requires less coordination between projects and creates no interference in the existing structure of corporate objectives or management practices. Change or evolution, happens within one part of the firm first (composite) and then may or may not affect the rest.
Limitations	Commits the firm to performance standards, and the consequences of not meeting them. Further, in adhering to standards the firm may have to disengage or opt out of certain conflict creating	Misses an opportunity to maximize the potential of investments already occurring. Reactionary utilization of adaptive changes impedes holistic firm evolution (instead of composite)

	operations. In potentially breaking with a rather successful path dependent model there is a greater uncertainty regarding the risk of failure for this approach.	and arguably maintains path dependency.

These processes of change for the firm are occurring through the different coordination of the same types of organizations: corporate foundations. Yet, it is difficult to determine if the organizational form of corporate foundations, be they independently governed and strong individual elements in a heterodox corporation, or national in scope and integrated with the firm's competitive advantage strategy, are differently path dependent approaches to socio-economic engagement. If so, does breaking with path dependence for overt evolution constitute innovation? And, if not, what is the utility of articulations of path dependence, particularly of institutional forms, if it is not a determining variable in the scale of evolution of the firm – composite or holistic – or opportunity for innovation?

Within Chile, the use of corporate foundations by the mining industry is becoming well known beyond the mining community. For those who receive the benefits and participate in programmes to redistribute the economic benefit of the mines, the change and presence of these benefits is greeted, but with trepidation.[112] The relationship between the foundations and the firm is not of concern. However, the changing role of the mines and mining firms in Chile – where it is going and how long it will last – is of great concern.[113] It is mostly in respect to this public concern that there are findings of significance in understanding the relationship between adapting to address socio-economic engagement through corporate foundations and the effect on corporations. The way they are evolving and the types of institutions they are becoming are linked to the plans of individuals and regions

[112] Interviews and participant observation with respondent type F

[113] Interviews and participant observation with respondent type F, as well as the reflected understanding of community sentiment from 2 respondents type A1.

across Chile planning their own development and evolution. Will the national co-identity with the necessity, power, and inequalities of the mining industry come to address its own path dependency?

6.5 Analysis and Conclusion

6.5.1 The pieces in practice

In the first section of this chapter, many of the features of evolutionary economics and path dependency were presented. The mechanisms discussed each contribute to our understanding of how the mining industry is adapting to the need for socio-economic engagement. However, in the course of presenting the adaptation through the use of corporate foundations, in different forms and organizational structures, the utility of the explanatory mechanisms were challenged. In particular, path dependency and its consequences became unclear regarding the strategic or innovative use of corporate foundations. The aspects of evolutionary economics presented to structure the processes and boundaries of adaptive evolutionary change are revisited here to investigate the relationship between path dependency and evolutionary change.

The five aspects of the process of adaptation presented as components of evolutionary economics included: Biological metaphors, governance resource capacities (related to other discussions of competencies or firm capabilities), bounded rationality, agency, and the search topography. Unlike path dependency, most of these aspects were both apparent in the empirical discussion and in analysis offer some enhanced understanding and perspectives of the empirical processes. Going through them briefly, first the use of biological metaphors constructs the approach to addressing the risk to business and the process of change as an adaptation. Basic components presented earlier are the elements of variety, and selection. Extending the metaphor within the empirical discussion, several dynamics are possible. For

example, there is a difference presented between the type of organization used - corporate foundations -and the way they are used – independently, coordinated, strategically. Placed within a biological metaphor these differences are paired to the differences between genotype, the unchanging genes as the corporate foundation and institutional form, and the phenotype, the adaptable routine or culture of the firm that determines the use of the foundation (Nelson and Winter 1982). Extended to the evolutionary process, changes at the micro-level of particular organisms and genes is ontogenetic evolution and that of changing composition of the gene pool and ongoing changes to the population is phylogenetic evolution. The types of changes in the empirical discussion occur in the genotype when the nature and structure of what makes a foundation a foundation is changed. However, phylogenetic evolution is more pronounced in these examples as a result of the difference in routine and use of the corporate foundation. Through different organizational structures and objectives, the use of certain types of foundations is selected for, and more broadly, firms that succeed by using these foundations are selected for.

Introducing the role of path dependency with these evolutionary mechanisms, one can see how the persistence of certain genotypes of forms, such as the corporate foundation, is consistent with a path dependent model of institutions addressing the need to change from a choice of "genetic" options or forms already available. However, phylogenetic evolution requires novelty. The innovative way of strategically using corporate foundations could provide just this novelty in routine for selection. This creates tension with arguments for path dependency because, yes the model of using corporate foundations is consistent with the embodiment of historical practices carried into the future, but it fails to limit them or their effects upon the corporation. It certainly does not create a lock-in with their use or any equilibrium in development or practices of the mining industry (Martin 2010).

Moving on to address the utility of resource capacities, bounded rationality, and

agency, together it is again clear that individually they contribute to structuring the institutional evolutionary process and have particular tensions with path dependency. Much of the analysis of the empirical material presented in figures one and two identifies changes to the firm in different scales of time and space as a result of the use of effects of resource capacities. A key difference in the resource capacities of a firm depending on the way, or routine, in which corporate foundations were used included altering the parameters of bounded rationality and agency in the firm. Firm strategy explicitly inclusive of socio-economic engagement and expertise breaks from the traditional bounds of understanding a mining firm as not having, and distancing itself, from socio-economic expertise. The new parameters in which choices can be made, bounded rationality if you will, in a firm with a changed conception of its own capacities then creates new opportunities for agency and innovation. Such possibilities of evolution through innovation and novelty have the potential, particularly over time, to dramatically reform the organizations of a firm - if not the firm itself. Discussed at greater length later, composite changes within the organization help explain the appearance of path dependency and even instances of lock-in, and yet through the recombination of subtle changes in one part of the organization, for instance its governance resource capacities over socio-economic engagement, evolution of the organization as a whole occurs (Martin 2010). In such instances path dependency, while perhaps indicative of the trends and appearance of a firm, does not contribute to its on-going changes or the scope of possibilities for its future evolution.

Finally, addressing the search topography over which change and evolution occur, there are clearly different levels and layers on which the search is occurring simultaneously (Nelson and Winter 1982). The very reasons for change, or the adaptive process, are driven from global industry critiques, regional necessities, and firm cultural specificities. Economic geography in particular has focused on the use of path dependency for understanding regional

change (Martin and Sunley 2006) and the need for place-bound limitations on the search topography, the resources, and rationality to engage novelty. But, place–*based* situations, such as development in mining regions, is not place-*bound* when changes occurring at different layers of operation can effect its performance and contribute to its evolution in its same place. For instance, the way in which experiences at one site can move up to corporate headquarters and become a piece of policy that is then disseminated to local operations in very different locations than the first instance. Path dependency, and its production of equilibrium for the organization (Martin 2010), in this instance requires situations without layered and leveled operating areas coordinated across different spaces and time-scales.

Each of these aspects used to frame and describe the parameters of evolutionary institutional change is not constrained or changed itself by the presence or absence of path dependency in the organization undergoing adaptive change. The lack of clarity regarding the significance or utility of path dependence as an aspect of the evolution of institutions presents two avenues of explanation. One, bluntly, is path dependence is not applicable with evolutionary processes and its theoretical utility lies as an explanation for the failure of evolution and the perpetuation of lock-in. Or, more realistically, the use of 'path dependence' obliquely across many diverse empirical instances and by several disciplines is inadequate and requires objective specific re-conceptualization. Taking the latter and investigating the problems with path dependency and evolution – and specifically evolutionary economics regarding adaptive institutional change – the empirical discussion of corporate foundations is further used.

6.5.2 the bigger picture in which it all fits…

Unfortunately, the multiple conceptualizations of evolutionary economics itself create a catch in demonstrating how the presented empirical material relates to better understanding

evolution and path dependency. Witt (2008) has created a map of the main thrusts within the discourse. It is structured into four groups determined by the combination of the heuristic strategy and ontological stance used. These each include two variables: heuristics as generalized Darwinian concepts (variation, selection, retention) vs. generic concepts of evolution (novelty, emergence and dissemination), and ontological stance as monastic or dualistic. The groups are: Universal Darwinism (Darwin, monistic), Naturalistic Approaches (Veblen, Hayek, North – generic evolution, monistic), Neo- Schumpeterians (Nelson and Winter – Darwin, dualistic) and Schumpeter (generic evolution, dualistic).

For this analysis the differences between the views is not as important as an appreciation of the diversity of beliefs underlying not only the conceptualization of evolution (Darwinian or generic evolutionary concepts), but also the results of these differences for their use as tools of understanding evolutionary economic change. Principle for this investigation is the debated role of novelty. Stretching back to the inception of arguments for evolutionary economics by Veblen in 1899, novelty was an important facet of evolutionary change (Hodgson 1999). Further, he articulated an evolutionary struggle as that of man *in* society and the process of natural selection occurring primarily at the level of institutions (Veblen 1988). This is surprisingly similar to the findings in the corporate foundation cases that highlight the place of novelty more in the routines and phylogenetic process of evolution than at the individual level.

Hopping along to the re-emergence of evolutionary economics in the 1950s with Alchain (1950) and Penrose (1952), the initial contestations of evolutionary economics and the use of biological metaphors again comes back to the place for novelty. Or from Penrose: " To treat innovations as chance mutations not only obscures their significance, but leaves them essentially unexplained" (Penrose 1952 pg. 18, in Hodgson 1999, pg. 117). From this, the complexity of the field expanded dramatically, resulting in what we have above. Principle

modes of change centred on reducing or increasing factors of determinism (E.O. Wilson Sociobiology) and complexity (such as Nelson and Winter 1982 and an interactionist approach). Curiously, there is rather consistent stress in evolutionary economics on endogenous change as the source of novelty (Hodgson 1999). Yet, evolution is largely conceived of as occurring within 'open systems' inclusive of both endogenous and exogenous change. Further, within these arguments are varying assumptions of the efficiency of evolutionary processes as near optimal outcomes.

In relation to path dependency, the evolutionary economic focus on endogenous change does not fit with the model of path dependency creating periods of equilibrium and lock-in that requires exogenous shock or, generously, 'critical mass' to break. Nor does strong belief in optimal outcomes suit a path dependent evolutionary process which, given its focus on limitations, does not provide the diversity of selection for optimal outcomes (North 1990, Hodgson 1999). Finally, whichever conception of evolutionary economics is chosen, novelty, be it an ontological assumption of the evolutionary process or the key tenet on which selection occurs, is not accounted for in the static equilibrium based understanding of path dependency. In Martin's analysis based off the use of lock-in as the condition of path dependency, "the interpretation of lock-in as a process of 'convergence to a history-dependent equilibrium" severely constrains the path dependent model as a conceptualization of economic evolution (Martin, 2010 p. 9). The discordance of path dependency with the empirical application of determining aspects of evolutionary economics, and with the broad and deeply rooted conceptualizations of evolutionary economics, furthers the argument to re-conceptualize the specific relationship and use of path dependency with evolution.

6.5.3 of problems and possible solutions…

Having already drawn heavily on Martin's work to rethink regional path dependency to suit a more evolutionary model, key parts of his argument are extended to articulate a re-conceptualization of path dependency specific to its use with evolutionary economics. The most significant is the argument for composite entities that he draws from the use of path dependency in political science and historical sociology. The idea of evolution in composite entities was introduced in the empirical cases and examined by viewing mining institutions as composite entities made up of a heterodoxy of organizations including corporate foundations. Depending on the strength of the individual organizations and their relationship to the firm as a whole, the consequences of evolutionary change in the individual institution affected the whole to varying degrees. Argued by Martin (2010 pg. 13):

> "The argument is that, …most institutions are *composite* entities, made up of numerous micro level institutions: organizational elements, structural arrangements, sociocultural norms, and individual rules and procedures. Furthermore, it is possible for many of these institutions to change without necessarily requiring a change of all the remaining components. By this process, it is possible for incremental change to occur in an institution as a whole while it still exhibits path dependence and a significant degree of continuity. In addition, while the basic path dependence processes, such as increasing returns and network externalities, continue to prevent abrupt and radical shifts, incremental changes at the micro level can cumulate, resulting in fundamental institutional change over the long run, for example, in terms of structure, operation, scope, or even function."

This composite understanding of evolution within a path dependent system has the potential to create positive changes rather than a situation of path dependency that is constrained and static. Positive effects occur when processes of layering, conversion and recombination accumulate to change institutions over time (Martin 2010). With these processes, institutions are changing continuously and states of equilibrium and lock-in cannot operate in these situations as previously postulated for other technologies.

The empirical discussion of adaptation with corporate foundations is an excellent example of the scope for composite change within organizations that largely appear to exhibit path dependency, and yet are clearly evolving and not in an equilibrium state. Composite processes for positive path dependent evolution also allow for not only selection based on novelty, but the opportunity for that novelty to have endogenous and exogenous origins. Martin argues the positive view of path dependency calls for rethinking path dependency on evolution and not "inertia and continuity" (2010 p. 22). However, given the demonstrated scope of opportunity for change and innovation through institutions apparently consistent with path dependency - such as corporate foundations - there is an argument to further extend the rethinking of path dependency. That is, path dependency used within the context of evolutionary change dynamics should primarily be used as a descriptive mechanism and not a 'tool' or conceptual utility to understand the limitations of an organization or its future trajectory. Path dependency is useful to articulate the behavioural trends of an organization, but in failing to specifically incorporate or allow for novelty it fails to provide utility in the processes of evolutionary change. As such, its use for this sort of analysis is best corralled to the identification of particular behavioural trends, types of decisions, and generalizations of the external appearance of organizations.

