

MINING SHAREHOLDER VALUE:
FINANCIALISATION, EXTRACTION, AND
THE GEOGRAPHY OF GOLD MINING

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ABSTRACT

Mining shareholder value: Financialisation, extraction, and the geography of gold mining

This thesis examines the influence of institutional investors in the activities of large, publicly traded gold mining companies. As key sources of financing and dominant shareholders in company stocks, institutional investors have pushed for the maximisation of shareholder value as company goal. I examine the financial and operational realignments implemented by firms and their implications for production, growth and geography in the commodity boom and bust cycle of 2003–2015. I argue that the bid to deliver shareholder value manifested in highly fragmented, but interlinked, sites of accumulation: sharp swings in stocks and dividend payments that diverged from their actual basis in production, alongside increasing claims to future profitability through spatial restructuring. I theorise the process as contradictory-laden and crisis-prone as mineral extraction came to be mediated by the yield requirements, investment motives and risk tolerance of institutional investors. The thesis contributes to key debates on financialisation and mineral extraction within geography, political ecology and the financialisation literature.

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DECLARATION

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CHAPTER 1

Introduction

Throughout history, gold has been prized for its lustre, its rarity, and its utility as a store of value. Its present day valuation is not far removed from this. Gold today is buoyed up by Central Bank's desire to hold gold, cultural affinity for gold jewellery, and investors' demand for a hedge and container of wealth—its most significant sources of demand. Yet barely two decades ago, gold's demise was being proclaimed. In 1999, the United Kingdom's decision to sell nearly half of its reserves triggered a price fall, the lowest price in two decades. Gold slid to a low of \$250 per ounce as concerns grew on other European central banks following suit. Gold appeared as a 'barbarous relic'¹ in a world of strong currencies, stored in bank vaults and unable to turn an income.

Ten years forward, in 2009, the gold price was about to break through the \$1000-an-ounce mark. Following the 2007/2008 economic crisis, gold has had a reversal of fortune, regaining its role as a safe haven, the go-to commodity when fiat currencies are in trouble. With money in search of new avenues to profit at a moment where everything seems to have slashed their value, gold shone out not only as an insurance but as a potential investment. "In gold they rush", a Financial Times feature article reported in the wake of the crash, in reference to the herd-like behaviour of hedge funds into gold. With speculation ripe on future

¹ This moniker for gold is famously attributed to John Maynard Keynes.

price appreciations, gold drew in some of the largest hedge fund managers, triggering an influx of investment from other investors (Blas, 2009).

Of the various ways available to ‘own’ gold, stockholding in gold mining companies presents one convenient way to gain ‘exposure’ to price appreciations. In stock exchanges, stocks or shares are bought (and sold) giving the holder ownership titles to a publicly held company. For investors, stock exchanges have the added advantage of ‘tradability’—stocks can be held or liquidated quickly, and in the process capital gains are earned.² Purchasing the gold bullion, in contrast, incurs storage and commission fees, and presents logistical challenges (i.e. in its transportation and withdrawal) for its holders that make for powerful disincentives for large investors.

For some institutional investors — entities that are highly capitalised and largely speculative in their investment choices³ — stock ownership in gold mining firms was a preferred investment in a rising gold price. For these types of investors that seek ‘above-market returns,’ leverage to income from production was key. Companies that produce the metal, and earn from its sales, were considered poised to outperform alternative gold investments that could at best only provide gains from gold price movements. Through cash flows from mines in production, investors can also earn from dividend payments. Anticipation, and the realisation of, value (from production), in short, buoyed up the attractiveness of owning mining companies.

Investing in mining firms is speculative in another sense. Stockholdings provide not only leverage to income, but also, by extension, to mineral operations. Cautionary notes found in official filings and forward-looking statements issued by mining companies capture the breadth of the risks associated with the business: financial risks (currency risks, interest risks, liquidity risks, and price risks),

² Capital gains are realised from selling stocks or shares when their values are higher than the original purchase. The flip side, selling when share prices are down, leads to losses for the shareholders.

³ Following the definition of the US Securities and Exchange Commission, these are entities that hold at the minimum \$100 million in equity assets under management.

geopolitical risks, and accidents. The presence of the product in the subsurface, an invisible space that is at best approximated, also makes actual production variable. Gold is relatively scarce compared to other metals and far more easily ‘exhausted’, requiring recurring capitalisation to sustain operations. Its time requirement is long-term and its returns typically counter-cyclical: a gold mine can take years between discovery and development, another few years to bring it to its full (production) capacity, and its sale may or may not coincide with a high gold price. Gold mining stocks as a form of investment is therefore doubly speculative, as the gold mining business can be even more illusory in its anticipated returns.

Institutional investors, in contrast, are driven by short-term, total return⁴ objectives. Whereas the typical shareholder follows a passive, long-term, ‘buy-and-hold’ strategy, institutional investors are ‘activist’ shareholders, geared at re-orienting companies to cater to their short-term return requirements. This is encapsulated in the ‘shareholder value’ doctrine. Ideologically, it instils in company managers a notion that the firm is ultimately beholden to ‘(institutional) shareholders’ as (large) owners of capital, over one that weighs the interest of other ‘stakeholders’ in the company (i.e. employees) (Dore, 2008). To create or maximise shareholder value, companies are expected to ensure stock price appreciations and rising dividend payments. Stocks and dividends become the indicators of company and managerial performance, instead of traditional measures of product market share (Fligstein and Shin, 2007; Epstein, 2005). This has resulted to sweeping reorganisations as each business activity came to be assessed based on its contribution to shareholder value rather than production growth. Target companies have been documented to have downsized their activities through asset sales, refocused company investments on core activities, and restructured company organisation into spin-off firms (O’Neill, 2001; Pike, 2006). Shareholder value creation is considered a manifestation of the financialisation of the firm as it re-aligns company priorities with that of institutional shareholders (Froud et.

⁴ Total returns refer to the net gains from dividends, share price performance and interests, among others. While dividends tend to be viewed as realised in the long term and share price in the short term, institutional investors like hedge funds require simultaneous increases in both dividends and share prices in the short term.

al., 2000a; O'Neill, 2001; Jacoby, 2008; Pike, 2006; Lazonick and O'Sullivan, 2000).

While institutional shareholders are not entirely new players in stock markets, their composition, strategies and investment priorities have evolved. In the 1980s, pension funds and mutual funds were the most prominent and, relative to the institutional investors of today, are considered to be longer term investors in stock markets. The emphasis on short-term returns is attributed to the emergence of new entities such as private equity funds, hedge funds and asset management firms which are less regulated, exclusive, and have a wider investment latitude than other institutional investors (Dore, 2008; Froud, et. al., 2000a and 2000b). With hedge funds, the amount under management in 1999 stood at US\$40 billion, growing to \$1 trillion by the end of 2004 as their numbers grew by 74 per cent (or a total of 3,307 hedge funds) (Anderson and Atlas, 2005). Their investment strategies are also more aggressive and are “about insuring above-market returns, not breakeven or humdrum market tracking” (Corner House, 2008).⁵

The thesis considers this interplay, between mining firms and institutional investors, and their divergent priorities and investment horizons, in the context of the commodity boom and bust of 2003-2015. The long stretch of buoyant prices that characterised this period (from 2003-2012) earned it the label “commodity super cycle.” For gold mining firms, it opened up new financing opportunities and new growth prospects, especially in the wake the 2007/2008 crisis due to strong institutional investor demand for mining stocks. Industry reports have described this convergence as a ‘mismatch’ given institutional investors appetite for quick returns and the ‘time’ and patience’ required by mineral operations

⁵ As a Corner House publication explained: Hedge funds do not hedge their bets merely to cover their costs (unlike the farmer seeking to ensure her costs of production): they hedge in order to accumulate.. their clients demand more than the run-of-the-mill “beta” returns achieved by conventional money market funds where the return on assets comes solely from the movement of prices in the market ...hedge funds are after “alpha”...achieved by betting not only on the price of assets going up but also on them going down. The hedging undertaken by hedge funds... is about insuring above-market returns, not breakeven or humdrum market tracking. (Corner House, 2008: 16)

(Ernst and Young, 2013: 4). Gold mining companies are “not in the business of making quarterly killings,” as the Chairman of a gold mining firm had phrased it (The Economist, 2014). Yet, being key sources of financing and new majority shareholders, institutional investors were well-placed to steer companies along shareholder value objectives (Labban, 2008; Williams, 2000; Froud, et. al., 2000a). This alignment between mining companies and institutional investors fuelled gold mining activities and propelled firms to cater to shorter-term priorities—a contradictory dynamic that enabled and constrained growth possibilities in the industry.

1.1 RESEARCH AIMS AND OBJECTIVES

The overarching aim of the thesis is to uncover the reconfigurations that came with the adoption of shareholder holder maximisation as industry mantra. ‘Shareholder value’ is understood here as not simply a financial re-alignment but one that requires a parallel shift in operations to support expectations of stock price rises and dividends. Since stocks ‘adjust’ to anticipated future production, and dividends ‘claim’ a share of profits, mining companies must continually demonstrate their ability to meet production targets, replace mined reserves, and deliver high cash flows from operations. Stocks and dividends are therefore intertwined with actual and future assumptions on production.

A first objective is to map out and unpack the role of institutional investors in industry financing in the past commodity boom and their influence in the business decisions of gold mining companies. A sample of the largest gold producers—Barrick Gold, Kinross, Agnico Eagle, Goldcorp and IAMGold—serves as case study. I document practices of mine/site selection and development, mergers and acquisitions, explorations, diversification, and divestment to see how these have been altered by institutional investors’ investment and returns criteria. I then illuminate the concrete procedures implemented internally to institutionalise the principles of shareholder value in the day-to-day decision-making processes of the firm.

A second objective is to situate firm-level financialisation (i.e. shareholder value) in the broader financialisation process (system-level financialisation). The concept of shareholder value first emerged as a manifestation of the growing concentration of capital ownership in institutional investments. This is itself rooted in the transformations of the 1970s and 80s that brought about a new ‘order’ in industry-finance relations. The re-organisation of finance capital (i.e. its deregulation and internationalisation) at this time had implications for industrial capital formation, charting a different path for firms to ‘grow.’ This part of the research historicises developments in financial markets alongside developments in the gold industry to highlight their interdependence and, indeed, co-evolution. Importantly, this provides a historical lens through which we can better grasp the significance of institutional investment and elucidate the different arrangement between finance and industry that prevailed in the two decades prior to the commodity boom.

A final objective is to investigate the socio-ecological implications of shareholder value. ‘Socio-ecological’ is used here not to denote an ecological audit (i.e. of mapping increases in environmental degradation) as to probe into how the disciplining role of finance may have reshaped the extractive space in which shareholder value strategies unfold. In the context of mineral operations that are geographically spread and that depend on a natural resource, shareholder value is necessarily premised on the particular spatial and ecological configurations that make for differential profits. Valuations are tied to *place*, the socio-material attributes of specific mines and projects that allow for, or that imply, higher profitability for the firm. Taxation, energy costs, transportation, wages, political risk and resource quality (e.g. ore grade)—and their implications for costs and capital-turn over—mediate shareholder value expectations. This incentivises firms to seek out or actively produce the arrangements that are essential to shareholder value delivery. I bring these dynamics into focus through a case study of Pascua Lama, a large-scale gold project in Chile.

Shareholder value maximisation, in this sense, operates through multiple spaces and scales. I trace the ways in which it became articulated in industry and firm

strategy, and as it manifested in their operations. I follow this process from the stock exchanges of North America to the multi-billion Pascua Lama project in Northern Chile; from the abstractions of shareholder value to the production and appropriation of the most value-creating ores, moving across scales (and not just linking the macro to micro) to draw out the actors and social relations through which shareholder value is expressed and enacted. Empirically, it concretises, rather than just takes as a given, the active re-working of space—and nature—that are indispensable to (and indeed, that are in-built in) financialised strategies of maximising shareholder value.

The key questions that drive the research are as follows:

- 1) How has shareholder value maximisation impacted resource extraction activities and the behaviour of companies engaged in them? In what ways?
- 2) How has the evolution of financial markets, instruments and actors impacted firms' business strategies?
- 3) What are the socio-ecological implications of a financialised turn in extractive practices?

1.2 THEORETICAL CONTRIBUTIONS

The thesis is well positioned to contribute to the financialisation literature, and economic geography and political ecology literatures on extraction. Firstly, it raises important nuances on current accounts on the 'geography' of finance, which tend to either privilege the national scale as a frame of analysis, especially US and UK economies (see critique by Pike and Pollard, 2010; Christophers, 2009), or overstate the global nature of finance (see critique by Swyngedouw, 1996). By conducting the study at the scale of the transnational corporation, the thesis is able to overcome "the distortions of the territorial trap" (Labban, 2013: 3) and emerge the expansive, albeit uneven, geographies that are intertwined with financial processes of shareholder value maximisation. This allows us to

recognise the existence, and persistence, of financial centres of power, as embodied for instance in the Toronto and New York stock exchanges, and assert that the search for maximum value is far from fastened to a specific geographical scale and go well beyond these finance capitals.

Secondly, the findings of the research shed light on the relationship between finance and production and court us to see these as interlinked and independent of each other. ‘Complicating’ our view of finance and production’s relationship helps qualify the observed shift in profiteering in the sphere of circulation while grounding it in concrete material processes that ensure that value circulates. In this case, shareholder value expectations can run ahead, and overtake, values in actual production—a divergence heightened by the long term requirement of mineral extraction—while at the same time setting in motion strategies that secure expected cash flows from production. I propose in this thesis that these strategies include greater control over the production process through the disciplining of firms and their extractive activities. The research adopts, and calls for, a more expansive understanding of financialisation and its dynamics that takes into account its expansion into new areas previously considered to be under the purview of industry capital, or other forms of capital (see Fine, 2014).

Thirdly, the thesis maps on to current efforts within political ecology to move towards a better understanding of corporate activity (see for example Dougherty, 2013; Bury, 2008; Labban, 2013; Hilson and Yakovleva, 2007; Emel and Huber, 2008; Himley, 2010). A concrete contribution is its focus on mining and finance and corporate decision-making. I argue that the financialisation of the firm carry important ramifications for mining geographies, which (partly) explains the extensification and intensification of gold mining activities witnessed in the past commodity boom and the disruption that followed in the boom’s bust. The findings provide an opportunity to connect with the vibrant work within political ecology on mineral extraction by making visible the internal dynamics that inform decisions of investment and growth, and disinvestment, mine closure and sale. The power relations within firms and the contestation and cooperation of different factions that shape mining activities tend to be obscured in political

ecology, leading to a view of the corporation as a monolithic and coherent entity. Further, by bringing attention to financialised practices in the gold mining industry, the thesis is able to connect finance to the ‘particular,’ to the material transformations in specific places and to the experiences of local communities.

1.3 RESEARCH DESIGN

The research adopts an approach that strides different levels of analyses to advance our understanding of financialisation’s scalar transformations and constitution. I draw mainly from Marxist analyses on finance capital (or system-level or systemic financialisation), the shareholder value governance literature (or firm-level financialisation) and the literature on (finance) capital-nature within geography and political ecology. While system-level or firm-level terminologies are often used to refer to the levels ‘occupied’ by financialisation, their usage here should not be construed to denote hierarchy: whereby global processes are a priori, and determine local outcomes. Places, as Swyngedouw notes, are ‘not passive recipients which adjust to the whims of money flows’ (1996: 136). In designing the research, rigorous attention to the process, and the social relations in which it is inscribed, is therefore required to avoid a one-way causality—of financialisation leading to x outcome.

A case study approach, in this regard, is best suited. Case studies by design, allow for a systematic treatment of a given phenomena, in this case financialisation, to empirical rigour. As a strategy for research inquiry, the attraction of this approach derives from its ability to illuminate the contingency of the process—as it is ultimately ‘context-dependent and multiply-determined’ (Peck, 2003: 731), while simultaneously allowing us to create compelling attributions.

In the first and second empirical chapters (Chapters 3 and 4), I consider a sample of the largest Canadian gold mining companies trading in the New York and Toronto Stock Exchanges (NYSE and TSX), the key stock listings for mineral financing, to introduce the specific position that gold firms occupy in the industry. The selection is based on their shared attributes as the top producers and

their access to certain types of financing and investors. Barrick Gold, Kinross, Agnico Eagle, Goldcorp and IAMGold have been key recipients of institutional shareholder investments through funds raised in the stock market and display high levels of institutional shareholder ownership. In terms of ownership and management structure, these companies are internally managed by a board of directors and owned by a diffused set of institutions and individuals through stockholdings.⁶ They are also primarily responsible for the production segment of the supply chain and hold several mineral operations spread in different countries and continents. They could thus provide a useful lens for analysing the calculations that firms make on growth and its attendant geographies at high and low stages in the commodity cycle and for clarifying the role that institutional shareholders have in these decisions. The sample selection was also partly influenced by methodological considerations. These companies are subject to the same disclosure regulations in the New York and Toronto stock exchanges and follow the same accounting methods for their financial statements, allowing for cross-comparisons. Other large producers, mainly South African, US and Australian firms are differentially situated in financing and the legal and accounting systems that govern their activities (see Methods).

In Chapter 5, I single out Barrick Gold as an emblematic case of a ‘financialised firm’ and as the largest gold producer. Without aiming to be representative of the entire industry, the selection of Barrick Gold privileges the best representation and combination of production-oriented growth (the supposed hallmark of a traditional approach to mining) and financialised practices in gold mining companies, pursued by the company as complementary strategies. Chapter 6 is focused on a specific project, the Pascua Lama gold project in Chile by Barrick Gold to empirically demonstrate the material transformations that accompany shareholder value commitments, while also bringing attention to the particularities of place that can facilitate or impede such commitments. The cases thus move from the industry level, to the company level and project level in order to trace its scalar dynamics.

⁶ A decentralised ownership allows institutional investors to hold sufficient influence within firms, a type of ownership that became pervasive from the 1980s onwards.

1.4 RESEARCH METHODS

Taking the firm/industry as a central focus of study carries important methodological issues. Corporate interviews can be difficult to secure, information disclosure in company reports are oftentimes insufficient, and the lack of knowledge and familiarity with business jargons can create powerful disincentives for researchers. In the next sections I discuss these issues in the context of the research, as well as point to important ‘openings’ within the industry that can facilitate access to corporate elites and company documents. I follow this with a discussion of the quantitative and qualitative methods employed in the research.

1.4.1 Preparatory work

Prior to the fieldwork, I took up an intensive course on mining finance and started attending industry events to get familiarised with how the industry works (see Box 1). I first participated in a conference held in London organised by London’s Chamber of Commerce. This helped me get an initial scan of the participants that attend these gatherings, get acquainted with industry players, and learn from industry presentations. Having no previous background in mining, the challenge of making sense of industry terminologies was one of the first hurdles I encountered. Recognising that a typical hurdle in data gathering is due to differences in the “the intellectual worlds of the interviewer and elite respondent” (Hertz and Imber, 1995: 76), learning the language spoken by corporate and financial elites was critical. It was also necessary to build the capacity to understand the significance of corporate terminologies, to “be more reflective in making judgements as to the[ir] meaning”, when analysing corporate discourse and accounting (Carroll and Fennema, 2004: 371). I took a 4-day intensive course in Stockholm in April 2013, developed and conducted by Raw Materials Group and Imperial College London, to start building industry-specific knowledge on mining investment and finance. The course was tailored to prospective investors and investment bankers that are new to the mining sector. It was very useful for learning the different methods used by the industry to produce ‘bank-

able' studies, an exercise at making the underground legible to money capital, as well as building a group of contacts that work for mining companies and the banking sector.

In 2014, during the fieldwork in Toronto, I again signed up for a full-day course with the Prospectors and Developers Association of Canada in March 2014. The short course was especially relevant as it is focused on resource development and the relationship to company stock prices. It helped supplement the earlier course I took, this time with emphasis on the interlinkages between the physical work of exploration and mine development and the financial (stock) valuations attached to these different stages.

Box I. Courses and conferences attended

16 to 19 April 2013 - Certificate Course on Guidelines to Exploration and Mining Investment from Imperial College London and Raw Materials Group, Stockholm, Sweden

5 November 2013 – Conference: Global Mining Finance: New Frontiers Conference, London Chamber of Commerce and Industry, City of London, UK

1 March 2014 – Short course with the Prospectors and Developers Association of Canada: Investment fundamentals: Understanding mineral exploration and resource development and the relationship to company stock prices, Toronto Convention Center, Canada.

2 to 5 March 2014 – Conference: Prospectors and Developers Association of Canada, Toronto, Canada

29 May to 1 June – Conference: People's Tribunal on the Canadian Mining Industry, Montreal, Canada

2 September 2014 – Follow the money: Research methodologies for researching financial flows, CRESC Seminar, Manchester Business School, University of Manchester

1 to 4 March 2015 – Conference: Prospectors and Developers Association of Canada Annual Conference, Toronto Canada

31 March 2015 – Conference: Gold Focus 2015 Report, City of London, UK

In the area of business finance, I participated in a one-day course with the University of Manchester's Business School on methodologies for researching financial flows and have kept in touch with key contacts that have done similar research. They have been key sources of information and expert opinion.