6.6 Conclusion

The argument in this chapter is that yes, the use of corporate foundations in the mining industry exhibits path dependency in the choice of institution. Corporate foundations are known institutions to the mining industry, and in different structural forms and relationships to the firm have been used to address socio-economic engagement. But, moreover, this chapter agues that the consequences of path dependency in the choice of corporate

foundations as an adaptive response are easily confused and fractured in an examination of the process of evolution within the firms of the mining industry that are undergoing adaptation through corporate foundations. Path dependency is at odds with several aspects of evolutionary economics presented to help structure the understanding of evolutionary process. This is particularly apparent through the ability of these aspects to further understanding in empirical examples where path dependency only provides further confusion. Path dependency is also ill suited to core concepts of evolutionary economics, in all its conceptions, by focusing on equilibrium that requires exogenous change to break and by not accounting for novelty.

However, these failures are diminished significantly if path dependency is allowed/perceived to operate as Martin (2010) suggests of institutions that are composites, or here discussed as institutions composed of a heterodoxy of organizations. In this way the organization as a whole may exhibit path dependency, such as several mining firms' use of corporate foundations, but the change and evolution within the smaller organizations may cumulatively change the entire organization over time. The sub-institutional change in these models is open to novelty. Selection can then occur on the use of routines that encompass this novelty in innovative ways. The change of firm strategy to utilize the competitive advantage of desirable socio-economic engagement at Anglo American in Chile provides just such an example. Finally, departing slightly from Martin's emphasis on re-focusing path dependency to evolution and away from strictly a concept of continuity, this chapter suggests the utility of path dependency in the analysis of evolutionary processes is more descriptive than prescriptive or indicative of change processes. Further, when regarded as descriptive, path dependency is able to exist with novelty, including innovation. This intersection and its dynamics require further research.

This endpoint, while apparently removed from the original interest in understanding the

potential path dependency, and consequences of path dependency in the use of corporate foundations as an adaption to address the need for socio-economic engagement, does still provide some conclusions. It follows that in 'doing the same old thing' by using corporate foundations, the mining firms are not necessarily failing to evolve. The evolutionary effects of change within and because of the presence of corporate foundations could be significant. The degree of this change is based on the level of exchange between the corporate foundation, the novelty in the performances of the corporate foundation, and the way in which, potentially innovatively, these institutions and their novelties are brought into the firm's routine, strategy or culture. It is important to note that these adaptations are at the forefront of socio-economic engagement in the mining industry, and their actions are likely, and already are, being reviewed for replication and imitation by other firms and in other parts of the industry. Further, the need for firms to seek adaptive solutions to exogenous and endogenous changes contributes to creating continuing evolutionary effects endogenous and exogenous to the firms themselves.

7 Structure and Knowledge: Corporate Foundation Fitness for Regional Development

7.1 Introduction

Corporate foundations in the mining industry have arisen from the expansion of global standards and expectations for the role of businesses in society, particularly those affecting large multi-national firms. Pressure from investors and lending institutions expecting accountability for the long-term social and environmental impacts in areas of operation threatens firms' future access to capital. However, managing the operations and reputation of the firm is dependent on the relationship between the firm and the society in which it operates. As many societies become proactive about the imperative of harnessing the wealth of their resources for development, they are increasingly critical of multinational firms removing natural resources at the expense of their development. So much so, that as a result of a negative reputation or poor social and environmental performance, they may bar the firm's access to the resource or rescind what is considered its social license to operate. A firm's reputation in the societies in which it operates is thus intricately linked to the social benefit it provides. Managing the necessity of addressing the social concerns has led to many responses for involvement with the development sector and its expertise. These have included everything from firms administering their own development programmes, to 'outsourcing' the distribution of social benefit through partnerships with development organizations where they conduct programmes independently through corporate funding. Corporate foundations have arisen as a strategic means of delivering local social benefit, and to address the difficulties of mining corporations' obligation for social responsibility - yet functional

incapacity - to direct and sustain local development. These dual objectives for establishing corporate foundations underlie their institutional hybridity.

To address this and construct the analysis, this chapter uses a conceptual framework structuring two levels of the hybridity of corporate foundations. First, the macro-structural level of corporate foundations concerning not only their institutional structure, but also their use as a strategic innovation in an emerging economy for social responsibility. This is discussed through the facets of theories concerning the development of learning regions. The second level is the micro-performance level of corporate foundations. Here adaptations of the corporate foundation model, when adopted in different geographically and culturally specific locations, create unique - due to their embedded hybridity - pathways and spaces that facilitate new patterns of learning in the performance of distributing social benefit. These innovations are discussed in relation to the study of institutional knowledge and learning, from which parallels and disjuncture are recognized to extrapolate potential outcomes.

For empirical analysis, this conceptual-analytical hybridity framework is applied to two case studies of corporate foundations in the mining industry. Each case focuses upon the role of the corporate foundation in facilitating inclusive business practices between the mine and the community. The first case reviews the formal plan of Fundación Minera Escondida and the process of creating several businesses among the indigenous communities of the San Pedro de Atacama region. The second looks at the organic participation of the Rössing Foundation supporting the development of small and medium enterprises in the town of Arandis, in Namibia, by establishing working relationships with the mine. Both provide greater insight into understanding the direction corporate foundations are moving as innovations and institutions in the mining industry.

The chapter proceeds by beginning with a detailed discussion of the contexts crafting hybridity, including how this is marshalled to construct the framework of analysis. This

framework is then elucidated at the level of the macro-structural relationship with corporate foundations and the features of learning economies. Next, the micro-performance level of pathways and spaces of learning is examined. This framework is then explored against two case studies of corporate foundation involvement in inclusive business programmes. Finally, some conclusions from the empirical investigation are presented and situated in the context of their contribution to our current understanding of the operations of learning economies, patterns of learning and hybridity.

7.2 Hybridity and the corporate foundation

A hybrid refers to the combination of elements, or something that can exist in more than one way. The term hybrid is used to describe many things in the scientific field, from genetics to vehicular propulsion systems. In the social sciences there are hybrid cultures, hybrid organizations, and even hybrid conceptions of the world structured through our material and non-material understandings of it (Latour 1993; Whatmore 2002 ; Boyd, Henning et al. 2009; Burke 2009). The migration of use for hybrid concepts from scientific to cultural expands the understanding of hybrid from scientific and structural integrations to the abstractions of attitude, emotional and belief synthesis. Unlike the classic scientific hybrid - the mule - cultural hybrids can reproduce. A mule is the genetic combination of a donkey and a horse, itself sterile and incapable of further genetic innovation. Hybrid culture however does not require persistent creation from its original sources. The freedom of hybrid culture from its structural origins can and does reproduce and generate new innovations. Are these innovations still hybrids? Or are they an evolutionary outcome that is no longer of its parts, or hybrid, but newly one in itself?

Corporate foundations are composed of both structural and cultural hybridity. Structurally they are institutional hybrids of a unit of a multinational corporation and a development organization. Corporate foundations are a structural innovation, a mule if you will, designed to provide the same hybrid vigour or heterosis of different genetic, or here, institutional strengths. This innovation is a strategy to meet the demands of an emerging economy of social responsibility. But further, and essential to what has become their reproduction through adoption and adaptation by different corporations and mine sites, corporate foundations are also cultural hybrids. They integrate risk management and responsibility with creativity and opportunity. They also provided cooperative spaces for local and firm interaction and cultural intersections. This cultural hybridity is responsible for the unique conditions of learning and innovation through which corporate foundations create new practices for the distribution of social benefit. These aspects of the hybridity of corporate foundations highlight the strengths of hybridity for the logic of their creation and their performance. However, representatives of mining corporations and corporate foundations are reticent to acknowledge this hybridity of corporate foundations. Instead, they emphasize their independence and or the distinct nature of their work.[114] Within the industry they are not promoted as composite structures. Is this emphasis moving beyond the hybrid objective origins of corporate foundations an accurate assessment of a resultant "new" institutional structure? Or are other conditions of hybridity and the particular demands, to which corporate foundations are a response, responsible for a conscious disassociation from the hybridity of corporate foundations and its associations?

To pursue this we can turn to Kraidy's cautious introductory words about cultural hybridity: "Hybridity is a risky notion. It comes without guarantees. Rather than a single idea or a unitary concept, hybridity is an association of ideas, concepts and themes that at once

[114] Interviews with respondents type A, A1 and B

reinforce and contradict each other" (2005). The ability of hybridity to reinforce the beneficial aspects appears clear in our first discussion of the hybridity of corporate foundations. It fits with positive connotations of hybrid cars – in being able to do two things, such as have two fuel sources, it has broader functionality than either one alone. So why is the rhetoric surrounding corporate foundations evasive about their hybridity rather than using it as a rhetorically persuasive device? Is the association of contradictions too great? The strategic objectives for corporate foundations arose because of inherent conflict in the presence and operations of mining operations in developing communities. Drawing attention to the intersections and hybridity of corporate foundations, even hybrid strengths, perhaps gets too close to drawing attention to the often grave intersectional weaknesses between the demands of the corporation, its operations and society.

This logic is perhaps not unfounded. Particularly in studies of hybrid culture, many argue that hybridity does not foster positive compromises (Werbner, Pnina et al. 1996; Bhah and Coombes 2000). At best a palliative synthesis is created. Worse, the hybrid loses and negatively distorts the significance of its original elements or it fails to ever adequately execute or embody both. Research of instances and forms of hybridity, not taken as normatively beneficial, is particularly prevalent in postcolonial studies. Bhah and Coombes (2000) raise the range of culturally situated interpretations of hybridity including its application to individuals of mixed racial backgrounds. Interlaced with different historical periods, mixed racial backgrounds and hybridity have been attacked and diminished for not maintaining a value of 'purity' or celebrated for manifesting multi-culturalism. The negative or positive construction of hybridity -seen here through time and different places of culture - is a very powerful signal influencing the extended positive or negative construing of the elements or process of the instance of hybridity. Continuing to question not only the context of discourses shaping hybridity, but also the direction from which it is viewed, there is an

interesting discussion of the application of postcolonial understandings of hybridity to international management practices (Frenkel 2008; O'skazanc-pan 2008). Frenkel draws on postcolonial theorist Homi Bhabha (1994) to articulate international management's engagement as a space of hybridity on the sites of (colonial) contestation. Furthering Bhabha, Frenkel details a "liminal space" or third space, as the multinational corporation (MNC) that produces constructed hybrid identities. Rather than seeing the adoption or mimicry of new management systems as a hybrid compromise directed by the MNC, he highlights the agency of the local culture in resisting complete adoption. Diverging from his argument specifically, we can focus on the interactions of hybridity as power or resistance or compromise for a purpose. Hybridity in each of these facets is contingent on its directionality and motive. From these arguments it follows that the hybridity of corporate foundations is perhaps not a prominent part of their presented identity because they may possess a complicated and negatively perceived hybridity. For example, if the dominant motivation for hybridity is perceived as firm strategy, not social benefit, this structure's hybrid nature could pose a high risk to firm reputation. The hybridity of corporate foundations as a strategy of the mining corporation carries with it the positive and negative contextual values associated with 'strategy'.

In contrast, efforts to move away from descriptions of hybridity may indicate an effort to avoid attachment with just these dialogues and maintain a view of corporate foundations as innovations holistic in their identity and purpose. The mining industry has not made the association, hybrid organizations – especially those involved in social development roles - resemble what are increasingly considered organizations of the third sector or space (Minkoff 2002; Menard 2004; Edwards 2008; Evers 2008; Boyd, Henning et al. 2009; Bills 2010). Building from Bhabha, the third sector is the intersectional space of institutions and culture. Chew (2010) focuses on the community interest companies of large charitable organizations

in the UK. She describes their hybridity as an extension of the charity's public service with its own strategic position and the tensions this creates. Other examples include businesses modelled on the values of environmental leadership (Boyd, Henning et al. 2009) or social enterprise (Edwards 2008). While it is clear that organizations in some way identifiable as hybrids are replicating – or reproducing the form - there is no model or empirical definition of third sector organizations. Valentinov (2009) seeks clarity by addressing the broadest classical encompassment of third sector organizations, such as cooperatives and trade unions, and identifying J.C. Commen's transactional typology. The typology of factors: legal equity between participants and the common interest of the participants, leads to a suggested hybridity between markets and hierarchies. Further in pursuit of definition for the third sector (2005) concentrate on the boundary issues of organizations at the borders of the state, market and community. They argue the lack of clarity at these borders creates the hybrid third sector, and its rationality is based on being something other than state, market and community and its ability to cope with the changes this presents. The third sector hybrid organization, as presented here, is similar in function to the use of a new technology for a variety of applications. While corporate foundations as innovations holistic in their identity and purpose may be akin to these third sector organizations, their independence may inhibit the transfer of value from their performance back to the mining corporation, thus losing the beneficial elements of using corporate foundations as a strategic technology.

7.3 Macro-structural Hybridity

To investigate the development of corporate foundations and potential for future breakdown due to hybridity, or a transition into a new form, requires further pursuit of the dynamics of the relationship between their hybridity and role as innovations – potentially as a

strategy and or technology. This is first conducted at the macro-structural level of their hybridity. The structural hybridity of corporate foundations is leveraged from institutions at a distance from its operations. The form of interactions at the level of the local community and individual mine site are constructed by the corporate headquarters, investors, and politics of development. Please see figure one for a visual representation of the leveraged force of these institutional organizations at a distance.