1.4.2 Question of access

Studying the financialisation of the corporation is necessarily a study of elites. Elite decision-making can serve to capture the nature of the strategies employed to maximise shareholder value and provide insight into the interactions in corporate boardrooms, annual shareholder meetings and investor conferences that informed these decisions. Shareholder value maximisation is an ideological shift, and its implementation required organisational changes and restructuring that were internally deliberated.

Much of the work in economic geography and geography of finance in related research, notably by Clark (2000; 1998), Thrift (1996), Schoenberger (1991, 1996), Bakker (2000) and Knox-Hayes (2010) utilised corporate, in-depth interviews ('close dialogue') with industry players. In this strategy, the issue of access is pertinent. Business elites, given the sensitivity surrounding their operations, are especially elusive to interviews that seek to pry into company affairs. In the mining industry, the conflicts around mineral extraction also made for more cautious company relations with the public. The hierarchy of business organisation also posed another logistical impediment. Organisational gatekeepers mediate email requests and follow-up calls to company executives and often try to insulate them from interview requests. The process of soliciting interviews could thus lead to outright rejections, cancellations or a prolonged process of follow-ups.

There are, however, other ways to get access to company executives directly. The Annual Conference of the Prospectors and Developers Association of Canada (PDAC) held in Toronto in late February or early March yearly is an important gathering for business and political elites, as well as the largest institutional in-

vestors involved in the mining business. The PDAC is the largest event for mining investment and capital raising globally that attract over 20,000 thousand attendees (as estimated in 2014 and 2015) from over 100 countries. I attended the conference for two consecutive years, in 2014 and 2015, during which time I was able to build contacts, vet potential respondents, and attend sessions relevant to my research. The format of the conference allowed for wider interaction among members of the industry and potential investors, with over a thousand booths set up by mining companies, suppliers, and industry analysts to market their mining projects, equipments or publications. Conference participants were encouraged to interact with company representatives and exchange contact details. In my case, this allowed me to discuss more fully the kind of information I was looking for and request for possible contacts within the company. The company representatives manning the booths are knowledgeable about their operations (with usually a senior geologist and investor relations officer present for the larger companies) as the PDAC is a key venue for meeting potential investors. In this regard, it provides a 'short-cut' and a more personal exchange at the onset that facilitates access to corporate executives.

The PDAC's student programme was another important entry point. The programme is designed to give registered students a chance to interact directly with industry players through an all-access pass (to all sessions) and a dedicated industry-student networking event. I met and conversed with potential respondents in these venues and sent them formal requests for interviews after the event. It proved to be widely successful for securing elite interviews with mining executives, albeit less so with institutional investors.⁷

Access to state representatives from Chile was also facilitated by attending the PDAC. Key mining states, including South Africa, Chile, Peru, Mexico and Brazil, send delegations yearly to this conference. I attended sessions sponsored by the government of Chile in 2014 and 2015 where key officials

⁷ The only setback however was that while institutional investors were accessible in these venues, they generally only stay for the duration of the conference. Thus, the opportunity for a sit-down interview was limited, save for those with offices in Toronto.

(e.g. Minister of Mines) and representatives of state agencies were present. I then followed up on these contacts during the fieldwork in Chile.

1.4.3 Quantitative and qualitative methods

The study combines quantitative and qualitative methods. Quantitative methods involve the gathering of financial, statistical and mine data as divulged in financial statements, regulatory filings, and mining/financial databases. Qualitative methods include document and archival research and semi-structured interviews. These methods were used as complementary approaches to inform and validate the data.

INTERVIEWS

The use of semi-structured elite interviews for this research was mainly to understand how the gold industry has changed over the past decades; to materialise and contextualise the measures taken by firms to maximise shareholder value (beyond that which is divulged in their annual reports and other documents, as well as industry newspapers); and to unravel the considerations behind company acquisitions/divestment decisions, explorations, and mine ramp-ups and closures, among others. Interview questions were mostly open-ended rather than standardised to ensure a more interactive exchange between interviewer and respondent (see Schoenberger, 1991). This interviewing approach also avoids limiting the respondents to pre-set categories and is sensitive to differentiation—as firms are differentially situated, even for those that belong to the same industry.

The fieldwork commenced on 22 November 2013 (see Box 2). Forty-four (44) qualitative interviews and close dialogues (see Clark, 1998) took place between December 2013 and September 2015 in Chile, Canada and the UK, plus three (3) Skype interviews and two (2) email interviews. The schedule has been adjusted during the fieldwork as contacts were established and opportunities opened up to secure additional elite interviews. The typical elite interview required several follow-ups, especially in the beginning. Two trips were made to Chile and three

Box 2. Fieldwork schedule in Chile, Canada and the UK

Chile - 22 November 2013 to 8 February 2014

Canada - 28 February to 20 March 2014

Canada - 4 May to 14 June 2014

Chile - 20 October to 8 November 2014

Canada - 27 February to 10 March 2015

UK - 31 March 2015 to 15 September 2015

to Canada (two of which were scheduled around the PDAC meeting). This schedule also allowed me to chase up on information gaps following initial data processing.

While there are conflicting definitions on who are considered ‘elites’ (Welch et al., 2002), I use the term to refer to those that occupy high ranking positions within an organisation (e.g. CEOs, Presidents or Vice-Presidents or Ministers), or are sources of expert opinion by virtue of their role or extensive experience (e.g. senior geologists, senior analysts, environmental lawyers) in mining, financial industries and government agencies. There were four groups approached for elite interviews: company management, institutional investors, key market analysts, and political elites. For company managers, respondents that were well-placed to talk about the broad range of global operations that characterise large corporations like Barrick Gold, with a good overview of company strategies on investments, as well as operation-specific knowledge in key mining jurisdictions were sought in the first instance. Given the quick turnover in company positions in the past decade, both current and past company officers have been approached. For institutional investors, online documents and videos were used. There was also fairly wide media coverage on the tensions between institutional sharehold-

ers and corporate managers which illuminate clearly where the divergences in outlook lie.⁸

The level of openness across respondents vary, with some more guarded in the answers they supply. This tends to be partly influenced by their position within the firm, with those that are not part of top management or those located in regional offices especially concerned with confidentiality and anonymity (see Welch et. al., 2002). The method through which interviews were accessed (i.e. by email or in mining conferences) also seemed to be an important factor on the probability of securing the requested interview and the respondent's perception of the interviewer as an insider or outsider. In my experience, accessing elites through the PDAC brought a level of confidence and trust that one is in one way or the other 'involved' or 'invested' in the industry.

Mining, financial and political elites are of course savvy players. As Clark pointed out, it is important to recognise that in such industries, "where information is both the object of analysis and the medium of exchange, respondents are skilled and calculating informants" (1998: 82). Interview answers are not 'neutral', but actively forward a view that 'construct worlds' (ibid). It is therefore incumbent on the interviewer to maintain reflexivity and "a sense of skepticism" (ibid: 78) on the information divulged. This also makes it necessary to be well-prepared and to know the subject matter in order to pose strategic follow up questions, and to ensure respondents engage in (rather than control) the interview. Extensive document reviews were conducted prior to every interview, and cross-checks were done after, including through interviews with (other) firms, suppliers and market analysts to ensure empirical rigour. Notwithstanding, or perhaps, precisely due to

⁸ At the onset, I did not set out to systematically categorise the institutional investor composition of mining firms beyond making the distinction between regular and institutional shareholders. I recognise that there are key differences in the strategies of pension funds, hedge funds, and other types of institutional investors which I highlighted in the thesis where relevant. However, there are limitations to categorisation. While hedge funds are considered the most 'activist' in their investments and on shareholder value maximisation, Canadian pension funds are also considered one of the most aggressive players of late. It is therefore important to view these categories as dynamic, even as we recognise that certain types of institutional investors are more predisposed to push for sweeping reforms within companies.

the ‘subjectivity’ of respondents and the vested interests that naturally exist, close dialogue/semi-structured elite interviews as a method of research is valuable not just for the information supplied, but also for the subjective interpretations that these convey. How managers make sense and interpret the particular challenges of their business can equally be powerful indicators of what calculations informed business decisions.

While elite interviews are an important part of this type of research, they are also not the only source for gaining insights into company decisions. There have been several interviews given over the course of the past years in mining conferences such as the PDAC and media outlets featuring the Chairman, CEOs and VPs, in both print and video form. Webcasts of shareholders annual meetings and conference calls also provided information that explain shifts in priorities and growth outlook. These were used in conjunction with the actual interviews.

The fieldwork in Chile, while focused specifically on the Pascua Lama project, also gave me access to large gold mining companies operating in the country. Santiago de Chile serves as the headquarters of a number of mining conglomerates with operations in South America. Interviews in Chile were conducted in either Spanish or English. In the interview information sheet, respondents were informed in advance of the option to hold the interview in either languages. Recognising that language is “more than just a literal transfer of information” (Temple 2002: 4-5), interviews in Spanish were done through the help of an interpreter.⁹ That said, most elite respondents conversed perfectly in English given the nature of their roles, which require liaising with corporate headquarters or elite counterparts in North America.

⁹ While I can follow interviews in Spanish, I opted to solicit the help of an interpreter to translate follow-up questions and to raise points of clarification. I learned Spanish in Spain and there are notable differences in terminologies and expressions that require not only language competence but also historical and cultural knowledge. Recognition of the other’s hierarchy, expertise and seniority are expressed through language, a sensitivity that must be exercised especially in an interview setting.

The interviews in Chile were especially useful for tracing shifts in companies' extractive practices in a bid to maximise shareholder value: to uncover what it meant in practice, and how this was operationalised across mineral operations. The information derived from these interviews helped surface the spatial, ecological project behind financialised practices, i.e. in company assessment of how specific mines or projects fit (or not fit) in broader company strategies and the 'course correctives' implemented in concrete cases. Interviews at the corporate headquarters and industry/market experts also helped triangulate some of these information.

Semi-structured interviews with non-governmental organisations, academics, and members of local communities also played an important role for supplying site and case-specific information as in the context of the research on the Pascua Lama project. The interviews, however, were more focused on socio-political regulations, the contestations around the project, and the history of Barrick's operations in Chile. Tax regimes and mining-friendly policies, social and environmental consequences, and the legal challenges that beset the project were important contextual variables to surface. During my stay, I was hosted by the University of Chile as part of the ENTITLE network which was instrumental for securing interviews with government agencies and academics who work on or with the mining industry.

Respondents were guaranteed confidentiality and anonymity. Direct quotes and/or attribution are provided in cases where permission has been given. Some quotes from respondents that requested anonymity have been truncated (i.e. by eliminating company name, respondents' position, or the name of the mineral project that can serve as identifiers) to ensure this is upheld.

DOCUMENT AND ARCHIVAL RESEARCH

Document and archival research were the first steps in my research, and these were carried out prior and throughout the duration of the fieldwork and thesis writing to validate data from the interviews. Documents collected and an-

analysed included company reports (including annual reports/official regulatory filings, mineral resource report/technical reports, proxy circulars), press releases and presentations in key investor/shareholder meetings and mining conferences. On the latter, conference call transcripts and webcasts of earnings report, annual general meetings and institutional investor conferences, and company presentations in key industry/gold-specific events (including those I attended) have also been sourced for information. The Prospectors and Developers' Association of Canada's Annual Meeting, CIBC institutional investor conference, Denver Gold forum, and LBMA Precious Metals Conference are of particular importance for the gold mining industry.

Mining journals, industry publications and newspapers have also been invaluable for a historical tracing of management changes, especially crucial for chapter 5, which takes a historical look at Barrick's operations, and chapter 6 on the Pascua Lama project. The University of Manchester Business School has extensive subscriptions to business journals; this provided access to archived materials of newspapers like the Financial Times, The Economist, the New York Times, and the Wall Street Journal using the Gale platform. The Mergent Archives (also accessed through the Manchester Business School) is another online database that indexes corporate documents, including those that are no longer available to download in company websites (which typically only display documents over a ten-year period). This was mainly used to access archived annual reports filed by Barrick Gold under 'American Barrick', a name it adopted prior to a major acquisition in 1994. The list of databases, official filings, and industry publications used are detailed in Box 3.

Access to key documents and archived material was facilitated by the move towards greater transparency in the mining industry. Over the past two decades the industry has come under stricter regulatory scrutiny following cases of

fraud, notably the Bre-X scandal¹⁰ in the mid-1990s. This resulted to the creation of mandatory filings for Canadian mining companies that are accessible not only to investors but to the broader public. The SEDAR database (and its US counterpart, the EDGAR database) is a key platform that contains electronic filings by mining companies dating back to 1 January 1997.

Box 3. Key databases and documents used

- US Mineral Surveys Yearbooks, US Geological Survey
- Minerals Yearbook Area Reports, Bureau of Mines
- EDGAR: repository of official filings by publicly traded companies submitted to the Securities and Exchange Commission.
- Mergent Archives - Archival database of company annual reports
- Thomson One database
- SEDAR: electronic filing system for disclosed documents of public companies and investment funds across Canada, including annual reports, prospectuses, financial statements, press releases, and notifications to shareholders.
- NI 43-101 filings - Technical Reports following Standards of Disclosure for Mineral Projects within Canada.
- NASDAQ database: provides a compilation of the 13-F forms that divulge 'long positions' in equity shares of institutional investor managers that hold at the minimum \$100 million in equity assets under management.
- Gale platform: Financial Times and The Economist Archives
- Proxy Statements: Official document that outlines the issues to be voted upon in companies' annual general meetings. Includes information on salary, stock ownership and voting rights.

¹⁰ The Bre-X scandal was one of the biggest gold mining frauds in the history of the Toronto Stock Exchange. Bre-X was marketed as one of the largest gold deposits to be discovered in Indonesia. With its stocks trading in Toronto, its stock price soared, reaching a total capitalisation of more than \$6 billion Canadian dollars. The fraud was discovered when the gold samples were shown to have been tampered with.

The gold mining sector is considered one of the most transparent regarding the kind of information it divulges to the public and to potential investors. There are several reasons for this. One is that investment demand has become one of the most significant sources of demand for gold, incentivising firms to move towards greater disclosure of their activities, notably to institutional investors. Annual reports now divulge far more information than that which is required in official filings for publicly-listed companies. Another is that the corporate social responsibility agenda has contributed to the “increasing need for individual companies to justify their existence and document their performance through the disclosure of social and environmental information” (Jenkins and Yakokleva, 2006: 271).

Gold’s long history as money also made it a commodity that is well accounted for in terms of supply, both above ground (in manufactured products and monetary reserves) and the new supply that comes from mining (Butterman and Amey, 2005; South African Chamber of Mines, 2013). In the 1990s, due to the wide use of hedging by the industry, which are supported by borrowed gold from bank reserves, risk management activities were disclosed in greater detail. A study by Tufano on gold mining firms notes how relative to other corporations that only provide ‘minimal details’ of their activities, gold mining companies “provide[s] investors with extensive information on firms’ use of forward sales, swaps, gold loans, options, and other explicit or embedded risk management activities, and permits analysts to calculate meaningful measures of the degree of risk management undertaken” (ibid: 1097-1098). This level of information is especially important for Chapter 5 that takes a more historical look at the financialised practices of gold mining companies prior to the boom period.

QUANTITATIVE METHODS

The research requires tracing money flows to substantiate key arguments that pertain to the industry's sources of financing, the level of expenditures committed to specific projects (e.g. Pascua Lama), trends in dividend payments, and hedging activities. At the mine level, numerical data like ore grades, reserve count, and mine-life schedule were useful at capturing how different financial parameters alter what becomes profitable to mine. With respect to institutional investment, shareholdings provide a snapshot of company ownership, albeit imperfect as it depends on voluntary reporting (see note on Figure 3).

An important shortcoming of quantitative data is that financial indicators “do not speak for themselves, and a quantitative list does not give us a transparent window on global corporations” Carroll and Fennema, 2004: 371). Primary and secondary sources were sought as a counter-balance whenever possible. Interviews with analysts have helped clarify and make sense of some of the information provided in financial and technical reports. In the case of Pascua Lama, NGOs and research institutes in Canada, Chile and Argentina have also provided alternative technical reports to challenge Barrick Gold's narrative on the project. Materials from NGOs and research organisations in Canada and London with a focus on the mining industry (Mining Watch, Halifax Initiative, London Mining Network, Protest Barrick, Polaris Institute and Corner House) and in Chile and Argentina (*Observatorio Latinoamericano de Conflicts Ambientales* or Latin American Observatory on Environmental Conflicts, and *Centro de Derechos Humanos y Ambiente* or Centre for Human Rights and Environment) were used as sources of information and verification.

Other challenges and limitations were mainly due to the ‘monopoly’ exerted by business journals and newspapers and industry-specific publications on the statistical information required by the thesis. For one, newspaper coverage on mergers and acquisitions or hedge fund investments are highly con-

centrated in newspapers like the Financial Times and The Wall Street Journal. The considered definitive source of numerical data on the industry, the World Gold Council, is made up of the largest gold mining companies, highlighting the need to be critical of the type of information it provides. In addition, numerical databases on the mining industry previously held by different enterprises (e.g. Raw Materials Group, Metals Economic Group, Intier-ra) have been consolidated as a result of mergers and acquisitions across these enterprises (now all acquired by SNL Metals and Mining). This limits the prospect for triangulation on large data-sets cited in the thesis. Firm-specific data (e.g. financial statements, NI 43-101 reports) are also dependent on company disclosures, albeit for stock-listed firms, these types of data are cross-checked by accountants to ensure accuracy in reporting. In the case of mineral properties, technical reports and feasibility studies are independently reviewed and verified as part of the regulatory process.

1.4.4 Secondment

Although not explicitly a method, I did a secondment with SNL Metals and Mining, a mining consultancy firm based at the City of London, over a two-month period. One of the requirements of the Marie Curie Fellowship that funds my research is to spend time with a non-academic entity (e.g. non-governmental institution, private enterprise) that works on a related topic. SNL Metals and Mining provides intelligence data on mining activities globally on a range of commodities, including copper, iron ore, and gold. Its work culminates in a database that maps out mining projects based on the type of resource extracted, the companies that own and operate them, and their sources of financing. The secondment took place from 20 July to 20 September 2015, during which time I was tasked with collecting information and updating the copper and gold database. This entailed looking at past and current production levels of mining operations; assessing the likelihood of a mining project (that are in the initial stages of development) pushing through; and updating historical and (expected) future production. The work was data intensive, but provided an up close look at the technical and material aspects of extraction, which helped beef up the data initially

collected during the fieldwork. The company's database also provided a broader picture of the gold industry, the differentiated position of the companies that constitute it (in size, market share and capital access) and as it compares to other industries. During the secondment, I was also able to converse and work alongside key analysts in the field with years of experience studying the mining industry. This not only facilitated triangulation but has also directed my attention to other sources of information previously not considered in the thesis. The experience has also helped me gain confidence on the findings of the research.

1.5 NOTES ON ACCOUNTING AND KEY METRICS

1.5.1 Accounting and financial reporting

Gold companies use different methods in reporting, and the level of information divulged in official filings vary depending on national regulations. This often makes it problematic to use the same indicators even for companies within the same industry. There are also key differences even within North America on the information required in official filings for public corporations trading in New York or Toronto. Differences in currencies used, often influenced by the location where a company's stocks are traded, can also further complicate the comparability of different companies. These were admittedly key considerations in the choice of industry sample and case studies.

The Canadian companies under study all trade in the New York and Toronto stock exchanges. I used their official filings, submitted to the US Securities and Exchange Commission, that are denominated in US dollars and comply with Generally Accepted Accounting Principles (GAAP). The GAAP is used by most businesses for financial reporting and are mandatory in companies that are publicly traded, as per the regulations by the US Securities and Exchange Commission. In stock exchanges, these standardised rules are moreover covered and guaranteed by the Securities Act and the Securities Exchange Act through annual external audits. There are, however, some key differences even within the mining industry. Non-GAAP metrics such as the all-in sustaining costs and all-in costs,

important measures for shareholder value maximisation, have been some of the most recent metrics implemented by mining companies to tailor reporting to specific industries and investors. As members of the World Gold Council, these companies also have the added advantage of adopting the same guidelines for reporting new cost metrics.

All currencies are stated in US dollars.

1.5.2 Capitalisation and market share

Measures of capitalisation and (product) market share are used by the industry to rank the largest publicly-traded companies. These metrics do not always coincide as the former is based on the market value of outstanding company shares and the latter on production levels (or percentage share in total industry production). I refer to the company's market share when comparing company sizes unless stated otherwise.

1.6 CHAPTER OUTLINES

The thesis has seven chapters in total. The next chapter, chapter 2, first undertakes a review of the literature on financialisation and nature-based industries. Without aiming to be comprehensive (especially given the breadth of scholarly work on financialisation), I draw out key findings and debates that are most relevant for the research and that informed its theoretical framing. The recourse to Marx and Harvey's work on finance capital (i.e. the circulation of interest-bearing capital) and Moore's 'unified' theory of (historical) capitalism and (historical) nature in framing the research is then discussed, followed by the thesis argument.

In chapter 3, I provide a background to the gold mining industry, its key players, and characteristics that sets it apart from other sectors. Gold's multiple use values and its counter-cyclical movement make for unique opportunities (and challenges) for gold mining firms, with implications for financing, (firm) valuation,

and profitability. I bring attention to the circumstances that increased the demand for gold and gold mining stocks during the commodity boom as a proxy for the physical gold bullion. The ownership and influence of institutional shareholders on gold mining companies are examined, and its impact on production and growth in light of short-term expectations of high stock valuations and dividend payments. The introduction of accounting measures, such as the all-in sustaining cost (AISC), and its significance for mining geographies are then discussed. I recast the geographical expansion of mining activities in the context of this alignment of finance (i.e. institutional investors) and industry, and the restructuring that followed in the bust period as a drive to pursue 'disciplined growth' to preserve, if not maximise, shareholder value.

In chapter 4, I further examine the implementation of the all-in sustaining cost (AISC) metric as indicator of company commitment to shareholder value. Aside from spatial adjustments, the AISC also required different 'material' conditions to derive maximum cash flow for every ounce produced. I illustrate how this has led to revisions in reserve definition, grade cut-offs and the rate of extraction, signalling a new (and different) schema of producing nature. The relationship between capital and nature, or capital in nature (Moore, 2015), is shown to be dynamic and co-evolving, bringing about new contradictions, and new 'limits', that is counterproductive to shareholder value in the long-run.

In chapter 5, I take a historical look at finance-industry relations following the end of the gold standard and the neoliberal reforms of the 1970s and 80s. This was a period that rejuvenated interest in the gold mining business and that opened up new sources and types of financing for gold mining firms. Barrick Gold, founded in 1983 and now the world's largest gold mining company, serves as a case study. This chapter provides a baseline by which to gauge what has changed in how companies accessed and competed for financing, and how growth and profitability were achieved prior to the commodity boom of 2003-2012. I focus in particular on the incipient but steadily growing role of stock exchanges and institutional investment in stock exchanges, the availability of financial instruments such as hedging, and the resort to bullion loans from

central bank reserves for mine financing to draw attention to how parallel developments in financial markets and institutions has enabled the formation of large capitalist firms like Barrick.

In chapter 6, I then move to the project level through a study of Pascua Lama, a large-scale mineral project by Barrick Gold in Northern Chile. I trace the development of Pascua Lama from when it was first ‘discovered’ in the late 70s, acquired by Barrick in 1994, and turned into a ‘world class asset’ under Barrick management. I follow these transformations over the course of nearly two decades of development, with attention to the encounter between the requisites of capital and finance capital and the biophysical, social and political landscape of Barrick’s operations in Chile. The impact of changing parameters of growth and profitability on the project and nearby territories are highlighted, especially in the context of high shareholder value expectations during the commodity boom, and the unique opportunities and challenges posed by socio-material arrangements found in place. Pascua Lama reveal the ability of capital to surmount (to an extent) these challenges through an iterative, and dramatic, re-working of territorial boundaries, intransigent nature, resource use, and labour capacity, and its vulnerabilities, absent enabling conditions of high prices, social policies and ‘cheap nature.’

I conclude the thesis with a discussion of the empirical findings and theoretical contributions. I review key themes developed throughout the thesis: the coalescence of industry and finance capital, the relation between (finance) capital and nature, and the spatial and ecological project behind the mining of shareholder value.

CHAPTER 2

Literature review and conceptual framing

There are two broad literatures that the dissertation draws from in framing the research: the financialisation literature (firm-level and system-level financialisation; financialisation of nature) and the geography literature on capital-nature interface in extractives and nature-based sectors.

An important strand in the financialisation literature with an explicit focus on the corporation, the *shareholder value governance* literature, studies the ideational and institutional changes that came with the financialisation of the firm. To date, it stands as an important body of work that reveals how financial interest has become a guiding principle in the activities of non-financialised entities. The shareholder governance literature has uncovered the increasing influence of institutional shareholders, especially new types of shareholders (e.g. hedge funds) that altered managerial priorities towards financial and short-term considerations of dividends and stock movements, often at the expense of long-term growth. It has also shown how commitments to shareholder value have introduced new practices to re-align the firm along this primary goal.

Yet, while the shareholder value literature provides a fine-grained analysis of firm financialisation, it is just as important to ground the firm as an entity amid broader economic reconfigurations that has shaped its re-orientation. An en-

agement with *system-level financialisation* allows us to see these changes in relation to the financialised nature of contemporary capitalism. This literature is a reminder that financialisation is not just a particular moment in a company's history heralded by the entry of certain types of financial investors but as a deepening process and logic, emanating from within and outside the firm, that is exerting ideational and structural changes in their operations.

In considering financialisation's articulation with nature-based industries, the financialisation on nature literature raises important nuances that must be taken into account. Building on the earlier work by geographers on capital and nature relations, this literature points to how the materiality and the physical attributes of nature have as much influence on the pace and manner by which financialisation, and capital accumulation in general, proceeded. This literature underlines the need to pay attention to the spatial, temporal and material characteristics of mineral resources that require a different handling for finance capital.

Thus, in locating financialisation's role in transforming extractive practices, the dissertation adopts a multi-scalar approach: one that sees company and industry-level changes as equally determined and necessitated by a particular mode of capitalist accumulation and that takes quite different forms given their mediation on the ground. The study builds on the strengths of the shareholder governance and system-level financialisation literature in conceptualising financialisation, while remaining sensitive to the particularities of mineral extraction as a place-based, nature-based activity.

In the succeeding sections, I first provide an overview of the key contributions and debates that are relevant for the thesis framework. I then discuss how I have conceptualised financialisation and shareholder value maximisation, followed by the thesis argument.

2.1 FINANCIALISATION

The ascendancy of finance in the world stage over the past three decades has been the subject of a growing body of literature in the social sciences. Due to the dynamism and rapidity by which this phenomenon has unfolded, a “frantic search” across disciplines has ensued “to try to make theoretical and empirical sense of it” (Engelen, 2008: 111). To date, no unitary definition of financialisation exists, and its most encompassing definition provided by Epstein (2005) is a testament to the manifold manifestations of the process. In its broadest sense, financialisation is said to refer to the “increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies” (2005: 3).

The wealth of literature that aims to capture the ‘empirical markers’ of financialisation has grown as the process itself metamorphosed, spanning disciplines as diverse as mathematics, linguistics, anthropology, sociology among others (Engelen, 2008; Aalbers, 2015). Falling under the rubric of financialisation are such phenomena as the globalisation of financial markets (Strange, 1997 and 1998; Helleiner, 1994), the emergence of new forms of financial instruments that ‘securitise’ assets; the ascent of a new ideology of shareholder governance in non-financial firms; and the scale by which finance has surpassed the profit share of the productive sectors in the economy (Krippner, 2005; Stockhammer, 2004). All these stand as examples of how finance capital has come to dominate and permeate economic and social life. Many of these contributions have been instrumental at identifying emerging sites of financialisation over the course of three decades and the concomitant changes this has generated at the firm level, within local and national economies, or on a global scale.

Financialisation has been a highly contested concept, leading some authors to comment that it has become “a space of quarrelsome debate” (Engelen, 2010: 42), “excessively vague and stretched... nebulous and ...unhelpful signifier” (Christo-

phers, 2015: 187).¹¹ The concept, however, “has proved broad and malleable enough to be able to gather... a critical mass that is often lacking at the level of individual disciplines” (French, Leyshon and Wainwright, 2011: 814). Some of the earlier works on financialisation were a reaction to the inability of orthodox economics to explain the growing dominance of finance, with disciplines like sociology, political economy among others stepping in to provide counter-narratives. As Aalbers (2015: 1) argued “[W]hatever may divide these approaches, there appears to be a shared conviction that mainstream, neoclassical theories provide little fertile ground to understand the contemporary financialized economy.”¹² Financialisation has opened up a thriving debate that transcend academic boundaries,¹³ and the range of practices that fall under the financialisation umbrella are still expanding. But rather than a setback, the messiness, confusions and contradictions unearthed in these empirical accounts should be seen as an invitation to which geography, and Marxist geography, can potentially contribute.

In the next sections I bring into focus three strands of the financialisation literature: firm-level financialisation (shareholder governance literature) to put focus on the firm and its activities; the systemic shift in the nature of accumulation to one that is finance-led, or system-level financialisation; and the financialisation of nature literature.

¹¹ Kripnner (2011: 23) raised similar concerns, that “enthusiasm for the concept of financialization has run far ahead of serious attempts to establish evidence for this phenomenon.”

¹² Aalbers moreover argued (in the context of the diverse disciplines seeking to explain financialisation) that “we do not live in a closed system in which causations are linear, one-dimensional and single-scalar” (2015: 2).

¹³ The debates are of course not just across academic boundaries but also within. For Marxist scholars for example, understanding financialisation place in the historical evolution of capitalism remains a thorny debate.

2.1.1 Firm-level financialisation

The increasing engagement of non-financial businesses in financial activities and the growing dominance of financial logics in the conduct of the company has led authors to argue that the firm has been “financialised”. The term “shareholder value governance” captures the changes in the activities, power structure and interests within the firm that propel traditionally non-financial firms to prioritise higher dividends at the expense of long-term growth or to turn to financial activities rather than production for profits.¹⁴ In particular, the growing influence of institutional investors within firms was found to have changed managerial structure and priorities with impact to company operations.

THE RISE OF INSTITUTIONAL SHAREHOLDERS

Crotty (2005) argues that in the 1980s, a shift has occurred in the view of financial agents towards non-financial corporations. From an entity that is ‘an integrated, coherent combination of relatively illiquid real assets assembled to pursue long-term growth and innovation’ to a “financial conception” whereby the non-financial corporation constitutes a “portfolio of liquid subunits that home-office management must continually restructure to maximise the stock price at every point in time” (2005: 88). Institutional investors like pension funds and mutual funds, in particular, took a more active role during this period to push for higher dividends from company management (hedge funds and private equity funds did not gain prominence until the 1990s). Pension funds played influential roles in countries like the US and the UK, owning some of the biggest corporations in the world. Jacoby (2008) finds that from a negligible 12 per cent equity share in 1960, in the 1990s, US institutional investors owned as much as 45 per cent. In the latter part of 2000s, this stood as high as 68 per cent of the top 1000 largest US corporations (Jacoby, 2008: 7; also see Clark 2000: 62-63). For Dume-

¹⁴ A study by Milberg (2007: 7) shows how “[T]he net worth of financial corporations rose steadily relative to the net worth of non-financial corporations...[and]...[T]raditionally non-financial firms became more like financial holding companies with a spectrum of financial services and financial investments swamping production in terms of their contribution to company revenues”.

nil and Levy, this “new configuration of capitalism” is characterised by the “formation of large corporations, backed and controlled by finance” (2005: 20).

The business environment in the eighties was one characterised by the rise of hostile takeovers and slow demand leading to intensified competition across industries (Aglietta and Reberieux (2005). Through the introduction of junk bonds and the lower interest rates of that period meant that take-overs could be easily financed by debt. These pressures, according to Crotty, put non-financial corporations in a state of “neoliberal paradox”, of “intense product market competition” that renders high earnings nearly impossible, and the threat of takeovers and plummeting stock prices should financial markets' demand for higher dividends not be met (2005: 79). This situation gave institutional investors more leverage within the firm. On top of the significant shares they wield, they often move in herds, which meant that they cannot sell without driving the price down. As a consequence, Dore points out, “voice” became easily a better option than “exit” (Dore, 2008).

With the move of pension funds towards riskier investments through portfolio diversification (Langley, 2004; Clark, 2000; Clark and Knox-Hayes, 2007), and with the entry of investors like hedge funds (Froud et. al., 2000), the pressure for higher returns have intensified. Hedge funds in particular are speculative traders with shorter-term total-return objective. Pension funds, although initially hailed as signaling an era of ‘pension fund socialism’, have increasingly come to rely heavily on movements in national (predominantly the US and the UK) and international markets for their “accumulated wealth” (Clark, 2000: 43). In his study, Clark (2000) suggests that in the UK, 80 per cent, on average, of pension funds assets are on equities, with about 20 per cent of this on international equities. But with the growth of these assets, the demand for specialised investment management strategies have increased, leading to the outsourcing of investment and flow-of-funds functions to investment management industries (2000: 65-66). These “new forces of the capital market, via investment institutions and professional fund managers” according to Froud, et al, (1999: 24) “are generally much more mobile and rapidly threatening than the old forces of the product market”.

CHANGES IN THE MANAGEMENT OF THE FIRM

The shareholder governance of the firm introduced with it key changes that would drastically alter management objectives and priorities. In the past, management (or ‘managerial capitalism’ according to Stockhammer, 2004) is primarily fixated with its performance in the product market and the long-term viability of the firm, while shareholders worry with stock prices and dividends whilst taking a voluntarily passive role. The shareholder revolution has blurred these divisions and altered the power structure of the firm. This involved an ideological shift, legitimising the view that shareholders are the company owners that take on much of the risks associated with its activities (Skarstein, 2011; Aglietta and Reberieux (2005). According to Aglietta and Reberieux (2005: 1), this was enshrined “in the legal principles imposed on companies quoted on the U.S. stock market since the early 20th century.” This, they added “makes the firm an object of ownership” and “the shareholders, as the subjects of this ownership, thus possess real property rights over the firms” (ibid).

Within firms, this was accomplished through the help of payment schemes that incentivise performance based on short-term stock price movements over long-term growth, and through stock buy-back options which effectively turned managers into owners (See Fligstein and Shin, 2007; Pike, 2006). In 1980, stock options were only available for less than a third of executives in the United States but this has now become the norm (Jacoby, 2008: 6).

With such schemes in place, meeting investors’ expectations has become the utmost concern of the manager. Dore (2008) captures this new scenario in his study:

“In today’s investor capitalism, American managers are far less autonomous. They operate under the close surveillance of a board of directors who represent exclusively the interests of shareholders and may frequently include a dominant shareholder. In the mixture of motivations that drive their work, notions of doing a socially useful

job or building an organization which will last and will honour their memory are likely to be overshadowed by the carrots and sticks of stock options, bonus systems and the overhanging threat of instant dismissal—all carefully designed, and specified in hard-bargained employment contracts, to induce them to meet those shareholders' expectations. And those expectations are now much more likely to be a steadily rising, rather than a stable, return on equity." (Dore, 2008: 1103)

Further, the adoption of performance measures in the form of EVA (Economic Value Added) and MVA (Market Value Added) has placed each firm in competition with each other following financial metrics. In the case of the legal industry, this took the form of Profits per Equity Partner (PEP) (see Faulconbridge and Muzio, 2009). According to Froud et. al, these financial metrics that measure current and projected returns of investment put "constraints on what corporate management can deliver as earnings which at best lift slowly" (1994: 24). These, moreover, significantly altered the task of corporate management 'which must now oversee new forms of competition based on capital market not product market performance which rework the balance between productive, market and financial goals within many firms' (1994: 25). "[A] new form of financial competition of all against all" has emerged, according to Williams (2000: 6) "whereby every quoted firm must compete as an investment to meet the same standard of financial performance."

O'Neill (2001) through his study of BHP Ltd, an Australian minerals and energy company, illustrates how the adoption of a "portfolio management model" has given birth to new accounting practices, and "shareholder value added (SVA) methodologies" which engendered changes in corporate and investment patterns. This model, according to O'Neill, project a different image of the firm as "a set of separable investments within a portfolio rather than as a set of integrated, complementary value-adding tasks and processes" (2001: 190).

CHANGES IN OPERATIONS

A central concern in the shareholder governance literature is how emphasis on shareholder value has led to disinvestment, eroding the very viability of the firm in the long run. Industry-wide researches have shown that companies that have high institutional ownership and stronger investor activism generally display fewer acquisitions and lower capital expenditures (Cuñat, Gine and Guadalupe, 2012). Those that have been the target of hedge fund activism in particular reveal in addition that cost-cutting, sale or spinning-off of noncore assets, increase dividend payouts, and higher CEO turnovers are among the documented effects on target companies (Brav et. al, 2008). “Corporate downsizing and downsizing” became “management justification” for delivering shareholder value (Williams, 2000: 1). For Blackburn this sealed the dominance of the rentier class, with the corporation becoming “disposable”: “[F]rom the standpoint of the pure investor, the corporation itself is an accidental bundle of liabilities and assets that is there to be re-arranged to maximise shareholder-value, which in turn reflects back the fickle enthusiasms of other investors.”

Rising dividend payments are considered a key demand of shareholders, impacting strategies for growth. Aglietta and Reberieux (2005) pointed out how this has then led to a redistribution of company profits in favour of shareholders. Despite fluctuations in profits, dividends remained high. In the context of the United States in the 1980s, Aglietta and Reberieux found that there has been a “regular rise in dividends, completely detached from movements in profits...[a] ratcheting up, which appears to exclude any possibility of a reduction in the cash flow paid to shareholders” (2005a: 36). This “logic of imbalance”, they added, was “transformed into a permanent objective” (2005b: 3).

By diminishing the available amount of capital for re-investment, companies are faced with dwindling prospects for increasing production. Production has also become secondary to what it can bring to shareholder demands. Physical investment still occurs but not so much a bid for material expansion as an end in itself, but as part of “disciplined investment” (disciplined by financial logic), a means to

generating even higher shareholder value (Labban, 2010: 550). Gunnoe and Gellert, in their study of timberland conversion in the United States, find that financialisation has altered capital allocation on such investments like timberland treatments, which are now decided on the basis of how much the market will pay if a given treatment is applied, rather than on the kind and number of trees that will grow as a result. As institutional investors are less concerned about maintaining a constant supply of timberlands, the utility of the timberland holdings have become increasingly structured by market demands: “if the market places a higher value on land as a golf course, as opposed to timberland, then there is little to dissuade this conversion from taking place” (2010: 278). The implications of a financial turn in business logic filters through existing extractive practices, with a discernible shift from traditional forms of extraction.

Most of the findings that detail the impact on company operations across a wide range of industries bear little resonance with extractive industries in general and mining in particular. Extractives, in many ways, are distinct to other productive industries (Bunker, 1985; Fine, 1994). Given the non-renewability of the resource in the case of mining, failure to secure reserve replacement is counterproductive and erodes claims to future profit—with implications to stocks. The dynamics naturally also vary across these different commodities, given differences in the structure of the market, the nature of inter-firm competition, the types of institutional investors, and characteristics specific to the commodity—its fixity and materiality. The unique circumstances surrounding certain commodities like gold also warrants that close attention is paid to the drivers of price, supply and demand, the social relations surrounding it, and its historical valuation through time in equal measures. Gold serves several functions as a commodity and investment, which tend to exert overlapping and opposing pulls on its extraction, production, pricing and trade. Hence, there is a need for integrated approaches that take into account these variety of factors even as we apply the lessons from the shareholder governance literature. The succeeding sections deal with other literatures that can serve to fill in some of these gaps.

2.1.2 System-level financialisation

Studies that trace the historical development of capitalist economies have sought to conceptualise financialisation as a particular stage in the development of late capitalism. Baran and Sweezy (1966) were some of the early Marxist scholars to have recognised its emergence. For these authors, financialisation represents a gravitational shift in capitalism as a consequence of the natural tendency of mature capitalist economies to reach stagnation. They traced this to the rise of 'monopoly capitalism' at the end of the nineteenth century, which had generated immense surplus capital and engendered profiteering in the sphere of circulation (Baran and Sweezy, 1966). Monopolisation, they find, was beset with contradictions as it on the one hand allowed for higher profits to be realised while dampening the desire for re-investments as markets were 'controlled'. The result was "more and more profits, fewer and fewer profitable investment opportunities, a recipe for slowing down capital accumulation and therefore economic growth which is powered by capital accumulation"¹⁵ (Sweezy, 1997). Financialisation, in their view, became a conduit for capital to escape in search of higher profits rather than re-invested in production.

This view of financialisation is shared by Foster (2007: 1) seeing it as the result of "a new hybrid phase of the monopoly stage of capitalism", or "monopoly-finance capital". Reflecting on the transformations that began in the 1970s, Foster and Madoff (2009) argued that capital continues to be 'trapped' in a vicious cycle of stagnation and financial expansion.¹⁶ The recourse to counter stagnation has been the movement of surpluses towards the new types of financial instruments

¹⁵ Reflecting on the development of financialisation in the 1990s, Sweezy (1995) argued that "a new structure" emerged "in which a greatly expanded financial sector had achieved a high degree of independence and sat on top of the underlying production system" (Sweezy, 1995), reflecting a growing view at the time that finance has become severed from production.

¹⁶ In 1997, Sweezy (1997) reiterated this conception of financialisation, identifying "retarded growth, increasing monopolization, and the financialization of the accumulation process" as interrelated processes. Surplus capital that "could not find profitable outlets in real capital formation" were "diverted into purely financial and mostly speculative channels" (ibid). Financialisation therefore becomes the preferred mode of capitalist accumulation that would absorb and channel excess (and otherwise idle) capital towards profitable ends.

that have been introduced and became widely used from the late 70s onwards such as derivatives and other forms of exotic financial instruments (ibid).