At their intersection, they are within an operating sphere of a regional community and economy. Inside this is a specific space of interactions between the mine, the corporate foundation and local community. This smallest space, an industrial district related to the infrastructure and needs of the mining operation, is the most greatly influenced by the presence of the external culture, technology, and people brought in through the arms of the corporation and development projects. Processing facilities for the mineral are established, bringing smelters, leaching fields, administrative offices, equipment maintenance businesses, and specialized transportation networks for the movement of the mineral. Each of these processes requires individuals with specific knowledge skills, and facilities for these employees are constructed. The industrial district is supporting a localization economy. The skills and process on site all relate to each other but exist as a component of the larger global economy of scale for minerals.

These differences and specializations most often do not coordinate well with the surrounding regional or national community and its economic activities.[115] The square peg of the mining industrial district fits within the broader hole/whole of society, but leaves many gaps in fulfilling its expectations throughout the society. These are spaces of tension between the industrial district and the regional or national community. The local community surrounding the mine is often the most acutely aware of the differences, opportunities,

[115] Interview with respondents type A1, B, D and E

and disadvantages. [116] The broader surrounding community, disconnected from the specialization of the industrial community, has few opportunities for access and disengages with the industrial district area.

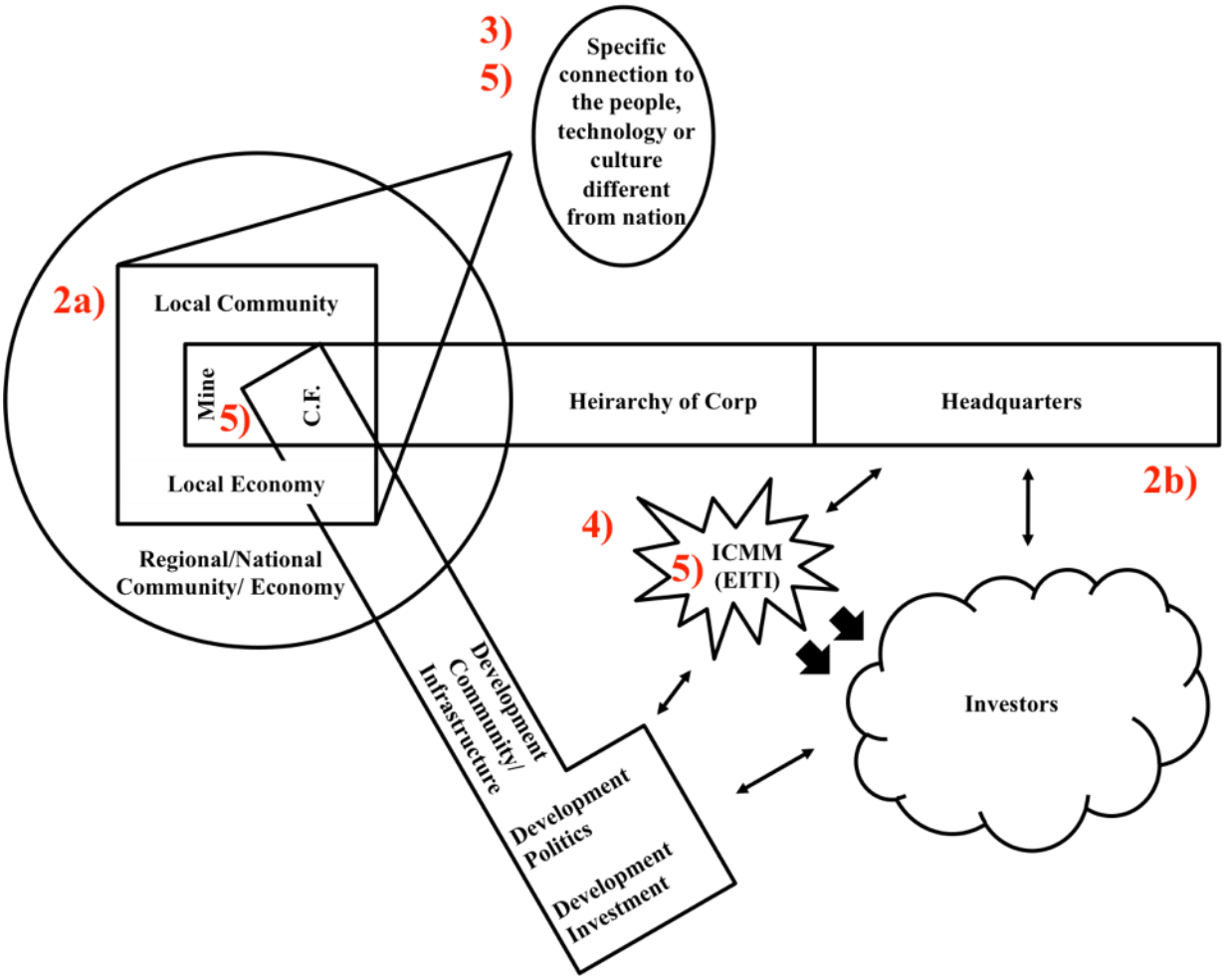

Figure 8: Macro-Performance level hybridity diagram

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[116] Interviews with respondents type A1, B and F

Until recently these gaps and tensions created in societies where mining occurs did not affect the operations of multinational mining firms. However, investor engagement with the development sector and the responsibility of corporations to the societies around their operations has changed this (see Chapter 4). To stay connected to their investors, mining firms must be close to the politics and practices of development. As seen in figure one, once removed from specific locations of operation, mining corporations and the development field diverge quickly. The distance between the corporation at its intersection with the community and its corporate headquarters creates leveraged power not only from the corporation to the community, but in reverse from the community to the corporate headquarters. Changes in the communities' engagement and orientation with the firm at a local level significantly affect the relationship and distance between the firm and its investors. For example, if the arm of the corporation within the local community is moved forty-five degrees counter-clockwise as a representation of a shift in attitude towards the firm and its local social license to operate, the extended firm is metaphorically moved a much greater distance away from the development field. As investors are increasingly gravitating to firms 'near' the values of development and responsible practice, the mining firm has also significantly moved away from its investors. Corporate foundations are a strategic link at the local level to lock the position of engagement between the mining firm and the development sector. Securing this position is constructed by the fusion of the institutional structures and practices of the mining firm and development institutions in a single, or as here argued, hybrid institution.

This structure raises interesting questions about its coherence with theoretical arguments for the creation of the structures of a learning economy. It is difficult to determine if difference between theoretical models and the structure presented here are due to the inability of applying the learning economy theory to social and development contexts, or from transitions in the actual nature of learning economy processes. This is most obvious

when trying to situate the integration of corporate and development institutions in corporate foundations in the local community and economy with the creation of a learning region. This created learning region does include the production of local business, the creation of which is often an innovation in itself, and the connections between these new businesses and the mine learning to benefit from engagement with locally established firms. The bound location of the mine and the surrounding businesses, the outreach to local systems of social capital, the interactive institutional learning between corporate and development sectors, and encouragement from the mine and local government constituting policy, fit the parameters of a learning region. But, extend the examination and this model presents challenges to much of the critical logical order that stabilizes the theoretical conception of learning regions.[117]

The first challenge is the constructed nature of the corporate foundation and mining learning region. Proponents of learning regions often cite the necessity of policy, government and overarching institutional support to encourage and direct the development of learning regions (Asheim 1999; Gertler and Wolfe 2004 ; Asheim 2009). However, coordination of existing social capital is not exactly the same as the creation of social capital for connections. Corporate foundations have access to the social capital network of the mine and of the community. In seeking to create engagement and benefit between the two, they help foster cooperative systems of interaction. Endogenous innovation does not occur because of the proximity of the community and the mine, rather it is the brokered result of the corporate foundation's involvement. The nature of this brokered interaction is critically different from other examples of the diversity of social capital because it contains few examples of encouraging 'ground-up' collaboration and innovation. Two parallel examples of the different constructions of social capital are often discussed when relating the significance

[117] For theoretical conception of learning regions look at literature beginning with Marshallian moving to – Lundvall Lundvall, B. A. and B. Johnson (1994). "The Learning Economy." Journal of Industrial Studies **1**(2): 23-42.

of the qualities of social capital for the successful development of learning regions. They include general differences between European and North American social capital as well as the distinct example of Third Italy and Silicon Valley (Asheim 1999; Gertler and Wolfe 2004). Asheim proposes European social capital is established through trust creating strength in social networks, while the North American model is more related to the quality of the knowledge infrastructure, such as the presence of research universities. However, as Bianchi (1996) highlights about Third Italy, its social capital did not spontaneously form a successful learning region. Governance structures and institution building were necessary to create the environment for firm development. The operation of corporate foundations to serve as the institution to foster learning region development is plausible, but difficult, as most developing areas where there are mining operations do not have apparent embedded (Granovetter 1985) social capital structures. This is often due to the disruption of the local historical social continuum because of the arrival of the mine. It is unclear, and would seem somewhat ideologically contradictory, if embededness can be created. But, if so, can corporate foundations be the locus of agency to do this?

Questions of agency present the second challenge to the use of the structural hybridity of corporate foundations to foster regional development as learning economies because of the location-specific intersections for business innovation they produce. Clark and Tracey (2004) argue that agency is undervalued in theorizations of learning economies, particularly in relation to understanding the significance of embededness. Choice of available partners and the nature of collaboration is partly contingent upon the agency of the institutions and the agency and cognitive abilities of individuals within them to make decisions. Acts of agency, to create change divergent from previous path dependency in particular, work best when they are consistent with consensus (Gertler and Wolfe 2004). Social capital is critical to consensus. The agency of the corporate foundation to foster a learning region thus is

contingent upon its relationship with embedded local social capital. However, reaching back to the negative dimension of hybridity, the industry led affiliation of the corporate foundation may encounter a social capital of agency based in resistance (Frenkel 2008). In this case the corporate foundation's strength from the vertical access to the market through the mine is undercut by the need for horizontal market integrations perhaps independent of the cultural intersections of the organizational culture of the mine.

The final challenge to the creation of learning regions through corporate foundations concerns competition. Learning regions have received such academic and policy attention because they offer a comparative advantage creating highly competitive firms. The dissection of their complexities attempts to understand the reasons and persistence of this place contingent success against the forces of globalization. Ubiquitousness (Gertler and Wolfe 2004) is just such a force of globalization that should be homogenizing components of firm competition, and yet the success of learning regions indicates a persistent "stickiness" (Malmberg 1997) of highly advantageous factors. Porter's extensive work on clusters (Porter 1998; Porter 2000; Porter 2001; Porter 2003) its critics (Martin and Sunley 2003), and more specific theorizations of territorial agglomerations (Storper 1997), focuses not primarily on the proximity and multitude of firms, but because of the coordination of these assets in the area in a way not easily replicated elsewhere. In the development of the region where corporate foundations operate, the creation and coordination of social capital for the development of a learning region is thrust back upon the mine as the defining territorial asset. The comparative advantage from which the corporate foundation can build is thus inconsistent with one of its primary objectives of providing economic sustainability for the region beyond the life of the mine.

Similarly, promotion of a learning region at all is questionable given the mission of corporate foundations. Given the frequent isolation of the intimate local community to the

mine, creating social benefit within the region based on advantages related to mining operations is not creating opportunities of access for other areas of the society or nation. Instead it perpetuates some of the regional economic disparities and national underdevelopment or resource curse dynamics prompting the need for intervention through the innovation of corporate foundations. The argument in this chapter is that this tension is due not to the structural hybridity of corporate foundations themselves, but to the associations and conception of their opportunities to facilitate firm development at the intersections of a regional location, and rife cultural and organizational hybridity.

7.4 Micro Hybridity

We turn now to the micro-performance level of analysis. In contrast to the preceding discussion of the structural relationship and spaces between sectors and institutions, this examination details modes and means of performance and learning how these structural relationships forge. Given the interest in the consequences of the hybridity of corporate foundations, this analysis magnifies the interactions around corporate foundations in the region of the local community and economy. Please refer to figure 2 for a visual representation of some of the patterns of flow occurring in this space. The dominate features of this system are the mine and corporate foundation. Here they are represented as individual entities performing, not in isolation, but distinct from their international corporate and development extensions. The relationship between the mine and the corporate foundation at this level is most active directly between the two structures.

In the mayhem of activities and interactions connected to the performance of the mine and the corporate foundation, it is difficult to see the interactions particular to innovative cooperation between the mine and corporate foundations. The pathways and spaces highlighted by the thick green arrows identify areas of innovative learning. These

innovations are related to the role of the corporate foundation generating access to the opportunities provided by the industrial districted created by the presence of the mine. This is one of the most significant activities of corporate foundations and is illustrated and tested against empirical cases in the next section of the chapter. They are not, however, the only type of innovation developing distinct learning pathways and spaces.

There are three areas where these processes are occurring, and they share some common features. Distinction between pathways and spaces of learning integration is difficult. But, pathways have directionality. This is not only as movement of knowledge horizontally between organizations, but a vertical movement of knowledge to codified and explicit representations in contrast to the circulating implicit performances occurring in spaces. The pathways are conduits of the explicit knowledge created in the spaces of interaction between forms of implicit knowledge. In this way the macro structure discussed before accesses these spaces and transmits the knowledge created between the corporate foundation, community, mine and other parties outside of the local region. But, these structures of knowledge transfer occur and circulate within the local region as well. It is in this structure that the intersections of performances produce cultural hybridity. The building components of both these structural pathways and cultural spaces are forms of explicit and implicit knowledge. While harshly outlined by confining explicit knowledge, or codified information, to pathways and implicit, or tacit, unspoken knowledge, to the spaces of intersection - it is the process of transition between these two forms of knowledge that make the identified spaces significant. Three different features of the relation between explicit and implicit knowledge are explored separately.

First, we look to the space where corporate foundations draw engagement with the government. The connections forged by the corporate foundation to the local and national government primarily operates at the local level, but has repercussions extending throughout

and beyond the locations and projects of interaction. Outwardly addressing failures of the economic distribution of the benefits of mining, corporate foundation partnerships with government fight the resource curse (Auty 1993) by building mechanisms for relations between different co-existing forms of community. The hybrid nature of corporate foundations gives them access to communities formed by the network of actors, existing community structures, and some agency as an institution intervening in the potential

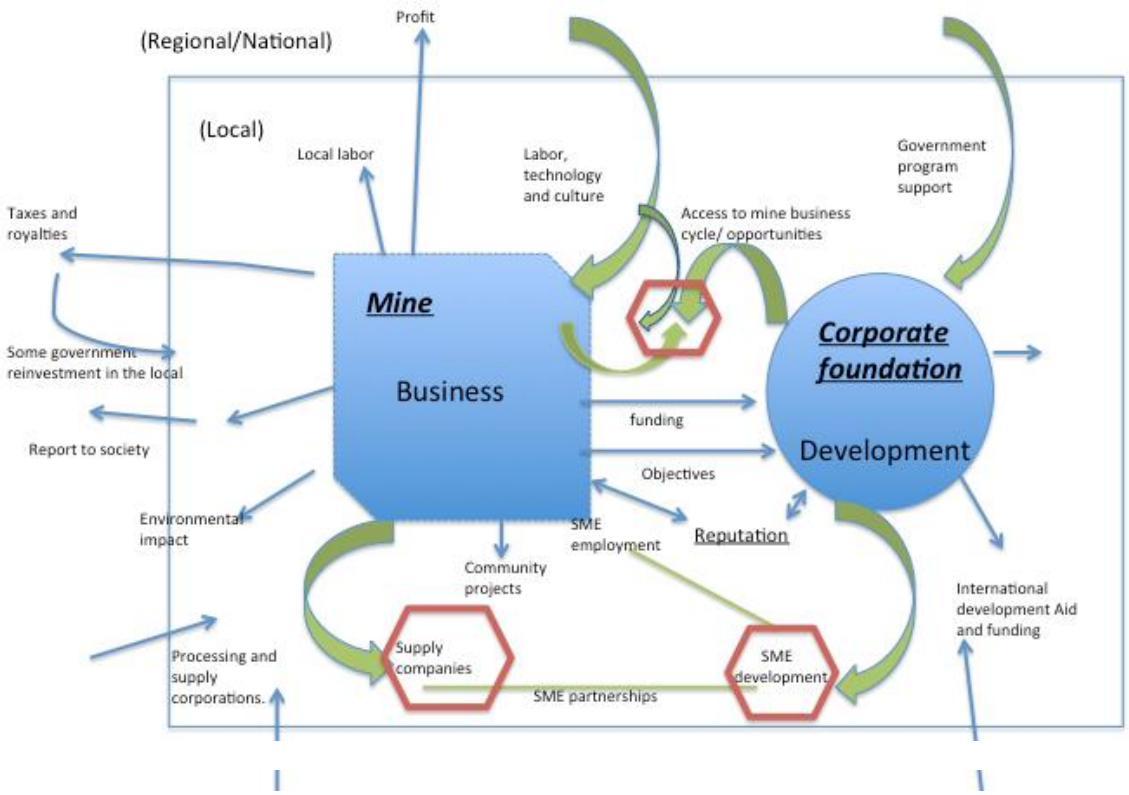

Figure 3: Micro-performance level hybridity diagram

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blocking nature of communities for reaching agreements regarding economic decisions (Storper 2008). The hybridity of relations fused through the interaction of the corporate foundation is similar to what Callon, Lascoumes, et al. (2009) call hybrid forums. They argue these forums bring together scientific and lay communities with the support of public agencies for expanded knowledge creation on a particular subject. The hybrid forum created

by the corporate foundation, however, is between the government and the lay knowledge of the local region supported by the corporate foundation. It still requires a distinct cognitive architecture for interaction and codification of knowledge. This is provided by the corporate foundation. It provides for both face to face contact between the government and communities of the local region creating opportunity to build trust, screen, and socialize and motivate in ways best facilitated by personal contact (Storper and Venables 2004; Gertler 2008). It also manages the unique subject matter of this forum, cooperation for regional economic development, in different spaces of knowing (Amin and Cohendet 2004). Its structural links to and beyond the local region organize learning spaces that are supported by proximity between actors and the benefits this creates, but also provides for the circulation of knowledge (Thrift 2000) throughout the local system, and to the extended and externally involved organizations discussed in the macro-structural construction of corporate foundations. In so doing, the corporate foundation is better situated to capture opportunity for innovations created between communities of many formations, and facilitate innovation through exploration with situations of distanciated learning between different organizations operating at a distance from each other (Gertler 2008; Nooteboom 2008). The prime example of such an opportunity is between the government and the communities of a local region.

Second, we discuss the culture of different communities and the nature of their intersections at the confluence of pathways drawing technology, labour needs and culture into the local economy, from the mine, and intersecting with the output of the corporate foundation. The words tacit and implicit knowledge often appear interchangeable. Here we create a distinction between the natures of uncodified knowledge grounded in different cultural and organizational traditions. Tacit knowledge is well suited to the information exchange and creation that happens within an industrial organization, such as a mining firm. There are operational cultures that are learned from experience within the firm ranging from

practices for safety to performances of masculinity as a miner. Technological skills are also developed between the active work processes of experts "doing" their jobs. Eventually, many of these practices and technological developments do become codified and shared throughout different operating units of the firm. In contrast, implicit is better suited to the knowledge exchange within traditional social groups. Rather than an unspoken or formal process, a rather sterile concept, implicit knowledge conjures anthropological understandings of knowledge transfer across time and through social groups. Implicit in this sense is less about the creation and fusion of process and more about the perpetuation and alteration of narratives. These narratives are more intimately linked with the identity of the group than within an industrial firm. For example, a community that has farmed for generations and possesses great knowledge of the skills this involves may transfer knowledge about these skills, and in turn changes to them, from new techniques or crops to different market opportunities, through implicit knowledge transfer and innovation. While they have similar roles in each of the organizations they function in, the distinction between tacit and implicit knowledge is more important when these organizations collaborate or fuse.

This is just one example of the differences underlying the divergent approaches to performance between mining firms and communities that corporate foundations attempt to manage. At the level of management, these differences are manifested in different organizational forms. According to Lam's (2000) four institutional frameworks built upon the learning type they employ, a mining corporation is similar to a machine bureaucracy dependent upon encoded information and strict hierarchy. Change and new knowledge only occurs slowly through institutionalization. The spaces created between the corporate foundation, community and mine are most similar to an operating adhocracy, emphasizing embodied knowledge. Within their organic and unbounded operation, learning occurs on many levels, and while innovative and potentially radical, it is not a stable or sustainable

organizational structure. The tremendous contrast between these organizational cultures is perhaps mediated by the corporate foundation increasingly adopting J-form organizational structure based on using embedded knowledge types. With both organic spaces and a hierarchy connected to the machine bureaucracy of the mine, the corporate foundation J-form is created from its hybrid purpose composed parts. As a J-form institution it is capable of creating and storing knowledge within the institution. The combination of these organizational forms and knowledge bases located within the same region creates a strange cluster of organizational forms for learning. It is through the coordination of these different institutional forms that the larger societal institutions and smaller local cultural interactions are able to interact.

Moving on to the nature of this interaction, one of the most important contexts corporate foundations are creating is represented in the third space focused on in this discussion, examining the creation and performance of SMEs. Here the relationship between the structures incorporates the previous discussions of both institutional form and culture, and the potential performance outputs are presented. In the creation and operation of SMEs, learning occurs between work and innovation (Brown and Duguid 1996). Within the context of the SME we again see the importance of embededness, however, here particular to the context of the process of learning rather than the context for fostering learning. This embededness operates in two parts - in one instance to shape cognition and the meaning of information (Nooteboom 2008), and simultaneously to provide the experiential environment of the learning (Piaget 1970).

Again, in contrast to expected patterns of development for innovation, the embededness is not extracted from communities of practice coordinated as an epistemic community. Rather, the corporate foundation forces an epistemic community that creates, in the skills and work of the SMEs, communities of practice. The epistemic community operates

through exploratory learning with a common goal, but trans-functional activities. It is not based upon the shared expertise or passion or "mutual engagement" and "shared repertoire" of communities of practice (Nooteboom 2008). As a result, rather than the cognitive distance between communities of practice creating the hybridity of the epistemic community and opportunity to experiment despite inefficiencies, the epistemic community, or here network of the corporate foundation, creates project-based hybrids as the seeds for communities of practice. The hybridity of the projects or SMEs is grounded in the identities of those involved all having been formed outside the project itself (Williams 2002). The trust or contract for the project thus goes back through the corporate foundation, which becomes responsible for changes post adoption. These changes most often involve moderating the learning styles and needs between the organizational mode of the SME and the mining firm. In this way, the hybrid projects are the spaces in which the implicit and tacit learning styles most closely converge and produce innovative SMEs. The pathways between them are the moderation of institutional styles conducted by the corporate foundation. Finally, the corporate foundation and its specific organizational J-Form is where the knowledge is codified and stored and made available for replication. Examples of the engagement facilitated with SMEs are discussed in the empirical examples in the next section.

In the three spaces presented for analysis of the factors of hybridity and learning affecting corporate foundations at the level of performance, the role of knowledge types and organizational form is clear. However, Polyani (1962) emphasizes three factors in shaping knowledge and learning: connection between knowledge type, organizational form, and society. The apparently missing role of society in the interactions for learning presented for the performance of the corporate foundation is the invisible hand, if you will, of societal pressures that originally brought about the need for the intersection between corporate

responsibility and development. This is the same need that put two simultaneous objectives upon corporate foundations and structured their hybridity.

7.5 Empirical Analysis

Two empirical case studies illustrate the hybrid aspects of structure and performance analysed. They are both loose models of inclusive business approaches to development. The focus of both the projects presented here relates to the mine's procurement needs. Procurement focused projects are one of the most accessible possibilities for inclusive business in the mining industry because of both the scale of procurement needs and budget, and the potential for flexibility in some sourcing.[118] Routes that other industries use for inclusive business involving incorporation into the labour force are more difficult in the mining business because the skills required are highly specific - requiring extensive training, they do not transfer well into other economic opportunities. Further, for our purposes through procurement, the distinct transfer of labour, skills, goods and overall finance is clearly visible as an excellent model to break down the financial flow that results, and the nature of the relationships necessary to carry it out.

The first case is that of Uibisan Cleaning and Services, and the Rössing Foundation of The Rössing Uranium Mine in Namibia. The business was started and is operated by Emma, a citizen of the mining town of Arandis.[119] The Rössing Foundation's commitment to Namibia's development through education includes building capacity for entrepreneurship. As part of the foundation's work to help the town of Arandis become sustainable independent of the Rössing Uranium Mine, emphasis has been placed in supporting a local government

[118] Interview with respondent type B
[119] Interview with type F respondent

with the capacity to not only manage the services it must provide, but to also innovatively attract other business to the town.[120] Drawing enough economic activity to support the town in the future will certainly require involvement with external, if not foreign, enterprise. Supporting the growth of new business within Arandis, the Foundation especially works through the schools, and particularly adult education courses for establishing small and medium enterprise (SME).

Emma has always lived in Arandis, and was an early participant in these courses. Her family is from a medium-sized Namibian agricultural town about five hours from Arandis, and came to Arandis for work related to the mine, like most of its population. She is active in the community, married, and has several children all attending the Arandis schools. Out of personal interest she attended the SME course and began her own cleaning company. While very small, the business slowly grew, as did Emma's understanding of business through continued participation in courses and seminars offered by the Rössing Foundation office in Arandis. Eventually, she had earned several small tenders with the Rössing Uranium Mine for the cleaning of offices, and equipment as variable as large trucks. As her work at the mine expanded, so did the company, which now employs 107 people from Arandis and 'nearby' areas. As part of this growth she secured the primary tender for cleaning services not only at the Rössing Uranium Mine, but at the new Langer Heinrich Uranium Mine as well. The name Uibisan comes from her family's traditional language, and best translates as pulling yourself up from your own bootstraps.[121]

In her work to build this company, Emma used the services the Rössing Foundation could offer her: originally business classes, later contacts within the mine, and in a curious twist - specialist health and safety cleaning courses. In her first proposal for the tender at

[120] Interview with type B respondent
[121] Interview with type B respondent 3/17/10

Langer Heinrich she did not receive the tender, and requested feedback on what would improve her company. Most difficult of the issues raised was an ability and innovation in using high standards of health and safety in the cleaning practices. This included not just the knowledge and use of safe cleaning agents, but also an ability to work at the facilities and dangers presented by the uranium mine. To meet these challenges, Emma again learned a great deal, largely with the help of the Foundation in finding education opportunities, and then went back the following year with a new proposal. She was granted the tender and is working to secure a longer tender term in the upcoming year. Further, she now is creating the capacity and proposals for work with contracting firms outside of the immediate Arandis area.[122]

In this situation the Foundation provided a key role in facilitating the education for Emma and connections with the mine. This was not, however, designed as an inclusive business plan. It was instead the relationship between the mine, the Foundation, and the community that facilitated a flow of resources and connections that made this inclusive business possible. Though the mine was able to contribute to the community by using Uibisan Services, perhaps the greater success is that Emma was able to use her experience with the mines to build a company not only operating through the dependence of one mine, but independently with several mines and expanding into other areas. The employees of Uibisan Services are also trained and earning money in a business sustainable beyond the life of the mine.