Arrighi (1994) in his book 'The Long Twentieth Century' (a study of capital accumulation spanning a 700-year period) is one of the key texts to consider financialisation's long history. Arrighi argued that while financialisation may seem 'unprecedented...at first sight' (1994: 6), it is in fact tendential—a recurrent pattern in the evolution of capitalism that has manifested itself over centuries past, dating back to as early as the fourteenth century. Using Marx's general formula of capital (MCM') and Braudel's notion of the 'long century' as a temporal unit of analysis, Arrighi identifies four "long centuries" or full systemic cycles of accumulation which are characterised by "alternation of epochs of material expansion (MC phases of capital accumulation)" with "phases of financial rebirth and expansion (CM' phases)" (1994: 6): a Genoese cycle, a Dutch cycle, a British cycle, and a US cycle. In all these he finds a pattern of recurrence and evolution, where financial expansion signals a "crisis" point, the consequence of a declining perception on the profitability of reinvestment in the productive sectors that lead capital to disengage from "trade and production" towards "financial intermediation and speculation" (1994: 220).

The financial expansion of capital as on display today is considered by some to be distinct largely due to its sheer scale and scope. This led authors to see financialisation as a transformative process, a rupture in how capital accumulation previously worked (see for example, Dumenil and Levy, 2005; Blackburn, 2006). In considering what is new with financialisation, Lapavistas characterised it mainly as a structural shift, "due to changes in the forces and relations of production, combined with the transformation of the institutional and legal framework of capitalist accumulation in recent years" (2009a: 6). These changes, he emphasised, are "rooted in the molecular relations between industrial and financial capital in the first instance" which saw "large industrial and commercial corporations becoming less reliant on banks' and venturing into open financial markets for fi-

nancing” (2009a: 8).¹⁷ Foster (2007), however, voiced some ambivalence at characterising the alignment of industry and finance capital. For him,

“there is no easy divide between the two since non financial corporations are also heavily involved in capital and money markets. The great agglomerations of wealth seem to be increasingly related to finance rather than production, and finance more and more sets the pace and the rules for the management of the cash flow of non-financial firms. Yet, the coalescence of non financial and financial corporations makes it difficult to see this as constituting a division within capital itself.” (Foster, 2007: 7)

For Harvey (2007) however, the perpetual oscillations between industry and finance capital are but part of the constant search for equilibrium between finance and production as necessitated by a particular stage in the process of accumulation, an alignment rather than an alliance between two factions of capital. A focus on process, he argued, rather than organisation per se, can illuminate clearer how such organisational changes are ultimately a pursuit to “perfect the operation of the law of value” to which capitalism is wedded (ibid: 141).

The impact of financialisation on production is another contentious debate. Lapavitsas (2013) proposed that financialisation amounts to “profiting without producing” given the growing asymmetry between profits that accrue to the financial vis-à-vis the productive economy. This process, he argues, can be considered a form of “financial expropriation”, anchored on “profits that can even be unrelated to surplus value” (2013: 794). Diverging from this view, Fine (2010) considers financialisation today to be marked by contradictions and tensions and cannot be simplistically regarded as a mere “shift in the balance between production and circulation”. Rather, he insists, one finds cases where financialisation is on the one hand a “reflection of continuing difficulties in production” even as it is at the

¹⁷ Lapavitsas differentiates this period from Hilferding’s (1981) ‘finance capital’—a period that saw the amalgamation of banking and industrial capital in Germany towards the end of the 19th century. Bank capital, according to Hilferding, “actually transformed ... into industrial capital” during this period (1981: 225).

same time “the major causal factor in low levels of real accumulation and in undermining conditions of economic and social reproduction conducive to such accumulation” (Fine, 2010: 109). For Fine, financialisation is contradictory and can be incoherent in its development.

Notwithstanding differences in views on whether financialisation constitutes a novel phenomenon, or whether financialisation is the cause of or result of the slowdown in accumulation (or both), what these literatures have in common is a recognition that financialisation is related to the changing conditions of accumulation. Whether financialisation becomes a means to escape low levels of profit realised from production, or it itself dampens production, it is implied that production and financialisation influence each other, a dialectical relationship that is not fully severed.¹⁸

REGULATION THEORY

The French (or Regulation Theory) School’s contribution to the financialisation literature elucidates the key historical shifts in the 1970s that paved the way for the ascendancy of finance capital. It is mainly identified with French political economists that broadly subscribe to Marxist theories, although the school is far from monolithic in its theoretical approach (Jessop, 1990). A consensus view is that the new “regime of accumulation with financial dominance” that emerged has been the result of the crisis of Fordism (Chesnais, 1996; see also Boyer, 2000) which ushered in neoliberalism in its wake.¹⁹ The regulation school is especially concerned with the ‘mode of regulation’ (procedures, norms, institutions and be-

¹⁸ There are some clear exceptions to this, such as Gowan (2009: 5) who argued that ‘understanding of the credit crunch requires us to transcend the common sense idea that changes in the so-called real economy drive outcomes in a supposed financial superstructure’. Reflecting on the development of financialisation from the vantage point of the 1990s, Sweezy (1995) also started to echo this view that finance has become severed from production. He argued that “a new structure” emerged “in which a greatly expanded financial sector had achieved a high degree of independence and sat on top of the underlying production system” (Sweezy, 1995)

¹⁹ Other Marxist authors also consider “the relationship between neoliberalism and financialisation is direct and integral, with the latter underpinning the persistence of the former (and not vice-versa)” Fine (2010: 109) (as well as latter writings by Sweezy, 1995).

haviours) that secure the expansion of capitalist reproduction. It follows the key policy, legal and institutional changes that facilitated the development of the financial system, and that altered inter-capitalist competition, wage relations and the role of the state.²⁰

For regulation theory, the financial realm is considered a keystone in the restructuring of the 1980s in the United States and the United Kingdom (Chesnais, 1998; Aglietta and Reberieux, 2005). One important area in which finance capital has managed to occupy a central position was through stock ownership that gave it a firmer hold on productive accumulation (Chesnais, 2005). For Aglietta and Reberieux, the firm and the ‘macro-economics of the financial system’ have a ‘reciprocal influence’ on each other:

“The competition among investment funds to attract collective savings is transferred onto the companies, which are judged by these funds on the basis of their ability to meet the financial demands imposed on them.” (Aglietta and Reberieux, 2005: 2)

From this level of analysis, financialisation is also shown to be a broader socio-historical formation, in which the firm is but a part of. A recourse to this literature will prevent us from having a partial view of financialisation, which tends to be read off primarily from the power of institutional investors to re-organise company managers around shareholder value, and from glossing over crucial variables that created fertile conditions for financialisation to take off. This helps us avoid seeing financialisation as introduced to the firm by financial actors, or to treat corporations as “ultimately...playthings of the capital markets” (Blackburn, 2008: 42), but as a process that is co-produced by this alignment.

Labban’s study on the Russian oil industry, for example, shows how the dynamics of inter-capitalist competition structured the responses of oil companies to fi-

²⁰ Aglietta and Reberieux (2005: 1) have especially paid attention to ‘the macro-economics of the financial system’ and ‘the theories of the firm,’ arguing that there is a ‘reciprocal influence’ between the two.

nance capital, to which they became dependent to fund their mergers and acquisitions. A result of this was the “increasing [the] power of financial capital over the production process while bringing it into the process of centralization” (Labban 2008: 59). Likewise, in a study of timberlands in the United States, the growth in timberland ownership of institutional investors was equally the result of a strategic calculation on the part of the firm managers to tap into institutional funding to diminish the risk of hostile takeovers—a move that was also deemed favourable to having to voluntarily sell-out to other rival companies which can potentially limit their access to timber supplies (Gunnoe and Gellert 2010). Thus, whilst institutional reforms in pay schemes (Lazonick and O’Sullivan 2000), accounting practices ((Froud et al., 2000; O’Neill, 2001), and shareholder activism are singled out as factors leading to or facilitating the primacy of shareholder value in the conduct of the firm, these developments are not divorced from macro-economic changes in advanced economies at that period, which saw the ascendancy of finance capital and the emergence of institutional investors (Crotty, 2005; Foster and Magdoff, 2009). In this sense, system level theories can serve to provide a more historical framing to the financialisation of the firm. Financialisation after all is “both a macroeconomic structural phenomenon and a socio-political process that requires a reconfiguration of social and economic institutions that support capital accumulation” (Gunnoe and Gellert, 2010: 270). The other challenge however is to elucidate its articulation in a nature-based industry like mining.

2.1.3 Financialisation of nature

The financialisation of nature literature emerged in the context of the commodity boom that began in early 2000. This literature captures the growing wave of commercialisation of natural resources and their intertwining with global circuits of finance capital. Authors have argued that there has been a resurgence following increased demand from emerging economies, combined with the expected increase in scarcity in commodities and natural resources, which triggered speculation on their future price movements (Tricarico, 2011). In the process, new asset classes have been created of existing commodities, tradeable

commodities invented and natural resources commodified (Kaltenbrunner, 2012; Sullivan, 2012). Through the use of derivatives instruments, the “standardization” and “homogenization” of physical assets has advanced by turning these into liquid, tradable assets (Kaltenbrunner, Newman and Paineira, 2012: 15). This allowed for the conversion of commodities, precious metals and natural resources like water and land to form part of “general portfolio assets” by financial speculators (ibid: 16).

The financialisation of nature is but the latest round of an ongoing qualitative shift in the relations between capital and nature. Authors have argued that what we have been witnessing in the course of the past three decades is the gradual transformation of nature (Smith, 2008; Knox-Hayes, 2013), and the “increasing strength of financial influences on the contemporary production of nature” (Loftus and March, 2015: 173). Smith (2008) pointed out that nature has become an accumulation strategy, insofar as it is being produced for its exchange rather than use value:

“Whereas the traditional commodification of nature generally involved harvesting use values as raw materials for capitalist production...this new generation of ecological commodities. Whether they do or do not become the raw material for future production is incidental to their production.” (Smith, 2008: 2)

For Knox-Hayes, financialisation is “an extension” of this process “of [the] conversion of use to exchange value in commodification.” Despite the burgeoning literature on financialisation however, the role of finance in the production of nature is, up until recently, on the fringes of the financialisation literature. As Castree and Christophers (2015) remarked, this has resulted in ecological questions being sidelined, compounded by environmental geography’s elision of major environmental fixed-capital investments.

For most of the new literature on financialisation of nature, the process is characterised as a process of ‘abstraction’ made on the basis of “artificial commodi-

ties....constructed from the absence of...rather than the existence of something” (Knox-Hayes 2013: 117). This was the case with the carbon market. In his study of the carbon market in California, Bigger (2015: 111) finds that this entailed the creation of a product “that looks like a commodity” but only in “form”, from which the state can then extract rent from polluters. Knox-Hayes (2013: 117) considers this “separation of exchange value from its objective material context” as an important step that “allows for the creation of distortions and heightens the demand for accelerated rates of resource production.” The acceleration of the turnover rate for capital in carbon credits mirrored those of other financial commodities, and the logic of financialisation (ibid). In environmental conservation, Sullivan (2013) demonstrates how environmental arenas are being incorporated in the financial sphere through investment funds and indexes. March and Purcell (2014) too find a growing presence of new financial actors and investment vehicles in water services and infrastructures.

In many of these cases, finance’s expansion is incomplete or faced with the primary difficulties of establishing a commodity or creating a derivative of it. In March and Purcell’s (2014:11) study, financialisation has moved unevenly into water provision (rather than water itself) and only where it “can be most profitably embroiled within new investment vehicles.” In California’s carbon market, Bigger (2015) concludes that it falls short of a “full-blown financialisation of the atmosphere” and resembles more “an administrative tool that environmental markets’ early advocates envisioned.” The need for legibility, clearly established property rights, and guarantees of a revenue stream undermine the development of financialised instruments and markets. Notwithstanding, the presence of financial actors and their growing influence in water services has been shown to impact ownership and accumulation strategies; as well as “shift responsibility for global environmental outcomes into the incentivising control of investment finance” in environmental conservation (Sullivan, 2013: 204). The socio-ecological project behind financialisation is an important theme that unites these studies, and the profit-seeking motive that defines its interventions. Importantly, financialisation is shown to have actively pursued new avenues, new forms, new natures that can be appropriated into new sources of value.

2.2 CAPITAL AND NATURE

Problematising nature-capital relations has been at the heart of the materialist turn in geography. This literature points to how capital must work with the specific attributes of a resource in order for accumulation to take place. Processes like commodification, privatisation, it has been argued, take on different expressions depending on the material affordances of nature. Nature in effect influences capital's ability to transform in into something of 'value' to capital.

2.2.1 Nature as opportunity and obstacle

Building from Marx's subsumption argument (the subsumption of labour under capitalism), Boyd, Schurman and Prudham (2001: 556) point to how "the physical properties of natural resources, the time required for biogeophysical (re)production processes to occur, and the fact that natural resources are extensive in space, found in particular locations, and vary in quality, all affect the capital accumulation process in unique and important ways." These particular characteristics shape nature-based industries (oil, mining, agriculture etc.), which depend on resources that pre-exist human labour (*ibid*; see also O'Connor, 1988; Bunker, 1985). The production of nature is therefore not a straightforward affair as compared to other industries (e.g. manufacturing) as it must contend with the "opportunities, obstacles, and surprises" presented by nature (*ibid*). Ontologically for these authors, nature-based industries require a different treatment, they should "be analyzed on their own terms and in specific historical and regional contexts" (Boyd, Schurman and Prudham, 2001: 556).

Boyd, Schurman and Prudham (2001) moreover make an analytical distinction between real subsumption and formal subsumption of nature to refer to the extent by which capital is able to control or subordinate biophysical properties along the lines required by industrial production. Real subsumption means capital is able to control or modify biophysical properties and turn them into productive forces in and of themselves. This is considered to be the case with agriculture and other biologically based industries. Mining on the other hand is

(only) *formally subsumed* in that capital is “unable to directly augment natural processes and use them as strategies for increasing productivity” (ibid: 557).

Boyd, Schurman and Prudham dovetails earlier works by Barham (1994), Bunker and Ciccantell (1994) that have emphasised the way ‘nature’ has shaped the organisation of industries and how capital must follow the spatial distribution of resources to expand. A seminal piece by Mann and Dickinson (1978) is among the earlier precursors for bringing into sharp focus the natural obstacles that exist for capital. In their study, Mann and Dickinson sought to explain the anomaly of the rural family farm co-existing “alongside a dominant capitalist mode of production”. “Capitalist development”, they argued, “appears to stop, as it were, at the farm gate” (ibid: 467). The authors find that “in some areas of agriculture the ability to manipulate and vary production time and turnover time is circumscribed by the natural qualities of the object being produced”, which makes them ‘high risk’ and ‘high cost’ for capital (1978: 478). But a recognition of such ‘natural’ obstacle, they qualified, is not a recourse to natural determinism as to emphasise the need for examining commodity production “in its historical, social, and political setting.” The ‘anomaly’ they argued, “lies instead in the logic and nature of capitalism itself” (ibid).

A related article by Henderson calls for a more nuanced analysis of nature’s obstacles. He posits, in response to Mann and Dickinson’s thesis, that “Marx’s theory of circulating capital is always already a theory of barriers and interruptions to capital”,²¹ and that the reason why capital circulates is precisely because of these “obstacles” which are at the same time “invitations” to it (Henderson, 1998):

²¹ The degree to which Marx has or has not sufficiently paid attention to nature remains the subject of an ongoing debate. Authors like Benton (1989: 64) considered Marxist analyses to have “underrepresent[ed] the significance of non-manipulable natural conditions of labour processes and over-represents the role of human intentional transformative powers vis-a-vis nature.” Within the social production of nature thesis, Smith allowed that “Marx did not have a single, coherently elaborated concept of nature at all”, but that there lies an “implied ... understanding of nature” which can be the firm basis of analysis on Marx’s conception of nature (Smith 1984: 368).

“Natural processes are at one and the same time an invitation and barrier to capital. This can best be intellectually grasped through attention to the circulation of capital and to capital not as a thing but as a relation, a function of the purposes that values embodied in capital are directed to serve.” (Henderson, 1998: 96)

2.2.2 The law of value

The view that nature is exogenous to production has important implications on the question of what kind of ‘value’ is being extracted in nature-based sectors. In the mid-1980s, Stephen Bunker in *Underdeveloping the Amazon* brought attention to how capital depends on materials outside of the commodity system, and therefore prior to human labour. In reaction to the ‘social production’ thesis, Bunker finds that our understanding of extraction are constrained by dominant analyses which are fundamentally based on productive systems and processes. Where Marxist analysis emphasises the way by which capitalist accumulation begins from production, Bunker sought to elevate the ‘absolute dependency of material production on resource extraction’ (1985:20) in the first instance. Where value is defined as socially necessary labour time (the labour theory of value)²² in the former, Bunker upholds “the fundamental values in lumber, in minerals, oil, fish, and so forth...”. Bunker argues that ‘value’ is “predominantly in the good itself rather than in the labor incorporated in it” (Bunker 1984: 1054).

Given differences between Marx’s labour theory of value and Bunker’s ‘natural value’ (Bunker, 2003:220) subsequent scholarly work have sought to provide a more robust account of nature and capital accumulation as intertwined processes.²³ Moore’s recent work addresses some of these debates, arguing that capital-nature relations have become “much denser, more geographically expansive, and

²² For Marx, only living labour creates value. Socially necessary labour time is defined as the time that a worker must work “to produce an article under the normal conditions of production, and with the average degree of skill and intensity prevalent at the time.”

²³ Boyd, Schrumman and Prudham’s argument, to an extent, stakes out a middle ground between social constructionism and environmental determinism by re-balancing the overemphasis on nature as ‘constraint’, while questioning the lingering binary logic between capital and nature.

more intimate than ever before” (2015: 359), and situating these observations in the *longue durée* of capitalism’s evolution. Moore proposes that rather than treating ‘nature’ as somehow external, the ‘accumulation of capital and the production of all nature...[are] dialectically constituted’ (2011a: 109). Building from Arrighi’s cycles of accumulation, Moore (2015) considers nature and capitalism as co-evolving, such that environmental history is essentially capitalism’s history. In Moore’s world-historical reconstruction of Arrighi’s periodisation of capitalism, “Dutch hegemony emerged through a world-ecological revolution that stretched from Canada to the spice islands of Southeast Asia; British hegemony, through the coal-steam power and plantation revolutions; American hegemony, through oil frontiers and the industrialisation of agriculture it enabled” (ibid: 163). For Moore, it is not so much a question of how capitalism sought to degrade nature as it is a question of how capitalism has worked through nature, with all the obstacles and opportunities it represents (ibid).

Moore’s earlier study has shown empirically such dynamics at work in his account of the ‘discovery’ of silver in Potosi by Spain in 1545 which placed it at the fulcrum of a ‘commodity revolution’. This drastically reorganised and linked it to the world capitalist system (of Braudel’s ‘second sixteenth century’) (2010: 58). Its transformation to a mining frontier was anchored on geology which gifted rich ore deposits and ensured access to cheap labour (Moore, 2007 and 2010). But equally, Moore argued, the “production of nature is constitutive” of the process (2010: 60).

An important contribution in Moore’s work is his revision²⁴ of Marx’s value theory. Moore (2015) considers it a “mistake to see capitalism as defined by wage-labor,” as the “zone of reproduction” is not merely “a narrowly human affair” but also depended on “massive contributions of unpaid work, outside the commodity system.” The law of value for Moore is also a “law of cheap nature”: resting on the ability to deliver “a rising stream of *low-cost food, labor-power, energy, and raw materials* to the factory gates” (what he called the Four Cheaps). Capitalists in

²⁴ Moore expounds on the law of value by synthesising ‘Marxist and Green thinking’ in favour of a reading of Marx’s value theory through capital *in* nature.

this sense must identify and extract “new sources of free or low-cost human and extra-human natures for capital” to appropriate.²⁵ The expansion of commodity frontiers serve this purpose, which appropriates “uncapitalized nature” as “a necessary condition for [capital’s] expanded reproduction” (Moore, 2015: 443).

2.2.3 Defining extraction

The foregoing debate has implications on how we view extractive industries such as mining and the very process of extraction itself. The word ‘extraction’ is typically used to refer to the physical process of extracting oil, minerals and gas from the earth. Extraction encompasses the processing of resources that are naturally-occurring ‘and in whose existence or continued reproduction there is no deliberate human intervention’ (Bunker 1985:24). Yet extraction is simultaneously the expansion of ‘value’, “via the identification, capture and control of extractable materials” (Bridge, forthcoming; see also Labban, 2014). As Bridge notes:

“Because resources are not only materials but also arrangements of property, their extraction implies relationships of social power: the ability of a group (e.g. tribe, class, nation, corporation) to control land and reserve it against competing uses and users for extractive purposes; to marshal human labour and energy resources to the task of separating and moving materials; to achieve and control access to markets to realise value from the products of extraction; and to repress, legitimate or otherwise contain the political tensions involved in controlling and appropriating natural resources. In short, resource extraction produces not only raw materials but also social-spatial distributions of power and geographically uneven forms of economic development.” (Bridge, forthcoming)

²⁵ Moore (2015: 455-456) uses the term ‘appropriation’ to refer to “extra-economic processes that identify, secure, and channel unpaid work outside the commodity system into the circuit of capital.”

As Labban similarly argued, thinking of capital on the one hand and nature on the other simply do not hold when studying capitalist industries. Capitalist industries are “extractive” in a dual sense, insofar as they are involved both in the physical mobilisation of raw materials (“the absolute objective condition of all productive activity”) and “the extraction of (surplus) value in the labor process” (Labban, 2014a: 561).²⁶ One cannot be abstracted from the other.

Elevating the role of extraction as the first ‘act’ from which what already exists underground is captured and subsequently enters production while at the same time foregrounding the value relation that underpin the process has helped refine earlier debates on the production of nature. In engaging with Neil Smith’s “uneven development” thesis for example, which argued the retreat of industrial production from its “roots in nature”, Labban questioned the wisdom of having extraction “relegated...to the status of an exception” (Labban, 2011: 258):

“Looking at uneven geographical development from the standpoint of the one productive act that cannot ‘retreat’ from ‘natural consideration’, the exception in the theory, there appear to be two processes running counter to each other: the increasing emancipation of capital accumulation from ‘its roots in nature’ runs counter to a process whereby the accumulation of capital has struck ever deeper roots in the material space of physical nature – not only expanding ‘vertically’ but also extending technically and financially into new layers of materiality.” (Labban, 2011: 256)

Geography scholars have emphasised how the physical nature of resources, their thoroughly social function and articulation with the capitalist economy is a dynamic relation (see Swyngedouw, Kaika and Castro, 2002; Bridge, 2002, 2013; Castree, 2008a, 2008b). The challenge is to strike a balance that does not unduly accord agency on nature, divorced from the social relations that define it. As succinctly captured by Bridge and Bakker (2006):

²⁶ For Labban, understanding extraction in its duality allows us to expand “the theoretical territory of extraction without abandoning the territories of particular extractive practices” (2014a).

“how to express the causal role of material without straying into object fetishism or without attributing intrinsic qualities to entities/categories whose boundaries are 'extrinsic' - defined, at least in part, socio-culturally? How, in other words, can we insist on the importance of things without treating them solely as things?” (Bridge and Bakker, 2006: 15).

In the case of oil, for example, Bridge and LeBillion (2013), draw our attention to how it is not so much physical limit that constrains the availability of oil, as is encapsulated in the peak-oil thesis, as it is the way that its production and consumption has been organised. Eliding above-ground variables, and seeing peak oil as essentially a case of underground depletion, misdirects our energies towards problematising physical environmental conditions rather than the bundle of socio-historical relations that underpin them.

The foregoing crucially provides us with a toolkit by which to understand nature-capital interactions. Nature is enclosed and transformed into commodities as is necessitated by a prevailing mode of accumulation (Castree, 2008a; 2008b) even as nature shapes the scale of expansion of the capitalist economy. This is evident in mineral extraction, given its spatial fixity, whereas “[t]he vast majority of economic activity is not fixed by nature” (Fine 1994:281). For gold, for example, what this has meant is that even as prices and demand have skyrocketed, production cannot immediately respond (see Evans-Pritchard, 2009) given the long time it takes for even upstream activities to be completed. These material realities, however, similarly play an enabling role for financialisation: its relative scarcity and the inelasticity of supply in gold in the face of burgeoning demand has galvanised speculation, reminding us of the opportunities that natural obstacles can present to capital (Prudham, 2005; Henderson, 1998). Crucially, for this research, the challenge pivots around sustaining this dialogue between the logic (and abstractions) of finance-led accumulation, and the material and social realities that enable and shape its production and reproduction.

2.3 CONCEPTUALISING FINANCIALISATION AND SHAREHOLDER VALUE MAXIMISATION

Having surveyed the literature, this section moves towards bringing together these different contributions in framing the research. In the context of the gold mining industry, I use financialisation to refer to the re-orientation of firm activities to ‘shareholder value maximisation’ as company ideology. Taking its cue from the firm financialisation literature, shareholder value is considered a manifestation of (institutional) shareholder influence, that incentivise and/or discipline companies to prioritise stock valuations and dividend payments. Under this regime, production is mobilised, as the ‘unavoidable middle term’, through which fictitious claims on surplus value can not only be expanded but *maximised*. By tracing this through the historical lens of (finance) capital-nature relations in the gold mining industry, with specific focus on the commodity cycle of 2003-2015, I recast this drive as the production of space, and the production and appropriation of (human and extra-human) natures along shareholder value lines, as (temporary) resolution to the contradictions inherent in capital. Theoretically, I draw from Marx and Harvey’s work on finance capital and Jason Moore’s conceptualisation of capital and nature as a dialectical unity to unify the different levels (system-firm-nature) of analyses on financialisation. I expound on this framework in the next sections.

2.3.1. Financialisation as a contradictory process

System-level accounts of financialisation draw from Marx’s writings on capital, in particular, interest-bearing capital, and its circulation which set out some of the foundational concepts by which we can understand financialisation. Marx’s theory on money elucidates its compulsion to circulate, its underlying logic, and contradictions that make it both an engine of accumulation (i.e. powering productive activity) and a source of instability. For Marx, there exists an inherent contradiction between the financial system and its monetary basis which gives it a natural tendency to reach crisis. This contradiction is itself rooted in the dual role of money as a measure of value and as a medium of exchange

(or ‘capital in its money form and capital in its commodity form’ Marx, 1894: 296). This dual function implies that money must simultaneously stand as an exact representation of value while creating the conditions for the expansion of value. In the latter, it necessarily involves the extension of credit and the creation of fictitious capital to create more money, assuming the guise of interest-bearing capital.

In Marxist analyses, financialisation is associated with the expansion, and intensity, of *interest-bearing capital* (Fine, 2014: 47). Marx himself did not use the term financialisation nor ‘finance capital’, writing instead about the circulation of capital. As Harvey observed, the concept of finance capital “has passed into folklore of Marxian theory with hardly a flutter of debate...periodically resurrected by Marxists whenever it is deemed polemically or scientifically appropriate” (2007: 283). Marx laid out some of his arguments in *Capital* vol. 1 and 3, but much of the task of expounding on these concepts (especially in volume 3) was left to others. Hilferding and Lenin, both of which had more explicit theorisations on finance capital consider it an ‘amalgamation’ of interest of a powerful bloc of elites.²⁷ Yet the *raison d’être* for these alliances emerging or dissipating in the course of the accumulation process were not sufficiently addressed (*ibid*).

Harvey’s systematisation of Marx’s work privileges a process view for understanding finance capital. Harvey eschews the idea of financiers (or a rentier class) being dominant as the defining characteristic of finance capital in favour of an interpretation that sees it as simultaneously and “necessarily caught in its own

²⁷ Lenin (2010) wrote in this regard that “The twentieth century marks the turning point from the old capitalism to the new, from the domination of capital in general to the domination of finance capital.” Hilferding similarly argued that the “separate spheres of industrial, commercial and bank capital are now placed jointly under the direction of high finance, in which captains of industry and the banks are united in intimate personal union” (1981: 409). The power bloc view of both Lenin and Hilferding emphasise an alliance rather than a temporary alignment of interest.

web of internal contradictions” (ibid: 292).²⁸ Finance capital for Harvey is inherently “*a contradiction-laden*” process [italics mine] (ibid: 316-317).

Following Marx’s view of capital as ‘value in motion,’ Harvey conceptualises capital as a *process* rather than a *thing* (albeit emphasising the need to see it as both, see Harvey, 2014). To understand finance capital, he focuses on the circulation of interest-bearing capital as “the chrysalis out of which finance capital emerges as an organized controlling force...” (ibid: 327). Interest-bearing capital, or money borrowed for the explicit purpose of expanded accumulation (for production and realisation), allows for increases in productive activity while at the same carrying a tendency to circulate independently of production. This creates the possibility for it to advance far ahead of commodity production, setting the stage for crisis. Interest-bearing capital and its dynamics undergird the organisation that finance capital assumes, congealed in banks, stock exchanges, or institutional investments, new instruments and alignments. These entities, and the arrangements in which they are constituted, embody in their functioning the same contradictions inherent in interest-bearing capital and its relation with (and independence from) production, as instrument for the expansion of surplus value (and to which it is only tenuously linked).

Harvey’s insistence on *process* is simultaneously a call for a firm historical grounding of finance capital, that can account for the complex organisation of the financial system today and the “perpetually shifting realignments of both institutional structures and financial practices” (Harvey, 2007: 318). While Harvey’s intervention in *Limits to Capital* was a critique in the first instance to Marxist accounts of finance capital, his emphasis on the mutual development of theory and

²⁸ Harvey (2007) argues that Hilferding’s interpretation of Marx’s work is flawed as the contradiction that plays centrally in Marx’s theory on money (i.e. money as measure of value and money as medium of circulation) ‘disappears almost entirely’ in his analysis. Moreover, for Harvey, the concept of a hegemonic finance does not stand up to close scrutiny. [“If...a conspiratorially minded elite is so powerful, has at its fingertips such multiple and delicate instruments with which to fine-tune accumulation, then how can the periodic headlong slides into crises be explained?” (ibid: 317)].

historical practice is especially relevant.²⁹ In the face of criticisms that systemic analyses of financialisation fall into ‘abstract’ theorisation or tend to consider it an ‘unambiguous reality’ (see for example, Langley, 2004: 541),³⁰ a revitalised attention to the process that underlies ‘actually existing financialisation’³¹ recognises that finance capital is contradictory, dynamic, and uneven in its development.

A process approach, in this regard, allows us to avoid seeing it as simply undermining production or as the control of financiers over industrialists, as these relations are constantly being reconfigured under changing conditions of accumulation. The different ways financialisation has unfolded are a function of the different ways by which value can be expanded in various types of economic activities.³² This helps address some of the questions raised within geography with respect to financialisation, as to why capitalist firms that are ‘financialised’ and that have increasingly engaged in financial engineering to gain profit have still periodically invested in production (Labban, 2013). Or why, as in the case of gold companies, certain financial practices (e.g. hedging) fall out of favour in order to gain leverage to income from production. Or indeed, why we find ourselves in a period where finance capital is engaged in “a fresh round of tracing value to its source... [as] a stable source of income, on which more speculation might be built, being brought into play” (Leyshon and Thrift, 2008: 98; also see

²⁹ As Harvey emphasised, “tangible connections must be made between the weft of theory and the woof of historical geography” (Harvey, 2007: 451)

³⁰ As Langley pointed out, Marxist theories (especially world-systems approaches) tend to consider financialisation “as an unambiguous reality” that end up “sidelining important political questions as to the historically concrete processes of financialisation” (Langley, 2004).

³¹ To borrow a term used by Castree (2008: 153) on ‘neoliberalising nature’ in which he calls for focusing on “actually existing neoliberalism”.

³² Key to this understanding is that the expansion of value could only take place through the production process, through the production and realisation of surplus value. This makes finance capital seemingly realised in the sphere of exchange as merely a movement of money, “a redistribution”, within the pool commanded by the capitalist class as owners of capital (Labban, 2013; Fine, 2014) that in and of itself does not have any self-expanding powers. Indeed, a “profiting without producing” straitjacket (see Lapavitsas, 2013) has proven to fall short of explaining its expansion into new domains ‘of economic and social life’ (Fine, 2010). This is not to deny, however, that various forms of fictitious capital can circulate and “continue to feed off each other,” as remarked by David Harvey in an interview by Review 31 (see Böhm, 2014).

Kaltenbrunner, 2012). Indeed, the financialising of nature, as Loftus and March (2015: 172) have shown, entailed “increasing control over common resources like land, wildlife, emission trading rights, energy or water”, and even “a new love affair with real things” (Ouma, 2014).

2.3.2 Financialisation as the production of space, the production of nature

While financialisation tends to be seen as having a set geography, with the United States and the United Kingdom considered the ‘epicentres’ of financial power (Helleiner, 1994; Bellamy Foster, 2007), it is not geographically bound. Most studies on financialisation reify this focus on the US and UK, leading to fractured spaces of analysis between ‘financial geographies’ on the one hand and the physical geographies where financial value is premised. Geographers have pointed to how financialisation has expanded outside of these ‘core’ countries, and how it proceeded unevenly given the mediation of place-specific socio-material arrangements (Moore, 2015; Buckley and Hanieh, 2014; Peck and Theodore, 2007).

Similar to ‘globalisation’ or ‘neoliberalism’, financialisation's strength drew from spatial reconfigurations that gave it its ‘globality’. “Space is not incidental” as Moore pointed out, since “the accumulation of capital is the production of space” (Moore, 2015: 322). In much the same way that ‘neoliberalising nature’ was accomplished through multiple scales as a “socio-ecological fix” to over-accumulation, so too is financialisation a “geographical” and “glocal project” (Swyngedouw, 1996 and 2003). Swyngedouw’s call (in the context of the globalisation debates) for a scalar analysis resonates with some of the concerns by geographers on financialisation: that fixity on one level only serve to “obfuscate[s], marginalize[s] and silence[s] an intense and ongoing socio-spatial struggle in which the re-configuration of spatial scale is a key arena” (Swyngedouw, 2003: 4). That there is something lost by focusing on national scale accounts of financialisation (see for example Krippner, 2005; Lapavistas, 2013) was argued lucidly by Christophers (2012). Considering the supposed financialisation of the UK economy as a struc-

tural shift between profits accruing to the financial sector and those to the productive sector, results in an “anaemic” picture of its dynamics.³³ That indeed, “the historic growth in financial profits in the UK... [was]... the result not (just) of financialisation in the UK, but (also) of the increasing ability of UK financial institutions to profit from overseas, and ostensibly non-financialised economies” (ibid: 273). What these underline is that we should set our sights not only to the “spectacular performances of speculative capital” (Leyshon and Thrift, 2008) but also its territorialisation and the active re-ordering of space that accompanies it.

Financialisation, moreover, proceeds in and through nature, not separate from it, “even and especially when...[it] seems far removed from these concerns” (Moore, 2015: 346). As Loftus and March have pointed out, “If the locus of profit-making has shifted to some extent, these profits are not separate from the ‘real economy’ but exhibit a complicated, historically and geographically specific relationship with the ‘real’” (2015: 173). The *longue durée* of capitalism for Moore (2015) is equally a history of how capitalism has made nature work for its purpose and sustained itself *through* nature. Similar to Harvey, Moore views capitalism as a contradictory process guided by the law of value. “At the core of this law is the ongoing, radically expansive, and relentlessly innovative quest to turn the work/energy of the biosphere into capital (value-in-motion)” (ibid: 14). Finance capitalism is ecological, dependent not only on exploited labour but also the unpaid energy/work of human and extra-human natures as sources of value.

In the next section, I mobilise these concepts in laying out the thesis argument.

³³ Christophers raised concerns on the manner by which scholars have inferred financialisation from “an inappropriate geographical scale...[which] disregard[s] certain vital geographical trends in recent capitalist history, most notably the massive late-twentieth century international expansion by US and UK financial institutions. (2012: 272)

2.4 THE THESIS ARGUMENT

In this thesis, financialisation is associated with the emergence and growing importance of institutional investors as sources of money capital for large publicly-traded gold mining firms. Their dominance in stock exchanges and majority ownership of gold producers positioned these investors to re-orient firms around the maximisation of shareholder value as the company's overarching goal.

Shareholder value maximisation is realised through stock appreciations and dividend payments. By purchasing stocks, institutional investors can gain from stock price movements and share in company profits (dividends). Stocks are title claims that give the holders a stake in the company's future surplus value. For Marx, such claims are 'fictitious', given their propensity to diverge from the actual surplus value realised. They move independently and can be traded freely, with only the potential value as basis rather than something already produced. Stock valuations shift alongside changing perceptions on the realisation of surplus value, and such shifts are equally important opportunities for speculative gains. It is this feature of stock exchanges, where financial profits can be achieved and money withdrawn as necessary without having to commit through the entire length of the labour process, that made it an important draw for money capital.

Shareholder value maximisation carries this 'fictitious' quality insofar as shareholder value can be gained from the fictions of stock claims that differ from their underlying basis in production. In cases of speculative booms for example, share prices can rise disproportionately relative to realisable production, and still contribute significantly to shareholder value. Dividends on the other hand can be drawn from a portion of profits or from re-financing (i.e. credit or stock issuance). The extent to which real accumulation takes place or is able to keep up

with title claims is ambiguous, which is itself shaped by the material conditions of production.³⁴

In the case of gold mining firms, stock valuations approximate the expected production throughout the lifetime of the firm, which is in turn co-terminous with the mine life of their projects and operating mines. In an industry that depends on a ‘depletable’ resource and mines that have ‘limited’³⁵ lives, a company must continually have a pipeline of projects to demonstrate its future viability—the basis of company claims to stock appreciations and dividends. Companies aim to replace if not grow the reserves they extract in a given year by either growing organically (i.e. searching for the resource through exploration) or through mergers and acquisitions. The ability to meet yearly production targets is read as indicative of cash flows, from which dividends (as portion of company surplus value) are obtained. The drive to real accumulation, in this regard, necessarily co-exist (albeit disproportionately) alongside fictitious capital. Shareholder value maximisation is therefore realised independently from production and through production.

Shareholder value maximisation can be considered a *claim* to maximum surplus value. Surplus value is understood as produced simultaneously from exploited labour and the unpaid work/energy of extra-human natures that are value-maximising. Capital and finance capital operates therefore *within* nature in the drive to realise greater surplus value. The identification, expansion and internalisation of frontiers of exploitation and appropriation serve as necessary to accumulation. These dynamics took distinctive shape in the commodity boom and bust cycle of 2003-2015. Shareholder value maximisation comprised a set of strategies that re-framed the parameters of extraction and shaped in various ways the possibilities of growth and expansion in different stages of the commodity cycle.

³⁴ The intent, it should be said from the onset, is not to argue that there is symmetry between financial profits and profit derived from production. Purchasing title claims in the stock market (rather than direct purchase of a company) sets the stage for this divergence, which is inherent and necessary to its workings.

³⁵ By limit, I do not mean to imply that a ‘natural’ limit exists. Limit, as co-determined by capital and nature, is the level considered profitable by capital on account of nature’s affordances.

Aggressive expansion was the favoured strategy (by gold mining companies and institutional shareholders alike) as the gold price rose steeply, in expectation of the higher margins that can come from production. Greater selectivity set in as the gold price fell that led to asset write-downs, stock devaluations and loss of investor confidence. This set stricter conditions by which production and growth could commence, with emphasis on jurisdictions that were aligned with new cost/investment return considerations and with institutional investors' conception of geopolitical risk. Maximising shareholder value therefore "has not emancipated accumulation from production" (Labban, 2014: 5). Material accumulation has instead been disciplined by it (ibid). Anticipation of the realisation of future surplus value is critical (Harvey, 2007) and companies must convincingly signal their ability to deliver and sustain their operations by meeting production targets and finding new reserves.

Maximising shareholder value is also necessarily spatial. Company claims to profitability are tied to place, in the physical location of production. To maximise shareholder value, companies must continually search for the particular configurations of 'place' that can maximise profits. It therefore produces (and is produced by) spatial re-orderings, as projects and mines are constantly assessed on the basis of returns on invested capital or against the devaluation of capital. These informed decisions of exploration, mine closure, divestment or re-investment, to ensure that money sunk into production can be made to produce more cash, and at levels that surpassed previous profitability thresholds used by the industry.

Maximising shareholder value is above all a socio-ecological project— a pursuit to locate, define (or redefine) and extract new sources of value that can sustain financial accumulation. This entails the smoothening out of the production process through a re-working of place to make mines and projects fit institutional investor expectations. The costs and affordances of nature needed to be rearranged, social regulations negotiated, workers employed (or disposed) as variable capital, as the contradictions inherent in its workings are transposed *in place*. Financial accumulation today therefore has penetrated deeper into new levels of

materiality (Labban, 2010), and has woven itself deeply into the very fabric of society.

2.5 CONCLUSION

In this chapter, I sought to draw out the key debates and contributions that informed the thesis. The shareholder value literature brings into focus the growing influence of a specific class of investors, called institutional investors, over the activities of non-financial firms. Under institutional shareholder influence, firm managers were shown to have been incentivised and disciplined to cater to shareholder priorities of rising stock valuations and dividend payments. Alongside this shift were key re-alignments in accounting practices and company operations, with the firm emerging as an extension of the interest of its shareholders. The system-level financialisation literature (and within it, Regulation Theory), on the other hand, helps broaden this company focus by showing the reciprocity between macro-economic configurations, i.e. the shift to finance-led accumulation, and the ideational and institutional shifts within companies. This literature highlights how financialised capitalism signalled a different pathway for accumulation, with finance taking a more dominant role over industries. Firm-level financialisation in this sense cannot be separated from the (neoliberal) arrangements that prevailed following the collapse of the Fordist-Keynesian system of accumulation. The financial system emerged as a keystone of these restructurings.