The Rössing Foundation's long history makes it uniquely a foundation that arose before societal pressure for CSR of the same magnitude as today. As a result, it was created from a comparatively organic process of trial, error and slow expansion. Further, given the economic prominence of the Rössing Mine at the time the Foundation was established and

[122] Interview with type B respondent, 3/17/10

before Namibian nationhood, the Foundation's mission is not just to ensure regional distribution of economic benefit, but national.[123] Its origins and current structure reflect less structural hybridity than more recently established foundations, and perhaps a greater cultural hybridity. In the case study in particular, it draws upon social capital from the town of Arandis, which is elaborately socially connected and supportive of the mine after generations of survival from its employment.[124]

The creation of education programmes reflects Arandis' cultural hybridity from long associations with mining; math, science, English and business are the most focused-upon and demanded areas. The Foundation has innovated to make the material particularly relevant and accessible, as it was for Emma.[125] In this way the Foundation mediated the intersections between the mine and the epistemic community it connects by creating these learning spaces. Not only do they use government support, engage with different learning and organizational cultures, but also through continued support of SMEs they foster communities of practice in these areas. For Uibisan, this has become a specialty of cleaning typical offices, to equipment for the handling of radioactive materials. The success of the company is marked by its increasing independence from the Foundation. Similarly for the Foundation, despite its organically hybrid culture roots, it appears to have more authority with the mine, community and government the more it is seen as an independent institution and less the mediator of community and mine.[126] This independence is now especially promoted by the mine and the Foundation.[127]

The second case study is that of Fundación Minera Escondida, or FME, and the inclusive business plan they are creating for the San Pedro de Atacama region. FME's

[123] Interview with type B respondent

[124] Interview with 2 respondents type E, and general observation and conversation from living in Swakopmund and spending time in Arandis.

[125] Interview with type B respondent

[126] Interview with 2 type B respondents 3/17/10

[127] Interview with type B respondent

regional mission includes the high altitude area surrounding San Pedro de Atacama. This area is now one of Chile's prime tourist destinations, as well as the home to many rapidly shrinking Andean indigenous communities. San Pedro exists as the gateway into the salt flats, stunning Altiplano lagoons above 4000m, and the popular El Tatio geysers; it is an oasis in this high desert environment and nestled at the comparatively leisurely altitude of around 2000m. A confluence of changes in the past twenty years has dramatically affected this seemingly petrified landscape, and FME is working to develop ways for the changes - at least in part resulting from the increase in mining - to include people indigenous to the area.[128]

While they have been working through an office directly in San Pedro to contribute to schools and run many other education and human service programmes, FME has just completed an extensive inclusive business plan to further commit investments in the coming years. The most recent draft of this plan was presented in June of 2010, and was prepared by Qualitas AgroConsultores. It reports how it has tested many programme scenarios, the costs and benefits of investment in different resources, and detailed calculations of the costs, needs, and time for development of even the smallest aspects of these businesses.[129]

The plan is strategically related to three of the most pressing changes: the increase in mining in the area since the 1980s, the increase in tourism to San Pedro de Atacama in the 1990s, and the 1993 change in indigenous laws. The increase in both mining and tourism has drawn people away from agriculture, reduced youth participation in traditional activities, and reduced available water. However, the indigenous communities are now more strongly identifying as a distinct cultural group, a process that is being reinforced by a simultaneous public change producing a new Indian identity through political and legal processes. The inclusive business plan is based on education and facilities to increase production of local handcrafts and foods to marketable scales and standards in order to meet the qualifications of

[128] Interview with 2 type B respondents
[129] Interview with 2 type B respondents

a label (of quality and origin).[130] Although poverty statistics are improving in the San Pedro area, there are concerns about the sustainability of this change as it currently corresponds to a marked decrease in agricultural production. The inclusive business plan meets the community desires to maintain a productive link to agriculture, yet has carefully selected the products that can efficiently be produced in quantity in the harsh environment. Further, these products now demonstrate, and will likely continue to capture, an increasing comparative advantage in the tourist market for local and historical goods (Minera Escondida Foundation, 2010).[131]

The inclusive business plan will start with the same types of educational business classes that already have excellent retention rates in the region. If production increases, the mine and its service provider have agreed to purchase food from the businesses for the mine's on-site cafeteria. Several restaurants and hotels in the San Pedro area have also agreed, with FME, to certain regular starting purchases for their businesses. The opportunities from these start-up contracts, especially with the mine as it serves several thousand people a day, should provide an excellent base to increase capital for the further expansion of local industry. The longer plan for these businesses is to become integrated with the local tourism industry to an even greater extent than the supply of the procurement needs of the mine. (Minera Escondida, 2010). Options for employment in the mine will continue, but this inclusive business plan can work even with individuals critical of the mining industry and disinterested in working as part of it.[132]

In understanding this plan and estimating its continuing success, it is important to note that it was created based on trust in the relationships between the local pueblo chief and the local office of FME. Further, it will grow through the value of relationships forged with

[130] Interview with 2 type B respondents
[131] Interview with 2 type B respondents
[132] Interview with 2 type B respondents

the mine and the local tourism industry by the foundation. As the linking partner, FME also manages the stages of growth for the project based on when they invest in education, training, and equipment. In this situation the investment from the foundation is seen as completely separate from the agreements to purchase goods for the mine, and the success of the sale will depend on a professional business relationship based on the goods. The formality of this process should help improve the goods and provide the first necessary contract to increase production. However, once this is achieved, attention will shift to the tourist industry, which will be a sustainable market after mine closure. The mine is mostly a stepping-stone in the business process.[133]

Unlike the Rössing Foundation, FME was specifically called for and designed to help manage problems of distribution of benefit from the Escondida mine. The Antofagasta region in particular, and the Atacama Desert region of Chile generally suffer from greater poverty and fewer opportunities than the rest of the country. This is particularly alarming since this is one of the regions that contributes the most to the country's wealth. To address this and other concerns developed from a complicated political history that has created a legacy of tension between Chile and foreign multi-national corporations (MNCs), the FME was carefully structured as a hybrid institution. In developing the inclusive business plan for San Pedro de Atacama, FME is working through many different hierarchies of cooperation.[134] The focus of their role is on the paths between different organizational entities. In this way their work is better viewed as a vertical and structural integration of linking hybrid performances of different organizations. Unlike the Rössing Foundation, which is more culturally hybrid and works through horizontal collaboration in spaces of innovation, FME works in the pathways. FME is strengthening the community of practice of the indigenous farmers, and by including them in the same epistemic community of regional industries such as tourism and mining,

[133] Interview with 2 type B respondents

[134] Interview with 2 type B respondents and 1 type A respondent

using the distanciated learning its pathways create between the two for innovative collaboration. As a synthesized hybrid - not organic - institution, FME's strength is as a link between chains of other organizations. It is most effective and successful when able to remove itself from the chain or phase out its involvement.[135]

7.6 Conclusion

The results of this exploration have produced several mixed conclusions. Changes in the learning performances of corporate foundations in the mining industry are altering the nature of corporate foundations. This was explored in an examination structured by the components of the hybridity of corporate foundations in the mining industry. Hybridity was used here to describe the corporate foundation's role as a part of a multi-national corporation and as an independent development organization. However, defining corporate foundations in the mining industry as hybrids required careful management of the varied meanings offered by the diversity of theoretical discourses affiliated with different conceptions of hybridity. In the hybridity of corporate foundations, elements of 'hybrid' as understood in science, cultural, and organizational studies are each present. The persistence of multiple meanings this provides suggested the nature of the hybridity of corporate foundations is perhaps tenuous. By establishing a conceptual framework of the levels of hybridity demonstrated by corporate foundations, this chapter distinguished a macro-structural level of hybridity and a micro-performance level hybridity. Further identified in this chapter are elements of hybridity at both levels that are rhetorically persuasive and those that mask inherent conflict. It then argued that these elements are reinforced in the performance of explicit and implicit learning in the pathways and spaces created by the operations of corporate foundations. Despite the

[135] Interview with 1 type A respondent

comprehensive scope of these overlapping units of the conceptual framework, it is theoretically unclear if these elements of deconstructed hybridity are indicative of a breakdown or evolution of the hybridity of corporate foundations, and their role in distributing social benefit from the operations of the mining industry.

Using the framework to guide analysis, each level offered insights into clarifying the nature of the performance of corporate foundations and its effects on the changing role of corporate foundations. The macro-structural organization of corporate foundations is hybrid to suit the corporation's needs to engage in development in ways it lacks the capacity. The creation of this structural fusion at the local level is part of a system of leveraged effects and is directly connected to the performance and positioning of the corporation at the highest levels. Further, while the work of corporate foundations to build the capacity for sustainable regional business beyond the life of the mine has many similarities with the development of innovative learning regions, this analysis makes clear that corporate foundations cannot build learning regions. They are primarily restrained by a lack of social capital suited or organized to support the conditions of a learning region. This particularly creates problems of agency and resistance for cooperative development initiatives led by the mine, and a failure to have a unique territorial asset on which to base the region's competitive advantage beside the mine. Instead the structural hybridity of corporate foundations, their use as a strategy is best understood to not foster a particular regional development cluster, but that structurally forced fusions create pathways and spaces for policy and practice that provides the opportunity for innovation and coordination of social capital for development.

As a result, the second level of the framework concentrating analysis on the micro-performance aspects of the hybridity of corporate foundations is critical to understand what occurs in the pathways and spaces constructed by the structural hybridity of corporate foundations. It appears that these spaces are forums of cultural intersection occurring through

the interaction of tacit and implicit knowledges, and they produce a certain hybrid culture of the corporate foundation projects that is transmitted through the pathways and in the process converted to explicit knowledge forms. The new learning that results is captured in the on-going performance of new communities of practice, and the corporate foundation as an institution itself. In this performance the foundations themselves work as a technology to coordinate social capital for learning for development. In this role they synthesize their hybridity and are transitioning towards institutions that serve as key nodes in the process of private sector led development.

The two empirical cases presented to illustrate the operation of the framework supported this analytical conclusion towards the increasingly distinct, rather than hybrid, role of corporate foundations. However, the cases also demonstrated the importance of the relationship between the strategic role of corporate foundations and the process and features of their increasingly distinct institutional identity. The Rössing Foundation's more organic than strategic origins have situated the Foundation to best moderate spaces of cultural hybridity, and coordinate horizontal integrations of the social capital of different social groups and institutions. The more the Foundation transitions to an independent entity, rather than a hybrid of these groups and institutions, the greater its authority and success in coordinating their cooperation for innovation. In contrast, the very strategic origins of the FME, and its mission for regional social benefit, in particular has situated the foundation to operate best through pathways to connect rather defined social groups and institutions. These pathways manage more vertical integrations, and the changing role of the corporate foundation moves it from a hybrid involved in these pathways and chains of performance and allows it to coordinate these connections from a more external, and eventually sustainable position. Both institutional transitions occur in parallel to their role in creating or coordinating epistemic communities. Institutional independence appears linked with the

increasing number and success of the communities of practice that compose these epistemic communities and which corporate foundations create and support.

These results offer insights into the logic and process of transitioning corporate foundations from predominantly hybrid organizations to significant institutional nodes for coordinating the process of private sector involvement in development. However, the use of corporate foundations is limited to a technology for the coordination and creation of social capital for innovation. The larger conditions of the context of development in mineral extraction economies serves as an impediment to the facilitation of learning regions, or other clusters as such, independent of the mine. While this unfortunately appears to reinforce the process of the Dutch disease rather than serve its strategic role in countering the resource curse, the strategic ambitions for corporate foundations are perhaps just misplaced. The processes of learning and facilitation of social capital requires further attention as a significant stage of development in mineral economies, particularly when dominated by complex power relationships. Here there is scope for research in the processes of innovation and economic learning as a distinct, but important, process when occurring at the intersection of development and the powerful dynamics of developed multi-national organizations.

8 Conclusion

8.1 Prologue

He started to wring his hands and lean back in the chair.[136] His feet came down from their relaxed perch and his eye contact was reduced to flickers of nervous connection. With all the tension of a crime scene interview we sat in the sun-washed and simple office discussing the operations and governance of corporate foundations.

A proud employee of a respected corporate foundation, he found it incredibly difficult to express jealousy for the advantages of a different structure for a 'sister' foundation within the same multi-national company. Anxious not to critique the organization of his foundation, we communicated through drawing the patterns of connections and obstacles that each form created on scraps of paper. Which was closer and which was farther from the influence of the mine or the government? What contributed to independent decision-making for the foundation, what didn't – and why it mattered. All this was expressed as circles connected to triangles with lines or squiggles or crossed marks. Nonetheless, the differences in the dynamics were clear. The other foundation came later, he explained. They had already seen what worked or failed in the operations of his foundation. Further, he said, the context – the place, the people, and the laws – for the other foundation were different.

Tension dissipated, and his quiet yet enthusiastic confidence that I had come to know in the office and by sharing drives between the foundation offices and town, again surfaced as we discussed what his foundation would do differently if it were like the other. Also, what were they doing within the given form to achieve some of the functions of the other? And so

[136] Interviewee requested anonymity, interview in March 2010, respondent type B

we went on, in practical terms, talking project by project. The turning points were the same: who supported the idea, what it would do for the people – and which people, what it would do for the mine, who would really make the decisions? How much money could it get, from where, and how long could it last? Almost lost in these details, and in just remembering to hurry for the bus back to town, the big picture revealed itself. This focus on the facets and variables of corporate foundations' form and function was seeking more than better performance. They are the building blocks and feasible tools for achieving a larger strategy of change.