In investigating financialisation's articulation with a nature-based industry, the question of materiality looms large. The geography literature on capital and nature, and the growing literature on the financialisation of nature, have highlighted the particularities of these types of industries. A key contribution of these literatures is in underlining how financialisation and the expression it takes are mediated by the specific attributes of the resource. 'Natural' variations in space, time and form can present unique opportunities and challenges for (finance) capital.

The thesis' framework brings together these different levels of analyses to provide a more rounded treatment of financialisation in the gold mining industry. I defined financialisation as the adoption of shareholder value maximisation as company ideology. Taking inspiration from Marx and Harvey's work on finance capital and Jason Moore's work on capital and (or in) nature, I conceptualised financialisation as a contradictory process of value expansion and highlighted the inherently spatial and ecological nature of this pursuit.

In the next chapter, I build on the arguments first outlined here, putting up front the reconfigurations that companies undertook to deliver on shareholder value commitments during the boom and bust cycle. The chapters that follow (chapters 4, 5 and 6) will then deepen certain aspects of these reconfigurations through more detailed empirical explorations and examples.

CHAPTER 3

Institutional shareholders, transnational corporations and the geography of mining investment

Institutional investment played a critical role in the expansion of gold mining activities in the commodity boom of 2003–2012—the longest recorded boom since the post-war period (Hilpert and Mildner, 2013). Institutional investors—defined by the US Securities and Exchange Commission as entities with a minimum of \$100 million in equity assets under management—have placed large bets in different investment channels to ‘ride’ the uptake in the gold price, including through stock holdings in gold mining companies. Gold mining firms drew in institutional investors like hedge funds in their stock registers, shifting the investor base towards more short-term investors. As key sources of money capital, institutional investors have directly contributed to the funding of gold mining activities through purchases of new stock issuances. As majority shareholders, they were well-positioned to exercise strategic control over firm management and influence company strategies towards shareholder value maximisation. This chapter considers the implications of this shift in the operations of some of the largest gold mining companies across the commodity cycle.

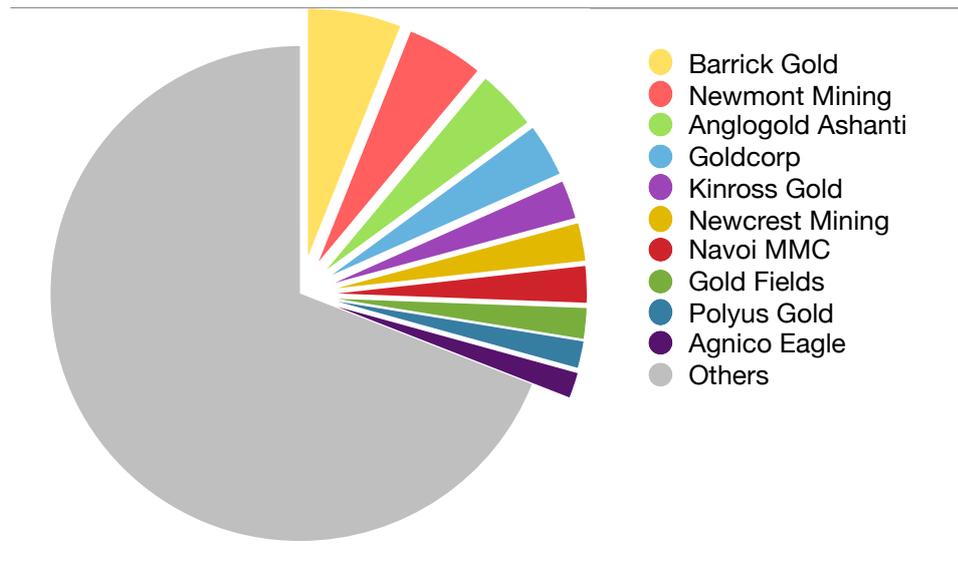
I first provide an empirical background on the gold industry and its peculiarities as compared to other sectors—attributes that have implications on how industrial and finance capitalists ‘value’ the industry. I follow this with the socio-polit-

ical conditions that set the stage for speculative investment in gold mining that led to a shift in investor base towards more short-term institutional investors (e.g. hedge funds). I then contextualise the aggressive growth to expand during the boom years in light of the alignment of finance and industry capital. Institutional investor speculation around the gold price unlocked significant amounts of financing for gold mining firms that fuelled their growth and expansion. As companies subsequently faced lower margins due to higher costs and a lower gold price, the means to create or indeed, “maximise shareholder value” as companies have phrased it, instilled a more “disciplined” approach to production and investment, requiring a restructuring in mining operations. Capital recycling—the sequestering of money capital from production—led to mine closures and sales. Geographically, institutional investors’ conception of geopolitical risk disciplined expansive strategies, deferring preference for jurisdictions considered mining-friendly and/or that meet shareholder value threshold. I follow this with a discussion on the geographical and socio-ecological implications of shareholder value maximisation.

3.1 GOLD AS A ‘SPECIAL CASE’

Gold’s function and movement is unique to other commodities. It is a commodity with end-use in technology and jewellery, but is also at once a financial asset, a store of value and a hedge against risk and economic downturns. Its price movement is largely sentiment-driven: the desire of central banks to hold or sell gold, cultural affinities for gold jewellery, and its utility as an investment constitute its most significant sources of demand (World Gold Council, 2015).³⁶ “It is best treated as a special case”, a mining VP in investor relations suggested, as it is moved by a broader and different set of factors than that which moves

³⁶ The breakdown of gold demand in 2004 shows the weight of jewellery consumption as a mover of demand at 76 per cent, its single most important source (World Gold Council, 2004). Since then, the sources of demand have become more diverse, with the most notable addition of new forms of investments such as exchange traded funds and central banks buying rather than selling gold. During the course of this period, the gold price has gone up, rising from 2004 to almost 5 times its value at its peak in 2011.

Figure 1. Top 10 Gold Producers, 2015

SOURCE: THOMSON REUTERS, 2016

other commodities which are primarily anchored on industrial use.³⁷ For gold, only about 10 per cent can be attributed to technological demand.³⁸ Since the end of the gold standard, there has been no real ceiling nor floor to the gold price: sentiments can drive it to historic highs and lows, and the lack of sufficient industrial and technological demand cannot cushion its fall.³⁹

For those in the business of producing it, the price of gold is considered guess work. As another VP of a gold mining company commented, “this industry is tough because you are investing hundreds of millions if not billions of dollars in projects for which you have no control over the price...no algorithm to plug in the numbers and say this is where the price of gold will be in two years”.⁴⁰ Gold mining companies also do not hold control over gold’s supply as to impact its price. While the top ten gold mining companies (see Figure 1) were responsible for about a third of production in 2015 (Thomson Reuters, 2016), annual world production is only about 2 per cent of already existing supply. Above-ground gold

³⁷ Interview, VP in investor relations, New Gold, June 2014.

³⁸ Average technological demand from 2006 to 2015 computed using data from the World Gold Council (2015).

³⁹ Interview, government employee, January 2014.

⁴⁰ Interview, VP in investor relations, IAMGold, March 2014.

reserves kept in vaults, traded in coins, or used as jewellery comprise the largest stocks (ibid). Since gold is not ‘consumed’ in a traditional sense (in that it is not exhausted in consumption), it can be recycled from use. It is estimated that nearly all the gold ever unearthed still exists up to this day, with the only gold ‘lost’ in technologies used in outer space (US Geological Survey, 2015). This stood at about 125,000 tonnes in 2013, equating to approximately 48 years of mine supply (Citi Research, 2013). This configuration of gold supply (as Citi Research pointed out) with a “disproportionately large above-ground stock relative to annual mine production can render mine production irrelevant over extended periods” (ibid: 12).

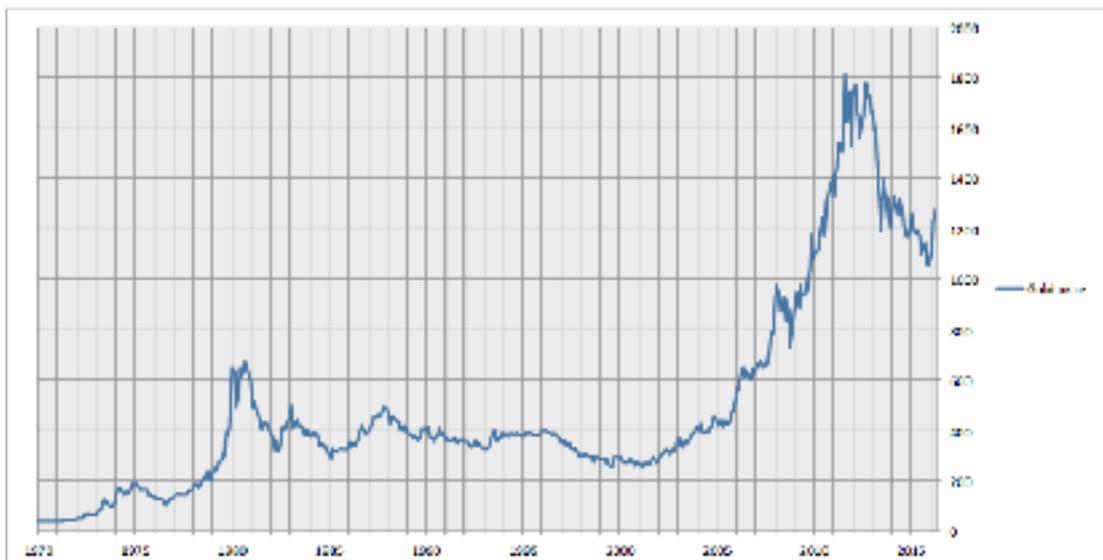
The size of the gold mining sector is small, in fact negligible when compared to the entire mining industry. It is highly fragmented, populated by hundreds of gold firms of varying sizes operating globally. Small firms dominate in numbers—no exact figure exists—and many artisanal activities, which also produce gold, remain unaccounted for. The amenability of gold to simple extraction methods (see Chapter 4) allows for low barrier to entry in the exploration end and in small-scale production (Dougherty, 2013). There is no control over mine supply in contrast to the monopoly or cartel-like grip of other metal companies on production, such as in the copper and platinum sector or the oil industry.

The entire capitalisation of the gold mining segment of the industry was estimated to be at approximately 70 billion in 2004, roughly less than the size of a single, diversified company like BHP Biliton, an Anglo-Australian mining and petroleum conglomerate. While small in aggregate when compared to other diversified firms, it is considered the most highly valued of the single metal sector (in terms of enterprise value) (Kettle, 2005: 2). At the firm-level, the largest gold mining companies have some of the highest capitalisation in the mining industry, with companies like Barrick Gold, Newmont Mining, and Goldcorp ranking among the top valued mining companies populated mainly by large diversified firms.

The stocks of gold mining firms are also valued differently, a remnant of gold's valuation following the end of the gold standard. Gold is considered by Western investors a “dead asset”, placed in vaults that pay no interest nor dividend, but whose value can rise significantly in times of crises. Gold mining companies extract gold and are thus exposed to changes in the price of their product. In contrast to gold, companies are “productive” entities that can yield income. Purchasing gold mining stocks (and with it, the leverage it provides to the gold price *and* income) was perceived to provide a higher investment return⁴¹ by outperforming the gold bullion in an environment of high gold prices. The value from production goes straight to “the bottomline [net income]” with price appreciations, as investors and industry players have phrased it. In a nutshell, speculating on the realisation of value, inherent in stock holdings, was the preferred route for partaking in gold price rises.

These attributes of the gold industry and its valuation, as I will argue in the next section, have important implications for financial accumulation and the perceived advantage of sinking money capital in production.

Figure 2. Gold price history, 1970 to 2016



Note: In US dollars. Data series from 30 January 1970 to 29 April 2016 based on London PM fix.

SOURCE: *WORLD GOLD COUNCIL, 2016.*

⁴¹ It is considered by the industry that gold mining stocks are “usually more sensitive to the price of gold than even a gold bar” (Kettle, 2005).

3.2 THE CHANGING CONDITIONS OF ACCUMULATION

Since the gold price was allowed to move based on market pricing in the late 1970s (see Figure 2), it has demonstrated sensitivity to geopolitical and economic uncertainties, shifts in monetary policy in the US (with an impact on the dollar, to which it is perceived to be inversely correlated), and central bank policies on lending or selling gold—events exogenous and beyond the control of gold mining firms. To shield themselves in low-priced environments, which prevailed for much of the 1980s and the 1990s, companies resorted to hedging—a financial practice of locking in the price of gold sold into the future. This was backed by the mobilisation of gold sitting in vaults, with companies borrowing and selling gold drawn from central banks (via intermediary commercial and bullion banks) to be returned from future production — a form of loan for gold mining companies (Doran, 1998). The result of these practices has been an increase in the supply of gold released in the market (I discuss this more fully in Chapter 5), which combined with the low priced environment at the time, depressed the gold price further.

The late 1990s and early 2000s signalled an important turn in the gold market. One of the first meaningful changes had to do with regulating traditional sources of gold supply. Central banks, which held about a quarter of the world's total gold reserves above ground in 1999, were then its most powerful players as threats of large-scale selling pushed the gold price to new lows. The signing of the Central Bank Gold Agreement (CBGA) in 1999, an agreement to put a cap on gold sales to 2,000 tonnes in the course of five years as well as bank lending activity (which were used for hedging activities by gold mining firms), defused the threat of additional gold sales by some of the largest reserve holding nations concentrated in the West (World Gold Council, 2014). Concerned on the potential impact of a low gold price to their collective reserves, the largest holders in Europe agreed to this limit, an agreement that has been affirmed every 5 years since then. This proved pivotal for changing the behaviours of other actors, investors and gold miners in particular, that would be supportive of a rising gold price. As an article published on the London Bullion Market Association reported:

“The September 1999 Central Bank Gold Agreement has had a tremendous impact on the gold market. Not only did the CBGA head off a likely plunge below \$250, but the shock it provided also triggered important structural changes—the two key being reduced short selling by funds (with them eventually moving more to the long side) and, above all, an about turn by producer hedgers (with positions tending to decline rather than increase).” (Klapwijk, 2003).

The effect of this agreement had ramifications for gold mining firms. Creating scarcity by withholding reserves provided stability for the gold price (with impact to company income) and elevated mine production as a critical source of gold supply to meet global demand. However, it also reduced the available gold reserves that mining companies can use as loan and to support hedging practices. These changed circumstances led to a different trajectory for the industry, pushing companies to look for new sources of financing and, as gold demand rose, in making mine production highly profitable, re-installing it as a strategy for value expansion in the view of finance capitalists.

It is important to stress that institutional investors are not particularly new in the gold industry, nor at investing in gold mining companies. Firms like Barrick Gold have especially benefited from institutional investments in the previous decades (see Chapter 5). In the mid-1980s, institutional investors flocked around gold stocks when there was widespread speculation on new gold bonanzas (Nevada for example) and concerns on economic and political turmoil in the US and abroad drew investors to gold mining stocks (Sease, 1987). In the 1990s, institutional investors maintained gold holdings as part of a diversified portfolio, to function as a “cheap insurance policy”: “if something goes wrong to the point where financial assets get into real trouble, the upside in gold and more so gold stocks is tremendous and can offset substantial losses incurred in financial assets”, according to one institutional investor (Task, 2001). However, for much of the 1980s to the late 1990s, the low gold price and the lucrative returns of other investments, have made gold and gold stocks less attractive to institutional investors seeking above market returns. As a VP in investor relations of a gold

mining firm recalled, “The concurrent shift in capital markets over these decades, with an explosion of new financial instruments and trading platforms and strategies, caused gold to be neglected as an investment asset”.⁴²

Aside from the signing of the CBGA, the commodity boom of 2003-2012 and the 2007/2008 crisis helped reverse this. Economic growth in emerging economies and cultural affinities to gold by a growing middle-class have propped up the price. The opening up of new sources of demand also expanded gold’s consumption,⁴³ and with it speculation on future price rises among institutional investors. But perhaps the most important was the crisis of 2007/2008 that elevated gold’s traditional role as a store of value and as a hedge against downturns, bringing its price to new heights. As the Financial Times reported, “The pace of the gains picked up after the collapse of Lehman Brothers in September 2008; having gained just over 120 per cent in the five years up to that point, gold rose by the same amount again in the three years to its peak” (Eley, 2013b). Following Lehman’s collapse, hedge fund interest caused a surge in betting on economic uncertainty and US monetary policy, which was expected to support further gold price increases (Jones, 2010: 25; Harding, 2010: 9). Central banks, on the other,

⁴² Interview, VP in investor relations, New Gold, June 2014. The Financial Times also wrote that the 1980 to 2001 period was a “lengthy period[s] of underperformance” (Eley, 2013a). While there were brief spells of gold price appreciations, as in the mid-1990s, the increase was modest and was not sustained over longer periods (as shown in figure 2).

⁴³ Notable among these is the change in the terms of ownership of bullion in 2004 in China, now its most significant market. As of 2013, China accounts for 26 per cent of the world’s total for private sector gold demand from only 7 per cent ten years prior (Hewitt, 2014). Jewellery comprises a large part of demand, but alongside it is the sharp growth in retail investment for gold following the lifting of the regulatory ban (in place since 1950) on individual ownership and trading of bullion in 2004. The Shanghai Gold Exchange, introduced in 2002, became a vibrant platform for trading, with the opening up of new means of access to gold by a flourishing middle class that holds greater capital at its disposal. In the West, this is mirrored by the introduction of new means of investing in gold, spearheaded by the World Gold Council, that tap into the strength of institutional investors (e.g hedge funds, pension funds) in capital markets and their growing desire to gain leverage to the gold price. Through bullion-backed exchange traded funds, set up in 2004, investors can own (and liquidate) a fraction of an ounce of gold (per share) in the same speed as stocks, as they are tailored to overcome the difficulties in access, storage, and costs associated with owning physical bullion that held investors back in the past. Combined, demand for retail investment and exchange traded funds constitute overall investment demand for gold, which accounts for about 35 per cent of total gold demand in 2012. Investment demand saw an almost quintuple growth from 2004-2012, the largest jump among the sources of demand.

have not only held on to their reserves but have switched from suppliers to (net) buyers of gold.

Of the available instruments open to institutional investors to invest in gold—including a wide array of choices in the derivatives (paper) market—speculation found its way to gold mining stocks as expected income from production rose. Since, historically, price shocks in gold “translate directly into wealth shocks for gold mining firms” (Borenstein and Farrell, 1999: 9), a stockholding was essentially a claim to such dramatic increase in the value of capital, in the “margin expansion” (CNBC, 2010) that it was bringing, and was expected to bring, to gold mining companies. Asset management funds like Blackrock Gold and General Fund⁴⁴ were but some of the new crop of gold-specific investors that were formed following the spike in the gold price. As its chief, Evy Hambro, commented in a CNBC interview:

“At Blackrock and the gold fund...we are focused on the gold mining companies than the metal itself. What we’re really pleased to see now is that gold mining companies have been able to hold on to the higher gold prices and the margins that have expanded with that...unlike the first half of the decade costs were rising almost at the same pace as the gold was rising so you didn’t see that margin expansion coming through...and the big trend now is about paying money back to their shareholders.” (CNBC, 2010)

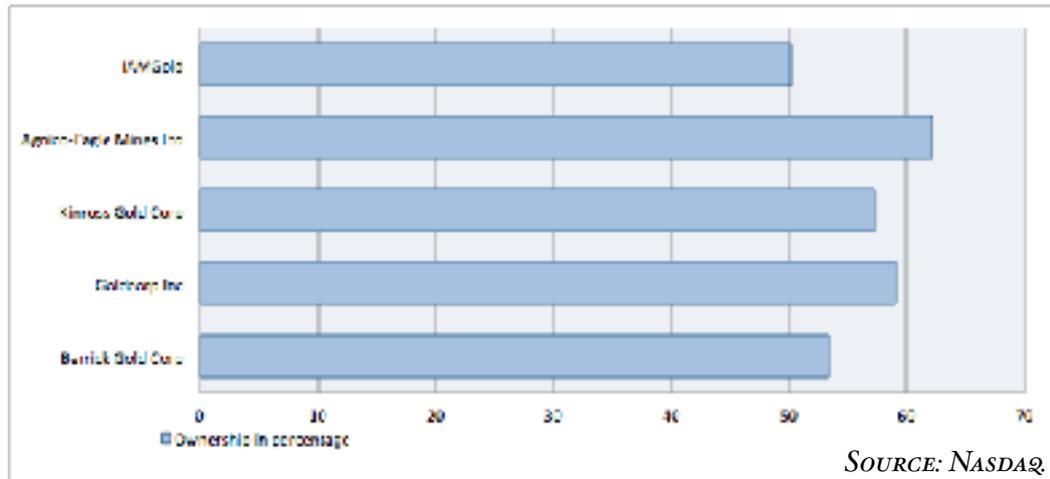
The strategy of finance capital, whose ultimate goal is to make more money (“the absolute form of capital,” Marx, 1894), is influenced by the particular conditions of surplus value realisation. Institutional investors harbour no particular interest in production per se, it must be emphasised, despite heightened interest in gold-producing firms. Rather, they reflect faithfully the sentiment of money capital towards the production process, an inconvenience that mediates the circuit M-

⁴⁴ Blackrock Gold and General Fund is a gold-specific asset management firm created in mid-2009. It holds \$24 billion in assets mainly invested in the gold equities of ‘established producers’ (Blackrock, 2014)

M' where production "is an unavoidable middle term, a necessary evil for the purpose of money-making" (Marx 1894: 137). Institutional investors have invested in a variety of instruments including derivatives of gold, but the conditions of strong demand, central bank buying, and a rising gold price made gold producers a lucrative buy'. In particular, large producers that are already in production were viewed to be its main beneficiaries: through the sale of their product in the market, they are able to immediately generate cash flow. The attraction of gold mining firms therefore rested on expectation of the valorisation of capital from production.