8.2 Introduction

This thesis concludes that a larger strategy for corporate foundations is currently under-developed. This argument is based on the cumulative findings of the thesis. From the range of existing experiences with corporate foundations, there is now enough information about their diverse performances to identify their more transformative approaches to improve the distribution of benefits from mining. From this knowledge a larger strategic approach for their work is both possible and necessary. The thesis proposes that this strategic approach is for corporate foundations to build, through partnership and education, the institutional capacity to manage the distribution of benefits and investment in alternative livelihoods.

Corporate foundations operating with this strategy would serve to facilitate transition. They mediate the relationship between community and government and build partnerships with outside organizations. The dominant and longstanding critique of the failure of the minerals industry to provide benefit, as discussed in chapter five, rests substantially with the institutional capacity of the recipient (Bebbington, Hinojosa et al. 2008). As the private sector has further intervened with and invested in development, there is a greater understanding of

the responsibilities of this engagement. Within the mining industry we have seen the particular evolution away from philanthropy and towards a more integrated and cooperative approach. Initial efforts were made in 'bricks and mortar' infrastructure projects. Corporations built roads, schools and hospitals. Unfortunately, they were not sufficiently transformative in fostering development even though they provided visual signs of change. As poorly conceived edifices were left abandoned with no trained employees to staff them, or places to go at the other ends of the road, efforts increased to provide different - and complicated - ways to engage in sustainable development needs. These new approaches have revolved around making better use of the corporations' core strengths, as well as providing education and new business opportunities - building the social capital and capacities of communities.

That said, this thesis argues that truly *responsible* private sector involvement in development must also address responsibilities towards the institutional capacity to manage and maintain these changes. Further, that changing the institutional dynamics is the only way to ensure sustainable benefit. The context of political economy restraints to development in many mineral economies is well known (Bebbington, Hinojosa et al. 2008; Ross 2008). If the private sector is to truly become *involved* in development benefits - bricks, mortar, and even entrepreneurial creativity will go unrealized without the institutional capacity to sustain them.

This, the institutional challenge of development, is the last endeavour of corporate engagement for many good reasons. Most obviously, there is no one model to strive for or replicate. Aside from basic principles, including for example managing corruption through promoting transparency, there is no one form or set of functions that defines effective institutional governance. It is a contextually and socially explicit set of dynamics. More cynical in distancing corporations from engaging in the institutional challenges of development is the relationship between the corporate, particularly multi-nationals', success

and the out-dated perceptions of business opportunities from the weaknesses of mineral economies' institutional capacities (Sadler and Lloyd 2009; Rajak 2011). Recently, the mining industry's investment in the ICMM and commitment to transnational government mechanisms indicates some recognition of the harm of this perspective and the benefits of work in stable institutional contexts.

Although bluntly obvious that mining firms are not development agencies, the expectations of their current engagement in development blur this distinction. Sometimes they have development experts on staff and complex relationships with the national government offering the appearance of a development agency. While some critiques might level this as a neoliberal wolf in development agency's clothes to further the business, it is not a sustainable or business enhancing role. Responsibility for development in the hands of mining firms conflicts with the inevitable exit of the mining firm after the closure of a project, and frames any relationships they establish and development dependencies created.

Nonetheless, the institutional challenges to effective and responsible private sector involvement in development persist and affect the reputation and social license to operate of firms and the development of impacted communities. By facilitating transitions, corporate foundations could serve as mediators between the benefits mining firms could provide and the institutional environment managing its distribution. The thesis presents this role as a possible strategy for corporate foundations. An overarching and long-term strategy is the missing piece in evaluating if corporate foundations are 'successful'. This strategy would articulate what 'success' for corporate foundations means beyond the evaluation of individual programmes. Significantly, this strategy also works to balance the needs of the currently articulated institutional gaps for managing the political economy of the mining industry and the actual capabilities of corporate foundations as assessed in this thesis. To present and unravel this argument for the future strategy of corporate foundations, it is necessary to turn

back to the objectives of the thesis and to bring forward this argument from the collective findings of individual chapters. It is an iterative process.

It is also a collaborative process. As indicated in the prologue, the fieldwork for this research provided the opportunity not just to bring information to the light of academic analysis, but was also an opportunity to engage in dialogues with practitioners that allowed them to explore their curiosity and concerns about corporate foundations and their role in the mining industry. The relatively new performances of corporate foundations are transforming each time the form is replicated. This creates the opportunity for significant contribution to changing corporate foundations. Informing the choice of engagement strategy through which corporate foundations operate is a start to a long process of this change. Consequently, in addition to the critical analysis of the rise and current state of corporate foundations in the mining industry, the conclusion goes a bit further. The concluding argument offers an ideal for the future directions of corporate foundations, the contributing factors to achieving this, and the potential consequences. It offers another jumping off point back into the collaboration.

8.3 Contribution of Each Chapter

The analysis of corporate foundations and the institutional challenges they face in the mining industry, and as organizations themselves is on-going and interconnected. The thesis analysis jumps into the existing work in these areas to articulate the relationship between corporate foundations and the failure of the mining industry to provide local benefit. As presented in the empirical chapters, the novelty or potential novelty of corporate foundations is complex. They bring with them past approaches and experiences. Corporate foundations are emerging in an already crowded field of activities. Some past approaches are still operating, others abandoned, and some caused more problems than they solved.

Finding clarity of purpose, cause, and consequences in this situation is like separating several delicate necklaces that are astoundingly entangled. Just as one is pulled, and might appear free, you realize that it has tightened the knot of strands at another point. In separating the necklaces all the entanglements must be loosened, and spread across a table so you can see what is stuck together. Then you take one strand and try to weave it out without further snarling the others. In following corporate foundations, the analysis of this thesis has felt like this necklace puzzle process. Each time a corporate foundation strand was pulled trying to separate it, other entanglements were tightened and revealed. The analysis resulted in less work to isolate corporate foundations and more fascination with observing how the strands of conflict were connected, and to what effects. The contextual embededness of corporate foundations shapes their identity and performance. As a consequence, the form and functions of corporate foundations is also a viewpoint into the changing role of the mining industry itself in the political economy of extractives dependent countries.

Each chapter of the thesis involves examining and separating corporate foundations within the entanglement. The chapters focus on the specific backwards and forwards effects of corporate foundations in relation to specific contexts: socially responsible investing, and the discourse of the political economy of extractives dependent countries (Chapters 4 and 5), and the performances of corporate foundations creating change: within the corporations they are associated with, and within the institutional environments where they work (Chapters 6 and 7). The tones of the chapters differ and the findings speak directly to their analytical tools and theoretical context. Here these specific findings are summarized and presented to specify their contributions to related literature.

8.3.1 Chapters Part 1: Summary and contributions to the literature

These first two empirical chapters focus on analysing the context from which corporate foundations are emerging and to which they are addressing their activities. They work to more clearly situate the 'problem' (Callon 1980) corporate foundations are serving to address from the discourses of the responsible business community and the political economy of uneven development in extractive economies. Their findings first demonstrate that the process of responsible business initiatives places considerable legitimacy in the form of corporate foundations leaving their function more open to a diversity of performances. Then Chapter 3 continues to address the need for the functions of corporate foundations through an examination of existing discourses concerning the distribution of development benefit. It finds that the dominant discourse of the resource curse, including views that support or fault it, fails to adequately account for the effects of technological change within the mining industry at the local level. Further, that these local and regional changes and failures are significant to the overall 'outcome' of a 'resource cursed' country. This overlooked element presents a gap in the current articulations of the problem of mining and development by being focused on a national level, and an opportunity for the functions of corporate foundations. Together these chapters explore the context of institutional challenges to the mining industry's (the private sector's) engagement in development. These challenges both push the industry to engage in development and present obstacles to situating and performing this engagement.

Chapter 4 Social Investment and Responsible Investment: Their Relationship in the Mining Industry, adds to the literature by taking many well know identifications, such as business case motivations for CSR and the debate concerning CSR and the legitimacy of practices, and integrating and operationalizing them. It articulates and explains in one

situation the consequences that different drivers and their interaction have on the production of CSR responses. Analysing the relationship between a categorization of CSR drivers with correlated performances brings together two branches of CSR literature. The first has concentrated on classifications of CSR types and drivers (Cramer, Jonker et al. 2004; Garriga and Mele 2004; Brammer and Pavelin 2005; Whitehouse 2006; Campbell 2007). Other literature has focused of the outcomes and performances of CSR for the projects conducted and the firms that conduct them (Pava and Kruasz 1997; Waddock and Smith 2000; Porter and Kramer 2006; Peloza and Papania 2008). This work moves the academic inquiry into CSR away from identification of CSR as a moving and contested target (Marrewijk 2003; Bansal 2005; Conley and Williams 2005; Sethi and Emelianova 2006; Sadler and Lloyd 2009; Rajak 2011) and towards understanding patterns of driver-performance linked approaches to engagement and not just driver-to-performance outcomes such as effects on firm finance and reputation (Bertels and Peloza 2008; Peloza and Papania 2008). This goes beyond single process research into CSR motivation *or* management *or* performance. Through a focus on the interaction between these different CSR concerns, new research can better identify future methods of promoting certain CSR outcomes.

In finding that the influence of different drivers for CSR concerning mining and development look more to the type and form of CSR engagement than the purpose, this chapter opens a space to question the absence of a larger strategy or goals for engagement in development and change. As far as the emergences of CSR mechanisms - such as corporate foundations - are responses to a dialogue in responsible business practice, they are consistent with established CSR practices in developed economies. However, it appears the dialogue has not fully adapted its initiatives specifically for the emerging market context. Due to the nature of on-going economic progress in these countries the issues of CSR concern change.

The goals of responsibility here should not be towards known responsibility equilibriums,[137] but for CSR goals that include participation in growth and change. Although, by the judgement of this chapter's work,the freedom of functions for corporate foundations could allow for such a strategic model.

This chapter thus works towards a new analytical utility for the literature on CSR. In finding that the legitimacy of corporate foundations, emerging within the drivers of responsible business discourses, is based in their form more significantly than in their functions, this opens the thesis to the continued exploration of the relationship of form and function in subsequent chapters. It builds on literature critical of simple directional relationships such that organizational form follows function (Rindova and Kotha 2001; Dixon 2012).

Chapter 5: The Resource Curse: Political Economy and the Mining Industry, argues that the resource curse, and even argument against the resource curse, does not adequately address the failure of regional adaptation to technological change in the mining industry. The lack of local economic benefit and linkages between the mining industry and other economic livelihoods is a crucial gap in further upward and national benefit from the extractive sector. This argument stands as an amendment to other literature critical of the resource curse and goes beyond it in offering an alternative argument for the significance of the geographic dimensions of the failure. In this way this chapter extends the literature that challenges the right or wrong bi-partisan stance on the resource curse (Rosser 2006; Williams 2010; Murshed and Serino 2011). Even with efforts to improve the national governance of wealth from the extractives sector, local or regional institutional capacity has often not been established or transformed to build alternative economic linkages or manage influxes of cash

[137] Examples of known 'responsibility equilibriums' are agreed upon metrics in developed economies such as meeting specific labour codes, percentage reduction of carbon emissions and water usage, etc.

rather than employment. The geographic scales of the necessary institutional capacity to avoid the resource curse are under-evaluated. The significance of the regional and local role is overlooked in the understanding and literature of the 'problem' of the resource curse or the failure of development benefit from mining projects. The process of these industry specific effects of uneven development (Smith 1982) would benefit from further analysis into the effects of this uneven development on national development.

In establishing this argument, the chapter also addresses literature concerning the processes of capitalist economic growth. Significant protest against expansion of the mining industry through accumulation by exploitation has dominated local and often national activity. It has concerned economic policy, labour, wages, and union rights. However, the most recent and more transnational social activism concerning the growth of the mining industry has focused on issues of accumulation by dispossession (Harvey 2005; Bebbington, Hinojosa et al. 2008) This is the process of expanding capitalism through the dispossession of such things as land, self-governance, and cultural rights. Bebbington (2008) argues that protest focused on accumulation by dispossession issues occurs simultaneously at many different scales of mining from the local to the mining house headquarters, and involves more individuals not personally affected by operations, especially new NGOs and activist networks. He argues it is building a broader class constituency in conflict with mining than protests led by miners and issues related to accumulation by exploitation. In articulating the local dimension of the resource curse, this chapter supports this literature by arguing for the significance of the effects of the process of accumulation by dispossession at the local level. It supports the need to recognize the difference in the nature of these changes and thus the need for different responses to address them. These responses include changing standards of practice in CSR as discussed in Chapter 4. These new interests affect labour, the

environment, and the nature of coordinating with the government (Christopherson and Lillie 2005).

Across disciplines in the social sciences, literature has addressed many aspects of the resource curse argument from the traditional economic (Collier 2010), to the philosophy of the state (Hibou 2004), and the political economy of particular regions (Ferguson 2006). Building on Bebbington the chapter opens space for corporate and organizational perspectives in these conflicts. However, the state of CSR literature as demonstrated in the previous chapter does not reach far into coordination with political economy discourses. As a result, corporate analysis of social responsibility and the language through which it occurs is more consistent with traditional management research that evaluates organizational performance (North 1990; Schoenberger 1997). In opening the organizational dialogue of technological change, this chapter begins the thesis's iterative process of bringing greater coordination between analysis of political economy issues and organizational response and engagement.