Institutional investors are congealments of the concentration of wealth and money capital, and their importance in stock exchanges has only grown over the past decades. As demand for gold stocks rose with price appreciations, companies took the opportunity to raise funds by issuing additional shares. From 2000 to 2011, gold mining companies raised an estimated \$78 billion in new equity capital (RBC Capital cited in Sprott and Morris, 2011), more than their entire capitalisation of approximately \$70 billion in early 2004 (Jenkins and Yakovleva, 2006).⁴⁵ While equity financing is not the only recourse for funds for the largest gold companies, with debt and (in the past decades) bullion loans having been key sources, it has taken a significant role as institutional investors sought leverage to the gold price and company earnings. The largest gold mining companies have successfully cashed in on investor interest through the issuance of multibillion-worth of new equity shares. From 2002-2012, the number of new shares issued by the four largest gold mining companies of that period (Barrick Gold, Newmont, Newcrest, and Goldcorp) went up by 117 per cent (Peple and Denning, 2012). Barrick Gold, the world's largest gold producer, went to capital markets twice for \$4 billion and \$3 billion dollars in 2009 and 2013 respectively to make the largest equity offerings in the history of the Toronto Stock Exchange.

⁴⁵ In real terms, this may seem small compared to that received by other industries. But this amount has had a larger impact on the gold sector given its size compared to other industries, or even as compared to diversified mining firms.

Figure 3. Institutional investor ownership in gold mining companies

As of December 2015/March 2016.⁴⁶

Gold mining companies attracted some of the more high-profile hedge fund managers in the financial world, such as Soros Fund Management (one of the largest hedge funds in the United States), Blackrock (the world's biggest investment manager) and Paulson gold funds (the largest gold hedge fund), that have heavily invested in companies like Barrick Gold, Goldcorp, and Kinross Gold. Within companies, the proportion of shares held by institutional shareholder as a class of investor outweighed those of regular shareholders, with the biggest producers all showing above 50 per cent institutional ownership (see Figure 3).

3.3 THE ALIGNMENT OF INDUSTRIAL AND FINANCE CAPITAL

The strategies of institutional shareholders diverge from regular shareholders. Institutional shareholders exemplify greater 'activism' towards their investment and are considered to have a shorter investment horizon. Within firms, institutional shareholders can exert a disciplining role as large owners of capital. Through shorting strategies or by exiting in herds, they can swiftly drive share

⁴⁶ Based on 13-F filings by institutional investors filed quarterly. The Nasdaq is updated constantly to reflect the most recent filings. However, since 13-F filings are voluntary and does not require institutional investors to provide full disclosure, these should be taken as merely indicative of their investment preferences rather than providing a comprehensive picture of their activities.

prices. This positions them to exercise a ‘voice’ in how companies are run and to pressure firms to align company activities with their investment objectives.

Institutional investors are concentrated in North American stock exchanges (PwC, 2015). North America is also the key region of shareholder activism and a focus of hedge fund activities.⁴⁷ Institutional investors are not a cohesive group and their investment strategies vary. Of these investors, hedge funds are considered to be “at the more aggressive end of the spectrum” that “seek[s] a significant change to the company’s strategy, financial structure, management, or board”, as an industry publication by Pricewaterhouse Coopers reported (PwC, 2015: 2).⁴⁸ “Shareholder value” proposals, it added, “are usually sponsored by hedge funds as a component of a more assertive activist campaign” (PwC, 2015). Low stock valuations (especially compared to peers) is considered a key trigger for these shareholders to exert influence over management.

Institutional investors in gold mining firms typically hold between 4 to 7 per cent of gold mining stocks of a company, a dispersed ownership characteristic of these types of investors. Since institutional investors maintain a portfolio of assets, their investments are spread (called “portfolio diversification”), preventing any single investor from gaining majority control in any single company.⁴⁹ However, the legal and regulatory environment in North America and especially Canada made for a conducive environment for shareholder activism. Canada has lower disclosure requirements on stock holdings, more permissive rules on soliciting

⁴⁷ In the publication Pricewaterhouse Coopers (PwC) mapped out the key actors and issues behind shareholder activism. The report finds that “[F]orty-one percent of today’s activist hedge funds focus their activities on North America, and 32% have a focus that spans across global regions. The others focus on specific regions: Asia (15%), Europe (8%), and other regions of the world (4%)”.

⁴⁸ In industry conferences and reports, ‘shareholder value activism’ has become a recurring theme as tensions between institutional shareholders and companies became widely-publicised battles.

⁴⁹ Another pertinent characteristic of institutional investment in gold mining firms is their gold-specific focus. In some cases, the specific target of investments are the largest producers as in the case of Blackrock and Paulson Co. Thus, while institutional investors disperse their ownership, this also had the effect of pushing firms to compete against each other on the basis of the value of their shares, their dividend payments, as well as with other forms of gold investments (notably exchange traded funds).

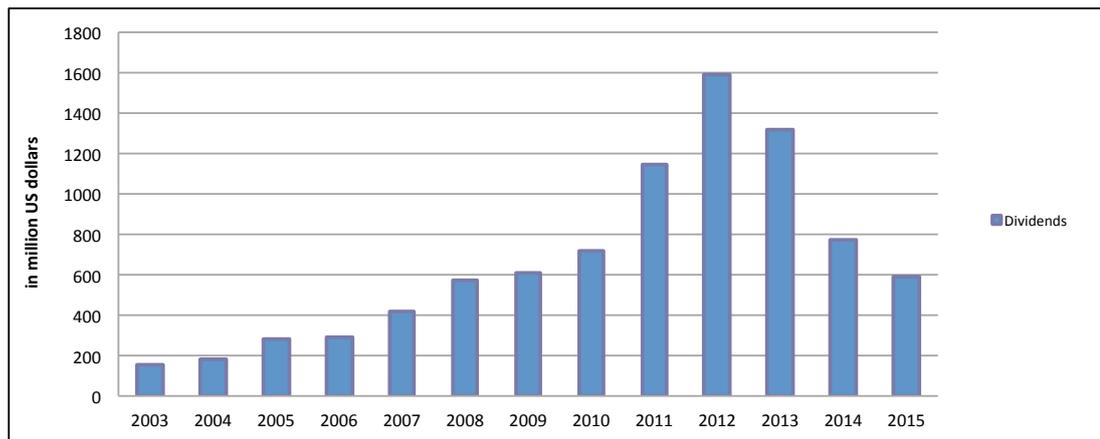
shareholder meetings and in the filing of proxy circulars as compared to the United States. As a representative of CST Phoenix Advisors, Glenn Keeling, pointed out, Canada is “reasonably activist-friendly...that’s putting it politely.”⁵⁰ In comparing Canada to the United States, he highlighted how shareholders within Canada are able to launch ‘surprise attacks’ or take more aggressive actions against management: a “5 per cent registered holder can request a shareholder meeting anytime without waiting for the next AGM [annual general meeting]”, and investors can “stealthily acquire 9.9 per cent [of stocks] without ever announcing [their] position.” In comparison to the US, funds are required to disclose their stake at 5 per cent (Rubin, 2015). Canadian and US stock exchanges, in this regard, provide the legal framework by which institutional investors can exercise control over groups of companies through minority holdings.

The demonstrable effects of shareholder activism, according to the shareholder value literature, are purportedly: 1) the growth in dividend payments, with a greater share of profits routed back to shareholders; 2) a decline in growth or production as a greater emphasis on ‘margin growth’; and 3) faster capital turnover, given the short investment horizon of institutional investors. This shift in power relations and in the distribution of profits it has been argued, has contributed to the growth in accumulation accruing to the financial sector. I consider these observations by looking at the particular case of Barrick Gold, Goldcorp, Kinross Gold, Agnico Eagle Mines Ltd., and IAMGold.

3.3.1 Dividend payments

Growing dividend payments is considered one of the key hallmarks of shareholder value creation. Company managers return the money invested by shareholders—“as owners”—in the form of dividends taken from company profits. The result, purportedly, has been a palpable shift in the proportion of dividend and profits retained by the company for re-investment, a proportion that has been sustained, if not increased, despite any rise and fall in company profits.

⁵⁰ Presentation by Glen Keeling of CST Phoenix Advisors at the PDAC conference, March 2014.

Figure 4. Dividend payments, from 2003-2015

Note: Dividends paid to common shareholders by Barrick Gold, Goldcorp, Kinross Gold, Agnico Eagle and IAMGold. Excludes dividends paid to non-controlling interest.

SOURCE: COMPANY REPORTS.

Gold mining companies did not have a history of paying back dividends prior to the boom, with the exception of larger companies like Barrick. Even in such cases, a company's retained earnings were mainly re-invested back into company operations (see Chapter 5). During the boom period, however, dividends grew exponentially, most significantly from 2006 to 2012 (see Figure 4), and were disbursed with higher frequency—with companies switching to quarterly and monthly payments—to accommodate the speculative and shorter holding time of company equities by investors. Companies took pride in their ability to constantly return higher dividends year-on-year as a testimony to the strength of their cash flows. It was a means to attract institutional investment, the success of which turned into a conducive environment for raising mining finance.

3.3.2 Growth

An acceleration of production growth rather than a decline was the strategy of choice as finance-industry interests converged around the capital needs of mining projects and investment needs of institutional investors. This aligned with capital markets' greater appetite for risk during this period and a mutual desire, on the part of companies and institutional shareholders, to take advantage of a rising gold price. Commitments to shareholder value were amplified in

annual reports and investor presentations, with claims of ‘maximisation’ of shareholder returns premised on aggressive growth which could bring in higher cash flows, margins, and returns. Far from crippling production, institutional investors not only supported but actively pushed for accelerating the drive to bring in productive capacity.

The very different tact toward growth by institutional shareholders can be partly attributed to the demand and supply dynamics in gold discussed earlier: the threat of oversupply from mine production was non-existent and carried no dampening effect on prices. Historically, the largest threat of oversupply in gold has been from central banks who hold the majority of stocks above ground. In the face of high demand and the majority of supply from above ground taken out of circulation, mine production and to an extent recycling stood as the only two key sources of supply. Secondly, institutional investors required high return potential (Agnico Eagle, 2012; World Gold Council, 2011) which in their calculation could be derived from investing in the companies themselves. Given the price of the commodity, the margin realised from production was expected to translate to higher earnings (which is instrumental to outperform gold itself), dividends and stock appreciation.⁵¹ As Barrick Gold recounted in its annual report in 2012: “In the years leading up to the global financial crisis, rising gold prices and booming equity markets created a mood of euphoria among investors, rewarding gold producers that delivered aggressive production growth, no matter what the cost.” On the part of the firm, conserving capital in the boom years, rather than reinvesting in growth, or the “failure to bulk up”, according to a World Gold Council study, “usually means death by acquisition” (Kettle, 2005: 2). As the CEO of IAMGold moreover explained in a company briefing paper, “Typifying the Canadian sentiment at the time was the view that any company in any industry that hoarded cash rather than investing in growth or returning it to shareholders was sitting on dead money” (Letwin, 2013: 2). Money must circulate, either by sinking it back into production, or by paying creditors or shareholders.

⁵¹ While not part of this study, a remark made by the CEO of AngloGold Ashanti, a South African gold mining firm, captures this succinctly: “investors want to see that, with a rising gold price, there is more than a one-to-one relationship between the gold price and earnings” (Holland, 2012: 11)

This fuelled an aggressive drive to expand, with companies venturing into new territories and picking up previously shelved projects. Mergers and acquisitions ensued with higher frequency leading to greater consolidation of production into larger firms. This strategy of ‘growth’⁵² also allowed companies to secure quality assets in strategic geographies and expand rapidly which drew support as it immediately adds ounces. Kinross’s acquisition of Red Back, for example, funded through the issuance of new shares, established its presence in West Africa, billed as “one of the world’s fastest-growing and most prospective gold regions” (Kinross, 2010). A total of 186 acquisitions from 2000 to 2012 took place, including multibillion deals by the big producers that are some of the largest in mining history (Jalonen, Forster, and Winder cited in Letwin, 2013). This includes Barrick Gold’s \$10.2 billion acquisition of Placer in 2005 (which made it the largest gold mining company), Goldcorp’s \$8.6 billion of Glamis in 2006, and Kinross \$7.1 billion acquisition of Red Back. This slew of M&As changed the structure of the sector, with larger companies emerging from the ranks of medium-sized companies, as with companies like Kinross and Goldcorp and the top companies almost doubling in size.

The competition to expand played out in an intense jostling for identified ‘gold projects’—those that predominantly contain gold in their mineralogical composition. Institutional investors’ interest in gold mining firms is due to gold being the main commodity upon which production and earnings depended. Because firms are valued for their “gold exposure”, company managers ensure that no more than 25 per cent of their total production is attributable to another commodity in order to qualify as a “predominant play”, if not “pure gold” play, for investors.⁵³ Diversifying to other metals is considered dilutive of this function. This single-metal profile contributed to “premium valuations” for the stocks of gold mining companies—that is, using prevailing valuation methods in the industry, “cashflow from gold mining companies” has been valued as “worth more to shareholders than earnings generated from the production of any other

⁵² ‘Growth’ by mergers and acquisitions concentrates reserves in the acquiring firm instantaneously. It is growth at the firm level which does not increase the overall available reserves.

⁵³ Interview, employee of a gold mining firm, March 2014.

metal” (Kettle, 2005: 2). This curtailed companies from expanding their business to include other minerals,⁵⁴ since investors prefer to “leave the diversification strategy to themselves”,⁵⁵ as explained by a VP of a gold mining firm:

“To find a shareholder that wants your exact mix...copper and gold [for example]...is more challenging. If you want somebody who wants a pure play of gold is much easier. We are constantly looking at that but it will be difficult for us to diversify further because this [other mineral] represents a sizeable chunk of the business already.”⁵⁶

The bid by gold companies to expand whilst ensuring a mainly gold profile constitutes a conscious attempt to organise production along the investment function of gold mining stocks. This disciplined companies, especially in the case of large firms like Barrick, from diversifying their production base to other minerals, even when bringing in additional ounces has become more difficult to achieve.⁵⁷

3.3.3 The ‘time value of money’⁵⁸

Institutional investors’ push for appreciating stock holdings and dividends is juxtaposed with a business that is long-term in its investment horizon. Industry reports and interviews have alluded to this seeming mismatch with the goals of

⁵⁴ While gold mining operations typically include by-products like silver and copper, gold companies ensure that the projects they acquire or develop are at least 50 per cent of their main product and as part of their total production portfolio, no more than a quarter is attributable to a secondary metal (interview, VP of a gold mining firm, March 2014).

⁵⁵ Diversification to another metal can help expand the sources of income by mining firms, but which will be dilutive of the function of gold mining stocks as a type of gold investment.

⁵⁶ Interview, VP of a gold mining firm, March 2014.

⁵⁷ By including copper projects in its portfolio, Barrick sought to mitigate the risks of single-metal operations by not heavily relying on gold as a source of income. While the total production of the company that is attributable to gold remains at above 80 per cent even following its acquisition of a copper mine, the negative reaction from institutional investors has led Barrick to capitulate, promising to maintain a predominantly gold production and to limit its copper production.

⁵⁸ The phrase is a direct quote from an interview with a VP of an investment firm, March 2015.

short-term investors, which require a faster capital turnover, more than what can be feasibly realised given the long gestation required by mining activities. As a publication by Ernst and Young (2012: 4) observed, these “new yield-hungry shareholders are not as comfortable with the sector's cyclical nature and its longer-term and often counter cyclical development, investment and return horizon.” A remark made by Blackrock cited in the same report captured this important difference: “Some of the decisions (companies) are making are very good in terms of long term strategy but are you going to make money from it in the next three years, which is our investment horizon?” (ibid).

A typical mine takes several years to locate, develop and to reach full production. The pace of mineral production in this sense poses a challenge as it does not move neatly in response to price signals or equity markets. The investment horizon of gold mining firms mirrors these considerations, viewing their business to be long-term. As the World Gold Council pointed out:

“The length of time it takes to develop gold mining projects and bring them to production, often up to a decade or longer, means mining companies cannot easily respond to immediate market conditions. It is, intrinsically, a long-term industry.” (World Gold Council, 2015).

An interview by Barrick Gold’s Chairman Peter Munk that appeared in *The Economist* (2014) echoes this view:

“We’re not in the business to make quarterly killings, like (John) Paulson or (George) Soros. We’re in the gold business as a business. So we have to think five, 10, 15 years ahead. When you make an investment in a mine, it takes us half a decade to see returns.” (*The Economist*, 2014)

Institutional investors, on the other hand, consider “near term cash flows” to be “more heavily weighted than long term cash flows”,⁵⁹ reflecting the predilection

⁵⁹ Interview, VP of an investment firm, March 2015.

of financiers for mobile money, freed from the encumbrances of the production process. This is heightened in the case of institutional investors like hedge funds, which require faster capital turnover at maximum returns.

Despite a discordant investment time-frame, gold mining firms have actively played on the short-term interests of investors by leveraging their operating mines, the extensions in the life of their mines by locating additional reserves,⁶⁰ and projects in near-term production (i.e. those in advance stages of development), even as they continued to replace their reserves by expanding operations. This contextualises the preference of mining companies and shareholders for M&A as a growth strategy, since production cannot immediately pick up by growing organically.

To satisfy the financial component of shareholder value, companies resorted to financial manoeuvring: companies drew cash from re-financing (a combination of debt and equity) back to shareholders in the form of dividends to attenuate what production could not yet deliver. Capital moved in circles, with stock markets (as in Labban's study of the oil industry) simultaneously becoming a "source and destination of profits" (Labban, 2010: 548). The growing access to credit as a consequence of inflated company stock values mediated and smoothed out the disjointed pace of production with investors' turnover requirements, providing in the short term the prolongation of rising dividend payments (and with it stock appreciations). This allowed for the dual strategy of growth and rising dividend payments to proceed alongside each other, without damaging the other, with all the contradictions it implies. The capital expenditures of mining companies devoted to the development of mineral projects (as divulged in their annual reports) shows an equally exponential growth in this period. This captures the intensity of the drive to deliver higher production levels, a commitment to 'real' accumulation.

⁶⁰ Mine life extension refers to the identification of additional reserves in an operating mine, allowing companies to add years in their operation. This is accomplished by extensification (i.e. expanding the mine pit) or intensification (i.e. extracting low-grade ores).

Since stock market valuations have an inherent tendency to be decoupled from production, stocks can appreciate in value ahead of actual commodity production. For instance, as the gold price rose 260 per cent from 2004 to 2011, the earnings per share of companies like Barrick have risen to 900 per cent, overtaking its actual earnings from production (Barrick Gold, 2011: 4). Valuations rest on assumptions made on the profitability of a company in the future, claims that are illusory at best until surplus value is realised. Hence, value circulating is considered by Marx as “fictitious value”, “advanced against future labour” rather than on existing commodities as collateral⁶¹ (Harvey, 2007: 267). While investing in stocks is effectively a commitment to the entire lifetime of mining operations, institutional investors can trade their stocks (i.e. buying and selling, or increasing and decreasing stockholdings) as title claims. Doing so allows for the periodic withdrawal of money, allowing it to re-circulate while realising gains from movements in share prices as assumptions on future surplus value are adjusted. It is perhaps no surprise that aside from a monthly disbursement of dividend payments, the holding time for gold mining stocks has shortened as the investor base shifted to more short-term shareholders, leading to “a reduction in the average investor holding period for gold equities from 30 months in 2000 to 19 months in 2013, and an increasing investor turnover rate from 44 per cent to 64 per cent over that period” (Thomson Reuters cited by Letwin, 2013: 2). Yet despite the frequency by which finance capitalists switch their preferences across firms and other gold-related investments given the highly developed financial markets of Toronto and New York, this in-built flexibility in stock markets is critical for attracting financing for a long-term business such as mining. This makes fictitious capital a necessity, aligning in this case two fundamentally different investment horizons and enabling the simultaneous pursuit of fixed capital formation and circulation.