8.3.2 Chapters Part 2: Summary and contributions to the literature

The second half of the thesis analyses the performance of corporate foundations. It looks at performance as change and change processes within the corporation or corporate setting and change in the regional or local distribution of economic benefit. These chapters couple with the first two empirical chapters by matching the contextual investigations focused on the corporate response to social responsibility initiatives and the political economy of mineral development. Their findings articulate the ways corporate foundations, given the constraints of their form and functions, can perform for change. It provides a review of some of the more significant effects of corporate foundations' current operations.

Chapter 6 finds that corporate foundations are consistent with the path dependency of the mining industry. It also argues that despite this path dependency, corporate foundations - if guided by a particular strategic relationship to the corporation - can slowly influence evolutionary change in the institution of the corporation. Chapter 7 finds that the hybrid form of corporate foundations is not well suited to change the regional distribution of mining benefit by instigating industrial clusters or agglomerations of economic activity. Instead, it argues the hybrid form supports knowledge exchange that is better suited to build partnerships and institutional capacities.

Chapter 6: Adaptation and Path Dependency: the Role of New Organizations in Institutional Change, conducts analysis through the literature of organizational evolution and path dependency. It examines the process of corporate adaptation to improve social responsibility. In doing so, the adaptation of corporate foundations confirms and contributes another example to the literature of organizational path dependency (Arthur 1994; David 1994; Witt 1997; Martin and Sunley 2006). It finds that corporate foundations are a path dependent response. As organizations they are consistent with other approaches towards social responsibility that the mining industry has previously used. This path dependency however does not conform with traditional economic models of institutional equilibrium and thus supports Martin's (2010) economic geography based argument for evolution within path dependent institutions. Due to the subtle changes in the different roles and functions that corporate foundations take on, and especially those corporate foundations integrated into the strategy for the competitive advantage of the firm, they have the potential to slowly influence change throughout the corporation.

These findings contribute to both parts of the overarching theoretical inquiry. First, it provides an example of the way change in organizations can change the institutional environment. Also, the relationship between increased institutional change and organizations

with an articulated strategic role for the firm is an indicator of the significance of a specified strategy in change processes (Porter 1987). This same dynamic is expanded upon in the concluding argument for a larger strategic role for corporate foundations.

Secondly, the chapter illustrates how the choice or formal change conducted by the creation of corporate foundations leads to the evolutionary change of the corporate institution. The interplay of formal design and evolutionary institutional change processes addresses the second aspect of the theoretical question debating the nature of institutional relationship between theories of formal or evolutionary institutional change (North 1990; Hodgson 1999; Ostrom 2005; Kingston and Caballero 2009). It offers an example of the significance of both processes occurring together.

Chapter 7: Structure and Knowledge Transfer: the Fitness of Corporate Foundations for Regional Development, continues to use leading themes of economic geography to structure its analysis as it investigates the relationship between the hybrid form of corporate foundations and their capabilities to address the failure of regional or local development benefit. Working from the findings of uneven development due to the poor response to technical changes in the mining industry, and a lack of economic linkages at the local level in chapter five, this chapter turns to the research of industrial clusters and agglomeration (Malmberg and Maskell 2002; Martin and Sunley 2003; Hassink 2005). It evaluates if corporate foundations can help create industrial clusters as a solution to the failure of economic linkages and regional development benefit. This analysis has involved a change in the approach to the literature. Rather than deconstructing an existing cluster to see how it has been established and operates, this chapter takes this literature's finding as the metrics to evaluate if mining regions through facilitation by corporate foundations have the 'ingredients' for economic clusters. By extension it is testing the nature of the mining industry as it is currently conducted as a sector conducive to growth through economic

linkages and perpetuated through untraded interdependencies (Christopherson and Clark 2007).

Finding that corporate foundations are not sufficient for this role revealed that the strength of their hybrid structure was their connection to various macro-level institutions and micro-level constituencies. These connections situate corporate foundations in a relational network with opportunities to facilitate partnerships through it for new economic activities and linkages with the mining sector (Bathelt and Gluckler 2011). It also expanded the empirical examination of knowledge transfer within organizations and relationships between organizational structure and tacit and explicit knowledge production (Brown and Duguid 1996).

This chapter contributes to the overarching theoretical inquiry and supports the findings of Chapter 6 by looking at organizations' changing institutional environments, rather than technical institutions such as corporations. It finds that corporate foundations have the potential to change the institutional environment through capacity building and partnerships. This further supports the findings of Chapter 6 by providing another example of the combination of intentional change through the functions of corporate foundations and resultant institutional changes occurring in an evolutionary manner.

8.4 Critical Aspects of the Strategy for Corporate Foundations

8.4.1 Strategy and Institutional Transition

This strategy for corporate foundations must be more than the cumulative success of many projects that each facilitates a specific distribution of the economic benefits of mining. The performance of corporate foundations must work towards producing something where

the combination of the parts has more utility than the parts do individually. Based on the findings of this thesis, that "something" is building institutional capacity by facilitating institutional transition. All of the different functions and programmes of corporate foundations strategically combined for this greater outcome/product - or change.

Corporate foundations are already the mediators of partnerships between the state and the firm, the firm and NGOs, and more. In most of these partnerships the corporate foundation works to draw the participants together, meditate the dynamics of the relationship, and then disappear and let them alone. Several existing corporate foundations do this with the articulated goal of building the capacity for these activities to go on beyond the life of the mine.[138] What is missing is incorporating into these goals what this role does to the nature of the 'problem' it exists in response to. Ideally, by creating partnerships and capacity building to manage development benefit, corporate foundations address the 'problem' by improving the capacity of the state and communities to manage development. They also limit the role of the corporation in creating dependencies while attempting to do no harm and provide benefit.

This is an important long-term strategy for several reasons. As Bebbington et al. describes it:

> "Contentious and ambiguous: two words which describe the relationship between large-scale mining and development. 'Contentious' because mining has so often delivered social, environmental and economic effects for the many, but significant gains only for the few; 'ambiguous' because of the abiding sense, among local populations as much as development professionals, that *just maybe* mining could contribute much more" (2008, p. 887).

Suggestions to avoid negative economic impacts from mining operations, such as the resource curse, continually come back to issues of institutional capabilities (Auty 1993; Sachs

[138] Example of Fundación Minera Escondida in Chapter 6. All financial partnerships offer a maximum contribution of the foundation at 50% and a plan to reduce this % contribution over time.

and Warner 1995, revised 1997, 1999 ; Ross 2008). Although it is easily advocated for that mineral extraction should not occur where these capacities are not established (Stiglitz 2007), this is not often the case. Many mines have already been constructed in places without these institutional capacities.

There are now mechanisms attempting to create procedures for the prevention of mining where there is no institutional capacity or desire to manage the impacts. Laws and policy that regulate mining and require Free Prior and Informed Consent (FPIC) work towards this goal to prevent irresponsible mining in indigenous communities (MacKay 2004). FPIC however is rooted in the communities' choice to accept a mining project rather than their capacity to manage it. As a result, many communities without the institutional capacities desire the *opportunity* of something else or better, even when they lack the institutional capacities to manage it. Worse, those whose lack of institutional capacities is often related to other hardships and lack of economic activity are more eager for the opportunity of a mine or lack the ability to appropriately organize against it (MacKay 2004).[139] This contradiction between institutional capacity to manage the impacts of mining and the desire for its potential benefits detracts from most self-selection processes. The alternatives for this judgement fall to the state and corporations themselves.

As seen in Chapter 4, the industry pressure to reform social responsibility is rarely to choose not to mine, but instead to create mechanisms to minimize or moderate the impacts. Then, from Chapter 5, the state perspective, as well as most transnational governance reform programmes, is aimed at the national institutional capacities rather than the regional. Additionally, the national interest and perception of economic benefit from mining is often

[139] FPIC is more conventionally viewed as the process to provide indigenous communities with the opportunity to exercise rights over the use and activities of 'their' land as determined by a wide range of national laws.

very different than the regional interests. Therefore, it is very difficult to obstruct the establishment of mines in locations with weak institutions or halt those already there.

After situating the need for a strategy for corporate foundations, and one that addresses the 'problem' rather than just the situations of distributing economic benefit, it is necessary to explain the choice of strategy argued for by this thesis. An example from outside the mining industry and this research help to further explain and support this strategy. To support the process of transferring knowledge and building capacity as a result of the particular relational position of economic activities there is research by Bathelt and Glucker (2011) on industry trade fairs. They identify the process through which a trade fair gathers participants, creates and distributes knowledge, and then disappears. Through the interactions at the trade fair the individuals each gain knowledge that is then brought back with them to their respective firms. The capacity of all these firms with the new knowledge is expanded, but so too is the interaction between the firms due to the communications connections forged by individuals who attended.

The trade fair was a mediator in the relationship between the individuals, industrial knowledge, and ultimately further relationships within the industry. The fair, its strategic reason for being, was to create these connections in a way that would change the industry's operation in the future. This is a similar strategic role to that argued for corporate foundations. In facilitating partnerships between the corporation, community, and state through programmes that involve creating new knowledge and interdependencies, the relationships between these parties in the shared institutional environment will have new capacities. The further ability of corporate foundations to draw expertise from other sectors such as NGOs and other aid organizations extends the nature of the knowledge connections available for creating new capacities. In this way there is institutional participation in guided

transitions towards the capacity and cooperation to management the impacts and development benefits of mining operations.

As this strategy is constructed from analysis of the existing experiences of the possible functions of corporate foundations, it appears this approach is technically possible. It does not require significant alterations in the form, or in the majority of current functions, of corporate foundations. It also does not require interfering in the process and principles of their establishment. Rather, strategy is a conceptual tool with long-term influence.

As such, we return to the biological metaphor presented in the introduction to the thesis. If the problem of the distribution of benefit from mining that corporate foundations address is a wound to the social fabric, a multitude of separate CSR programmes, either run by the firm, an NGO, or a corporate foundation - while helpful for those involved - do little to heal the injury. They are if you will a Band-Aid or plaster holding the situation together - if not hiding it from sight. Instead, the strategic approach to transition healing and transforming current institutional challenges to private sector involvement in development is a salve – a Neosporin or Savlon if you will – that integrates with the wound and promotes healing. The strategic approach to build institutional capacity and facilitate institutional transition is the work of a salve. It is messy. However, only through healing and engagement with the institutional challenges can corporations truly work towards corporate social responsibility, that which includes responsibility for the institutional capacity to sustain it, and actually involve themselves in fostering development and not dependency.

8.4.2 Corporate Foundation Strategy in Practice

This discussion starts to articulate this expressed strategy in practice using some sample ideas and general practices to consider for a forward-looking plan of action. The ideas represented in the table below are rather general and highlighted to indicate a critical difference for future practices between 'soft' and 'hard' action approaches to better integrate the strategy discussed above into the establishment and management of corporate foundations. 'Soft' approaches are used to foster the exchange of knowledge, shared engagement and provide positive incentives. They are specifically designed to minimize any interference in the contextually explicit design and performance of corporate foundations necessary for them to succeed in providing institutional transition where they operate. 'Hard' approaches, while perhaps a more satisfying standard to monitor change and reference oversight, in various ways limit the ability of corporate foundations to maintain their essential heterogeneity and contextually specific performance.

For example, take the third points in the positive and negative columns from the table below. The positive point: the creation of a set of principles for the performance and objectives of corporate foundations that includes a system for third party assessment and publication and transparency of the activities of participating corporate foundations. This would create communication and benchmarks for the performance of corporate foundations against a larger and globally recognized strategy without compromising their individual form, function and the nature of engagement with the firm, community, and external organizations that best suits their context. Whereas looking to the negative point: to link funding and finance, site access, compensation, or impact and benefit agreements specifically to the inclusion and creation of a corporate foundation. This would elevate the knowledge of and industry commitment to corporate foundations while at the same time diminishing the unique positive and generally mutually contrasted relationship between corporate foundations and

communities. This is not to say that corporate foundations cannot or should not be used for these purposes, but as an obligation of long-list of tick box requirements for various formal agreements the legitimacy of the corporate foundation is potentially easily undermined.

Table # : Sample Approaches to bringing the larger strategy for corporate foundations into practice.

Bringing corporate foundation strategy into practice (Sample ways to move forward)	Positive Approaches 'Soft'	Negative Approaches 'Hard'
1)	Creating a forum for the exchange of information and practices between practitioners, corporate partners, and community members involved in corporate foundations.	The creation of strict performance standards or oversight rules for the operation of corporate foundations.
2)	Fostering greater intra-industry participation by the leadership of mining corporations and corporate foundations to participate in research and governance projects concerned with the political economy of mining as distinct from CSR.	The establishment of an administrative authority (independent or through another existing body) to monitor or direct the activities or coordination or structure of corporate foundations.
3)	The creation of a set of principles for the performance and objectives of corporate foundations that includes a system for third party assessment and publication and transparency of the activities of participating corporate foundations.	To link funding and finance, site access, compensation, or impact and benefit agreements specifically to the inclusion and creation of a corporate foundation.

While just speculative examples, these ideas offer some appreciation of the sensitivity of moving forward in any over-arching rather than company-by-company or foundation-by-foundation approach to the integrations for a larger strategy for corporate foundation. They also indicate a need for awareness to the complications of the more formal incorporations of

corporate foundations in the tool-kit of activities to address the distribution of benefit from mining and improved corporate social responsibility. As repeatedly emphasized throughout the thesis, recognition of the scales of any program or coordinating efforts will also be essential. Differences between local, regional, and national operations and long-term plans must be addressed accordingly.

In addition to the attention to the difference between 'soft' and 'hard' approaches to integrating a larger strategy for corporate foundations it is important the main principles of this strategy remain the central focus. For emphasis these principles are: 1) institutional transition to sustainable institutional capacity for development from and beyond the distribution of benefit from mining and 2) exit of the corporate foundations in a timely fashion from individual projects and from the location altogether when their function is redundant as a result of the successful transition to a more sustainable institutional environment.

8.5 Concluding Discussion and Further Research

To conclude, here is a description of the thesis's finding in response to the theoretical questions and research aims posed in the introduction. The theoretical questions concerned two aspects of organizations and institutional change. The first questioned the process of organizations changing institutions, and contributing to bottom-up change rather than only being subject themselves to changes from institutional norms. It found that in both technical institutions and institutional environments organizations did affect change. This change process was not direct. It involved different ways that the organizations mediated their own and others' relationship with the institution or institutional environment. As seen in Chapter 6, the organization/corporate foundations furthered institutional evolution because of the

strategic relationship between their functions and the needs of the larger institution/corporation. In this case, the corporate foundations mediated the strategic relationship as the process of influencing change. In Chapter 7, again organizations influenced change in the institutional environment. In this example, the intervention is a clear process of mediating partnerships and facilitating knowledge transfer to build institutional capacity and thus change it.

The findings in respect to this first question of organizations and institutional change contribute to the findings for the second question. This question debated the opposing views of institutional change as the result of formal policy and designed change or as an evolutionary process (North 1990; Kingston and Caballero 2009). The findings and the theme of organizational mediation suggest that both work together in the process of organization led institutional change. This is more specific than the neo-institutional perspective that institutions co-evolve with their environments both modifying the other (Jessop 2001). The role of the organization, in this case corporate foundations, is actively change oriented as a matter of its design within the shared environment. Nonetheless, the process through which the change actually occurs or is mediated is evolutionary. It is the durability of institutions to structure norms and provide formal and informal constraints, their resistance to change, that characterizes them. Thus, looking for processes of change, it is logical that evolutionary change is effective because it *wears* on this durability and affects change. The findings are most valuable in showing what functions of organizations, or relationship between organizations and institutions, works to *wear* on institutions and create change.

The findings in response to the research objectives concerning the performance and role of corporate foundations to address the failure to distribute economic benefit were presented throughout the argument for a larger strategy for corporate foundations. Perhaps not yet properly addressed are the findings related to the research interests in the specific

concerns of economic geography. Most simply reduced, to answer the concern about institutions and uneven development, the use of economic geography highlights the necessity of heterogeneous institutions and organizations to coordinate with the particular conditions and needs of specific places where economic benefit is needed. Efforts to create only one ideal institutional or organizational model will fail to do this and further, rather than diminish, uneven development.

Further research

There are many new directions for further research to build on and continue the work of this thesis. Five such new directions are highlighted here. First, the proposal for the larger strategy of corporate foundations is nascent and requires more evaluation in a number of ways. It is necessary to examine the industry response to this proposal, to evaluate the process of incorporating it into practices, and to determine a way to measure or judge changes in institutional capacity as a result. Also, how will activist, industry governance, and transnational governance mechanisms acknowledge or incorporate the role or potential of corporate foundations?

Second, there are also several possibilities for alternative uses of corporate foundations. These include ways they may be used, or potentially outside the scope of this research are used, to compensate for irresponsible behaviour or damage from the firm's operations. This thesis has researched corporate foundations that do not pay or manage compensation payment. More research into the confusion over providing benefit versus providing compensation with this organizational form is necessary.

Thirdly, the process of mediation that facilitated institutional change was based on altering the conditions for navigating the institutional environment in relation to other participants. By mediating partnerships and knowledge exchange to effect change by building

capacity, corporate foundations altered the relation of institutions in the environment to each other. This pattern of influencing change was provocative for institutional change. Further insights into these dynamics could be made through an examination that uses the tools of a relational geography framework (Sunley 2008; Bathelt and Gluckler 2011).

Fourth, future research could compare the organizational functions of corporate foundations presented in this thesis against other models to specifically address regional benefit distribution. This could include comparisons with other industries and circumstances of organizational change. If the strategic choice of organizational functions is related to institutional change it could also be used to test the performance of other change driven organizations. Application of this research in other fields may also serve to highlight other institutional challenges that could be addressed through mediating or transitional organizations. For example, Nigeria has established Oil Producing Area Development Commissions charged with managing regional distributions of benefit. However, they are considered ineffective in "their inability to alter the opportunities and incentives for rent seekers and allow for active community and civil society participation" (Idemundia 2012). Further research could consider what is different about this form of engagement and what the experiences of corporate foundations could provide for future work.

Finally, although the booming merger activity between majors of the mining industry in the 1990s has quieted, new mergers such as that proposed between Glencore, a commodities trading firm, and Xstrata, a large mining firm, suggest that the process of marketing minerals is also likely to transform. Further research could compare the nature of firm transition in the markets with the processes of firms' transitions to engagement in development. In particular, it could explore the differences in managing firm changes within the upper global hierarchy of firm operations – such as through greater involvement in

commodities trading – with the processes of managing the specificity and heterogeneity of development engagement at many different sites.

This research would occur at a critical moment in the progression of the mining industry's involvement in development. The ICMM has just marked the first ten years of its operations, and thus the first decade the industry has formally started to face the challenges of their development impacts. It is now critical to assess what has gone before in order to better manage future endeavours and approaches to improve the distribution of the economic benefits of the mining industry. Through its analysis of the relationship of the theoretical and the empirical this research process pointed to the critical role of corporate foundations as mediators. This role presents opportunities for corporate foundations to move forward, furthering our understanding of the institutional challenges to the mining industry's involvement in development.

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Appendix 1: Key to Coded Representations

These categories presented below divide the interview participants into groups as coded respondents. This allows for citing of the interviews and participant observation in the chapter narratives while preserving the anonymity of individual respondents. Footnotes are used in the empirical chapters to indicate which conversations contributed to the information being presented. The characterisation of different categories of respondents helps to better situate the nature of the perspective and positionality of the cited respondent.

The codes are:

A type respondent:

Employee of a major mining firm (Headquarters or Regional Office) generally a leadership position and responsible for the social and environmental performance and programmes of more than one mine.

> **A1 type respondent (subcategory)**
>
> Employee of a major mining firm working on one mine's environmental, social, and/or human resources team

B type respondent:

Employee or administrator of a Corporate Foundation

C type respondent:

Employee of a consultancy that works with the mining industry on environmental and social performance

D type respondents:

Employee or member of an organization that researches the mining industry's governance, social and environmental performance through a governance-oriented organization or research group. Not necessarily employed directly by a mine or foundation.

E type respondent:

A member of a mining related organization, including NGOs and mining support industries that are partners in corporate foundation projects or legal or geological support organizations.

F type respondent:

Member of the local community affect by the mine and/or corporate foundation activities

Appendix 2: Further information on Participant Observation

1. South Africa

Participant Observation: Full days spent in one area or premises taking part in daily activities.

March 2, 2010: Rustenburg Platinum mining squatter camps

March 3, 2010: Bench Marks offices Johannesburg

March 4, 2010: Potchefstroom University

March 5, 2010: Potchefstroom University

2. Namibia

Days of Participant Observation:

March 10, 2010: On site at the Arandis Foundation Offices and education centre in Tamariskia,
Swakopmund.

March 11, 2010: On site at the Rössing Uranium Mine. Full tour of mine, processing and facilities.

March 17, 2010: On site at the Arandis Foundation Offices Arandis and Arandis Town Hall

Institutions and Organizations involved in Namibian uranium rush and development:

Rössing Foundation
Erongo Regional Council
Namibian Chamber of Mines
Uranium Stewardship Council
SAIEA
Rio Tinto
SIAPAC
Arandis Town Council
Erongo Development forum
Local NGOs and environmental consultancies: NACOMA, NNF, ERFM

Other mining operations in the Swakopmund area:

Paladin Resources
Langer Heinrich mine
Areva
Klein
Trekkopje mine
Bannerman
Forsys,
Valencia mine
Swakopmund Uranium

And juniors and prospectors such as Reptile Uranium, (67 prospecting licenses)

Major international donors for Rössing Foundation implemented projects:

US Millennium Development Challenge Corporation
USAID
WWF US
EU
UNESCO
LIFE (Living in finite environments for CBNRM programmes)
IRDNC – Integrated Rural Development and Nature Conservation
Kolin Foundation (Swiss-based foundation for developing world growth projects)
Norwegian and Icelandic Government (fisheries training)

3. Chile

Days of Participant Observation:

June 17, 2010: At Anglo American sites within a day trip from Santiago. Morning and lunch at: Chagres smelter and Nogales Valley Community. Afternoon at: El Soldado copper mine and three surrounding community development programmes.

June 27, 2010: Trip to El Teniente, Codelco copper mine near Rancagua Chile and Sewell historic mining town. ** Indirect Participant Observation - joined a Chilean tour group of the site and entered the mine

June 30, 2010: Day trip to Minera Escondida from Antofagasta. Meet with people in the Electrowining and Concentrator plant and had lunch in the labour cafeteria and conversations with staff manager.

July 7, 2010: Day touring the programmes run or supported by FME in Antofagasta

1) Conac Casa: Cancer care centre (live-in for patients and family)
2) Jardin del Niños: Part of the national initiative for early childhood education for poor children
3) Ayuda Marie Centre: Treatment and shelter for abused women and teens

July 13, 2010: Day traveling to three small indigenous communities close to the Cerro Colorado mine (roughly 60 miles from Iquique). The largest was Mamiña, an agricultural community now working to develop and tourist industry for the sulphuric mud pools that are meant to be healing. Community investment projects are supporting the training for this business as well as helping to build greenhouses for flowers that can be sold in Iquique markets.

July 15, 2010: Afternoon in Fundación Educational Collahuasi offices. They were just moving in and I had the chance to go desk to desk and chat with people about the foundation and their roles within it.

Appendix 3: Supplementary Data

Information from the Appendix 5 of the Experiences with Mining Foundations Report (Nelson, Bannerman et al. 2010)

This table indicates the area of activity for the foundations the report reviewed. It provides a good opportunity to see the spread and popularity of different engagements

Focus Areas for Investment

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This table in this thesis is not available for public consultation online. Restricted digital material is held in an archival copy and is not available for consultation in perpetuity.

This image in this thesis is not available for public consultation online. Restricted digital material is held in an archival copy and is not available for consultation in perpetuity.

Appendix 4: Photographs from Fieldwork

List of Photographs:

South Africa

1) Rustenburg squatter camps with mine tailings piles in the background
2) Women in squatter camp of Rustenburg getting water from a recently delivered tank provided by the mine
3) Children in squatter camp with a home made from the waste of the extractives industry (Door is made of Shell metal)
4) One of the largest labour squatter camps, this one is provided with government support – see the electrical lines, but there is limited plumbing and water
5) Entrance to a Platinum mind shaft, Rustenburg

Namibia

6) The Uranium mine on an hazy and dusty morning
7) Uranium mine processing facilities and tailings in the background
8) The town of Arandis and the Rössing Foundation Arandis office
9) Looking in at Arandis from the desert
10) View of Swakopmund from the adjacent start of the desert dunes
11) Endangered chameleon munching a bug in the Namib Desert. It is one of the species threatened by the environmental impacts of increased mining
12) Dunes of the desert just south of Swakopmund

Chile

13) Photo of the Caitlin McElroy and a colleague with miners inside the El Teniente mine
14) The entrance to one of the levels of mining in El Teniente. Many of the tunnels are big enough to drive a bus through.
15) On-going work in the pit of the open-cut copper mine, Chile.
16) El Tatio geyser field. North of San Pedro de Atacama and 4,000+ meters altitude it is part od the unique geological and other-worldly Chilean altiplano
17) Indigenous village in the altiplano participating in FME's inclusive business program
18) Altiplano landscape – volcano
19) Altiplano landscape
20) Fiesta la Tirana, a small community near Iquique that hosts an annual traditional dance festival competition from villages that make pilgrimages to the town as a holy site.
21) Mamiña village (near Cerro Colorado and an indigenous community) working to build greenhouses in the valley to grow flowers for sale in Iquique
22) Mamiña sulphuric clay project they hope to develop into a health spa tourist business
23) Caitlin McElroy at copper mine in Chile and next to the very large mill crusher.

1) Rustenburg squatter camps with mine tailings piles in the background



2) Women in squatter camp of Rustenburg getting water from a recently delivered tank provided by the mine



3) Children in squatter camp with a home made from the waste of the extractives industry



4) One of the largest labour squatter camps, this one is provided with government support – see the electrical lines, but there is limited plumbing and water



5) Entrance to a Platinum mind shaft, Rustenburg



6) The Uranium mine on a hazy and dusty morning



7) Uranium mine processing facilities and tailings in the background



8) The town of Arandis and the Rössing Foundation Arandis office



9) Looking in at Arandis from the desert



10) View of Swakopmund from the adjacent start of the desert dunes



11) Endangered chameleon munching a bug in the Namib Desert. It is one of the species threatened by the environmental impacts of increased mining



12) Dunes of the desert just south of Swakopmund



13) Photo of the Caitlin McElroy and a colleague with miners inside the El Teniente mine



14) The entrance to one of the levels of mining in El Teniente. Many of the tunnels are big enough to drive a bus through.



15) On-going work in the pit of the open-cut mine, Chile.



16) El Tatio geyser field. North of San Pedro de Atacama and 4,000+ meters altitude it is part od the unique geological and other-worldly Chilean altiplano



17) Indigenous village in the altiplano participating in FME's inclusive business program



18) Altiplano landscape – volcano



19) Altiplano landscape



20) Fiesta la Tirana, a small community near Iquique that hosts an annual traditional dance festival competition from villages that make pilgrimages to the town as a holy site.



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