⁶¹ With the exception of fixed capital, but even this, Harvey argued, “is subject to complex and unstable determinations” (Harvey, 2007: 267)

3.4 THE RESPONSE TO CRISIS

The sinking of money capital into production rids it of its uncompromised flexibility and exposes it to the potential discontinuities of mineral operations (even momentarily, for the length of time the stock is held), a terrain that is spatially uneven, arising from the differing socio-political contexts where mines and projects are embedded. In the face of high gold prices, such differences were ‘attenuated’.⁶² Stock valuations were rising and mining companies were paying increasing dividends. Rising profit margins (due to high gold prices) and the growth in liquidity⁶³ provided some flexibility to accommodate increased demands for taxation and higher wages while maximising shareholder value; a prolonged bull market sustained this exuberance.⁶⁴

For capitalist firms, the adjustment to crises—when stock market values are forced into equilibrium with their underlying values in production—takes the form of devaluation and the withdrawal of capital. A countervailing force for a sudden withdrawal from operations, in the case of mining, are the sunk costs. Such was the dilemma in Pascua Lama, as will be discussed in Chapter 6, with over half of the estimated \$8 to 8.5 billion capital costs pre-production already spent. Interviews with employees of gold mining firms have pointed to how companies have lost touch with their operations as the gold price rose, which obfuscated the rising cost of extraction. As the gold price fell in 2011, concerns regarding profit margins raised alarms among shareholders. As one gold firm shared of their experience, since a key acquisition by the company was based on a higher gold price assumption:

⁶² I return to the importance of these differences in succeeding sections, to qualify how such differences play a critical role to the accumulation of capital.

⁶³ Large companies have access to stock markets and bank loans, both of which were tapped by mining firms for financing. They should therefore not be considered as standing in opposition to each other. In fact, Aglietta and Reberioux (2005) have argued, that their interlinkages, and indeed, the ‘perturbations’ that arise are rooted in debt stepping in to satisfy the ‘financial criteria of shareholder value’. This debt was made on the basis of asset values inflated by high equity values.

⁶⁴ Interview, employee of a gold mining firm, January 2014.

“...the shareholders got really nervous about what we were doing, they started to put a lot of pressure on the company. Very serious concerns were raised on this purchase...So in 2012, the CEO at the time decided that we have to stop in this process of growing...we have been involved in shrinking, trying to reduce cost and trying to create value for shareholders. We have gone through a very, very severe process of reduction.”⁶⁵

Crisis illustrates the fragile alignment of industrial and finance capitalists, with each faction trying to minimise their losses, and indeed as Marx phrased it, to “shove it off upon another” (Marx, 1894: 173). Shareholders have also been impacted as dividends were cut severely — in the extreme case of IAMGold, dividends were put on hold altogether since the viability of the firm was at stake— leading to some investors pulling out and stock valuations dropping to levels from a decade ago. Yet despite the temporality of their investments, being significant holders of capital where private wealth has accrued, institutional investors were seen as the financial counterparts of the wealthy gold buyers in product markets. They are the target clientele to whom a company’s future value is sold. “Like it or loath it”, as a portfolio manager presciently remarked in 2003, in an assessment of the benefits and pitfalls of institutional (hedge fund) investment, “investors and gold mining companies alike will have to learn to live with the evolution in capital markets” (Steel, 2003).

The withdrawal of other sources of financing such as debt now compounds the liquidity problems that it ‘solved’ in the boom years. In the case of Barrick, this ran to a high of \$15.8 billion dollars worth of credit (as of 2013). To maintain cash flows, companies turned to cost-cutting and ‘capital recycling’—the selling off of parts of the business (i.e. mines and projects) to instantaneously free up cash. Mining companies and shareholders also sought greater oversight on capital allocation through the setting of new price guidance on costs and new thresholds on returns on investment. A new method for accounting for costs, upon investor demand to know the all-inclusive cost of mining, has been rolled-in—the *all-in*

⁶⁵ Interview, employee of a gold mining firm, January 2014.

sustaining cost (AISC) metric meant to provide a better representation of the fully loaded cost of mining per ounce of gold in order for investors to gauge the profitability of gold companies. This, according to one institutional investor, “should make it much easier [for investors] to derive margins for each company at any given gold price, and facilitate sector comparisons” (Sykora and Carlson, 2013). Hurdle rates on new investments have been introduced by companies like Barrick against which current and future investments are measured, with a 10 to 15 per cent as threshold on returns on invested capital throughout the price cycle, and a commitment to “defer, cancel or sell projects that cannot achieve this target” (Barrick Gold, 2014: 3).

For companies like Barrick and IAMGold, this commitment to value expansion is encapsulated in the ‘disciplined capital allocation’ framework; for Kinross, a Kinross Way Forward action plan—all promising a move from a “growth for growth’s sake” mantra to more profitable growth, with profitability redefined along higher returns on invested capital. From “gold-specific industry metrics” that placed a primacy on growth and production, “investment metrics” have been used that are based on cash flows and returns (Dundee Capital Markets, 2014: 5). The shift in strategy to deliver shareholder value is apparent in Barrick’s narrative. Comparing 2004 and 2012:

“The overriding goal of our strategy is to create value for our shareholders. To achieve this, cash flow from our mines is consistently reinvested in exploration, development projects and other strategic investments to work towards sustainable growth in production and cash flow.” (Barrick Gold, 2004: 28)

“Barrick is leading the change from a focus on growth, in favor of maximizing free cash flow and growing rates of return: a significant paradigm shift for our industry... a commitment that has become nearly universally accepted throughout the industry: Returns will drive production, production will not drive returns.” (Barrick Gold, 2012: 3)

Overhauls in management and streamlining of company structures have also taken place. Executive turnovers have placed new CEOs at the helm that are deemed committed to ‘shareholder value’ in companies like Barrick and Kinross (US Global Investors, 2013), compensation and bonuses were tied to stock performance, while regional offices have been eliminated (including ‘reducing the headcount’ for head offices) to slash expenses and ensure better oversight by corporate headquarters. As one employee commented:

“Before I had a boss here...and now I report directly to Toronto. Same goes for other offices including North America. Before the South American operations are one business unit...Now that’s gone and now my boss is Canadian.”⁶⁶

3.5 GEOGRAPHIES OF GOLD MINING

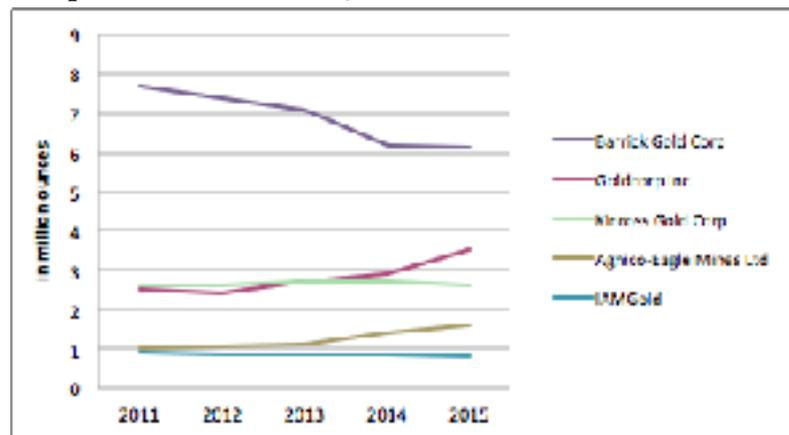
The organisation of gold mining production is geographically dispersed. No single region accounts for more than 20 per cent of mine supply (World Gold Council, 2011). This stands in contrast to other commodities like oil, copper or platinum, which are concentrated in the Middle East, Chile, and South Africa respectively (*ibid*), in the two latter cases creating a natural oligopoly. Large gold mining companies reflect this geographic dispersion, with companies like Barrick Gold operating in as many as five continents and holding in some cases over 20 mines and projects under their belt. Crucially, this configuration of production, incorporates risks and rewards that have implications for profits. Mitigating risks to preserve or generate maximum shareholder value entails greater consciousness on the shifting risk-reward ratio of particular geographies throughout the highs and lows of the mining cycle. The broad geographical spread of mining projects held by large gold companies, in principle, helps hedge some of the risks inherent

⁶⁶ Interview, employee of a gold mining firm, January 2014. Another interview with a gold mining firm held in February 2014 pointed to a similar restructuring in their company. Of gold mining companies, Barrick has adopted some of the more aggressive cuts in staffing, reducing its head office by nearly 50 per cent and ‘eliminat[ing] all management layers between Toronto and [their] mines’ (Barrick Gold, 2014). A conversation with one institutional investor pointed to the importance of “corporate governance” as indicator of the commitment of companies to shareholder value maximisation.

in the business, such that no single jurisdiction can exert a pull on production levels should problems arise. This has been emphasised by the large producers as their advantage over medium-sized and junior companies that depend on a smaller portfolio of mines. In an industry where “profit must be imagined before it can be extracted” (Tsing, 2000: 118), mining companies marketed the “high quality” and “geographically diversified asset base” of their reserves to make an “investment case” to investors (Barrick Gold, 2010). In mining and investor conferences, assets that are “high-growth” and that are located in “highly prospective” districts (Kinross, 2010 and 2011) were made to speak for their potential for future earnings on the basis of “cash flow per share” or “reserves per share” (Agnico Eagle, 2009: slide 11). Reserves and resources (“high-reserve deposit”, “long-life”) and their respective characteristics (“high quality”, “tier-1”) and geographies (“highly prospective”, “diversified”) serve as a company’s claim to profitability.

Mining’s spatial fixity implicates it deeply in the political economy of resource states (Bridge, 2013; Bebbington, 2009; Perrault, 2013). Extractive activities tend to be highly conflictual, with questions of rent generation and distribution, resource use (e.g. water), and environmental degradation becoming some of the most contested issues to emerge during the commodity boom. With the wave of resource nationalism and opposition that mining projects have sparked in a number of countries—and in the case of gold, registering the highest incidence of worker strikes from 2009 to 2011 (PwC, 2012)—companies had to deal with work stoppage, delays in the securing of permissions, renegotiations of contracts with the government, and the concomitant costs. Goldcorp had its El Morro project suspended in Chile, as well as Barrick’s Pascua Lama project, following local opposition. In certain cases, sovereign risks took the form of increased taxes (e.g. windfall on profits or withholding taxes), such as in Barrick Gold and Goldcorp’s amended agreement with the Dominican Republic for the Pueblo Viejo mine. The potential economic gains from the commodity boom have also seen states implement regulatory reforms to attract a greater share of mineral investments. Peru is a clear example where legislative amendments in mining policies and taxation have been made, changing the terms by which companies

Figure 5 . Gold production, 2011-2015



SOURCE: COMPANY REPORTS.

and state share the benefits—and risks—of mineral extraction (Ernst and Young, 2014).

With the dramatic expansion of mining activities, fuelled by fictitious capital and debt, the disruption associated with capital's withdrawal was also heightened. The gap between fictitious capital and what can be materially delivered, now under changed conditions, required massive devaluations to bring it into equilibrium. The multi-billion asset write-downs of the gold mining industry (including Barrick Gold, Goldcorp and Kinross) showed some of the biggest falls relative to industry size (Casey Research, 2013; Hill, 2013).

Adjustments entailed the freeing up of money capital from production through a fire sale of mining projects (Ernst and Young, 2012). This was especially true for mines that do not form a core part of their production—the so-called peripheral assets, or those that did not meet the all-in sustaining cost per ounce cut-off (which is higher than traditional profitability metrics) as set by the firm. This resulted to companies foregoing mines that were reaching maturity, albeit profitable, as was the case with Barrick Gold's Granny Smith, Lawless and Darlot mines in West Australia. Selling off mines carries an immediate effect, with cash freed up for re-allocation in other investments or to meet financial obligations (e.g. debt or dividend payments).

The biggest geographical re-scaling was on greenfield explorations and what remained of exploration budgets were confined to brown field explorations and mine life extensions which involve lower risks and capital outlays.⁶⁷ Core or tier-1 assets—defined as those that contribute, or can contribute, significantly to margin growth—possess low cost, high-reserve mineralisation, the potential for mine expansion and are located in identified mining-friendly locations. New investments have been allocated to projects that provided the best mix of reserve and production potential and geopolitics, and where mining companies have had an established presence. The cost and time-saving implications of these decisions were expected to help companies generate a higher cash flow, ensure survival during the downturn and pacify increasingly risk-averse investors, by withdrawing to areas where they possess a better grasp of the geological potential, the existing infrastructures and facilities, and where they have the social license to operate to minimise the chances of losing it all. The flip side is that mines classified (or re-classified) as peripheral were marked for closure, sale or their mine plans changed to accelerate the end of mine-life.

Despite drastic cuts in expenditures and the paring down of mineral operations, companies have not, at any point, eliminated their commitment to production nor the lining up of production growth in the future.⁶⁸ Goldcorp, Kinross, Agnico Eagle and IAMGold show stable if not rising production levels (see Figure 5) alongside optimisation in their operations while sustaining efforts at reserve replacement. It is Barrick, the largest company, that has faced the greatest challenge to grow production,⁶⁹ where production levels have declined resulting from

⁶⁷ Brown field exploration refers to exploration conducted in the perimeter of an already existing mineral operation (in contrast to greenfield exploration). Mine life extension pertains to the addition of operating years to a mining operation by locating additional mineralisation or lowering the target cut-off grade.

⁶⁸ Even among institutional investors, the opposition was not on growth per se but on the cost of growth for a particular firm and at a particular stage in the price cycle, which is in turn impacted by the particular attributes of mining operations that can enable or constrain their ability to return money to shareholders.

⁶⁹ Being the largest producer, the company could only grow by replacing, and adding to, millions of ounces produced annually which at this point could only come from high cost mergers or acquisitions.

asset sales, deep cut backs in capital expenditures, and revision in mine plans to extract only the most profitable ores. Production, therefore, remains constitutive of shareholder value maximisation but its possibilities to expand restricted by stricter financial considerations.

Interviews with mining company employees reveal how this process has been influenced by the shifting risk/reward ratio of places as understood by investors. Institutional investor perceptions of country risks weighed greatly in the consideration of mining companies. With ‘resource nationalism’ being ranked highly by the industry as potentially the most ‘value destructive’ (Ernst and Young, 2012), companies with lower exposure to geopolitical risk have seen their stocks rewarded as institutional investors exemplify greater conservatism in investment choices. Goldcorp, a much smaller company than Barrick Gold and Kinross, achieved the highest market valuation of 2013, which analysts attribute to its comparatively low exposure to places outside of North and South America. Others, with operations in riskier jurisdictions, have seen their shares drop: “investors punished the company severely [in stock exchanges]” as one employee of a gold mining firm put it, following a high-risk acquisition.⁷⁰ Projects and potential acquisitions that are operating in the frontiers also found it more difficult to raise funds and gain shareholder approval as investors prefer jurisdictions where procedures for securing permits is well understood or that have attained investment grading. As one employee in a gold mining firm remarked:

“Going to new frontiers is a gamble...you risk having a project that cannot be developed anyway because institutional investors will not support it. Right now everyone’s focusing on safe jurisdictions. This is the state of competition nowadays”.⁷¹

Different geographic risk valuations also had to be factored in, with institutional investors in North America considered to be “more comfortable” investing in certain jurisdictions in South America, and are less inclined to venture into

⁷⁰ Interview, employee of a gold mining firm, January 2014.

⁷¹ Interview, employee of a gold mining firm, March 2015.

Africa than their European counterparts.⁷² A financial entity with investments in the mining sector also commented that they “only fund projects in the Americas” but “are not going to touch Argentina, not Bolivia, Ecuador nor Venezuela.” The renewed emphasis on the Americas is apparent with companies reshuffling operations to increase the attributable production drawn from the region to be higher than 50 per cent. Barrick’s Chairman Peter Munk was quoted in the *Financial Times*, explaining this geographical focus:

“You just know that the average major investor who wants to invest in the ideal gold company hates maximum political risks and loves minimal political risks. That gives you a clear definition of where you ought to be—you ought to be in Canada and the US.” (Wilson, 2014b)

This is being achieved by ramping up production, investment in brownfield explorations, selective acquisitions, as well as through the sale of mines that draw from other riskier regions. Thus, there is a tendency to revert to tried and tested jurisdictions which is shaped by institutional shareholder preference and capital access.

These point to a reversal of some of the expansion and intensification of the boom years, while shifting production profiles and investment in priority jurisdictions. Companies have moved to expanding already existing mines in favoured locations, emphasising to their shareholders their political stability and the companies’ long history of operations in these regions, and that any growth plans are relatively low-risk and follow the new cost-guidance for investments. Selectivity over a purely expansionist strategy has been the preferred template. By this, I do not mean to imply that the geographical spread of gold mining investment has contracted overall in the gold mining industry. Indeed, such geographical re-ordering can serve as important opportunities for other players to step in. The scope of this study is limited to the largest gold mining companies and their operations. The intent is to bring focus on their sources of financing and the factors

⁷² Interview, employee of a gold mining firm, March 2014.

Figure 6. The all-in sustaining cost versus total cash cost

	Cash Costs	AISC
Direct Production Cost	✓	✓
Onsite Admin and Regulatory Costs	✓	✓
Royalties and Production Taxes	✓	✓
Smelting, refining and transport	✓	✓
By-product Credits	✓	✓
Corporate General and Admin Costs	✗	✓
Reclamation and Remediation	✗	✓
Exploration (Sustaining)	✗	✓
Stripping and Mine Development (Sustaining)	✗	✓
Sustaining Capex	✗	✓

SOURCE: MARKET REALIST, 2015

that influence their business decisions and practices, geographical selection included.

3.6 THE ALL-IN SUSTAINING COST METRIC

Shareholder value maximisation is inevitably spatial, with implications for places where value is drawn. A key measure by which financiers can ascertain company commitment to disciplined capital allocation and margin growth was through the all-in sustaining cost (AISC),⁷³ as mentioned previously. As the compendium of costs that span the course of the labour process ‘on-site’, the AISC accounts for the particularities of place in which it is embedded. The AISC spans such items such as wages, royalties, taxes and all the affordances and costs attached to a given location. The fixation on cost is not incidental to the process but critical for determining under what conditions capital is allowed to circulate

⁷³ Other proposed measures by investors to assess the fully loaded expense is the all-in-cost (AIC) which includes costs not tied to current operations, such as administrative costs at company headquarters. Since mining operations are capital intensive and costs are mainly incurred on-site, making any drastic change on costs, be it AISC or AIC, necessarily spatial. The AISC has been standardised and fully implemented by members of the World Gold Council as of 2014, allowing for comparisons across mining companies, including the companies in this study. It has since been used as a benchmark for investors to gauge company profitability and the margin growth that can come from operations.

in these moments. Places and mines must hold stronger guarantees on the expansion of value, a requisite of capital's circulation.

The AISC, adopted in 2013, replaces the original method of reporting on a '(total) cash cost' basis following pressures from investors. A key difference between the two are the items included in the accounting (see Figure 6). In the guidance note published by the World Gold Council (see Appendix 1), a group composed of the largest gold firms, the AISC spans the costs of the mining lifecycle, from exploration to closure, thereby providing an improved disclosure of costs to investors. The main objective is to have a better oversight of the capital commitments tied to production, for every ounce produced, and therefore the value (or opportunity cost) of committing money capital to it. Viewed as distinct rather than complementary assets that can contribute to a company's growth, mineral operations were quantified to come up with an all-in-sustaining cost for each mine to assess its contribution to the company's overall AISC. Absent product differentiation (since companies extract and depend on the same metal for cash flows), AISC becomes an important part of a firm's competitive advantage: the difference of the AISC and the gold price is read to stand for a company's ability to generate cash flows for every price movement. The AISC is therefore both a measure for cost discipline and a competitive strategy, a contest to maximise relative surplus value,⁷⁴ incentivising competing firms to be "at the lower end of the AISC spectrum" (Halley, 2013). The lower the AISC, the higher the relative surplus value. Shareholder value is therefore maximised.

The AISC carry important geographical and socio-ecological implications. With the AISC cut-off used to determine and differentiate core (or tier-1) and non-core (peripheral assets) mines and projects, the latter represents money capital withdrawn from production and subsequently re-invested in core mines, or used to pay off debt or return money back to shareholders. Core mines, on the other, are the best representations of the sources (and potential sources) of shareholder

⁷⁴ The sources of relative surplus value, according to Marx, can take a variety of forms, including depressing wages, technological innovation (i.e. "technological fix"), economising of machineries, renegotiation of contracts with suppliers, etc. Firms are incentivised to do so since a higher relative surplus value undercuts the competition and ultimately drives it out of business.

value, where capital is allowed to circulate. These new portfolio assemblages amount to spatial re-orderings, in the process creating new uneven geographies. Spatial differentiation was sought as a difference that can provide firms competitive advantage over their peers. Recognising the particular configurations that can lead to shareholder value maximisation was therefore an integral part of the process.

Capital's commitment to the production process in a given project or mine varies throughout the mine life cycle.⁷⁵ The life of mine schedule details the length of time capital will commit itself to production and the payback time, when money can begin to be freed from it. Cash flows are therefore typically set at their highest levels in the first few years of production, when the rate of production peaks.⁷⁶ Explorations therefore easily become the easiest to slash as they hold the least guarantee for capital to be returned. But even for operating mines, the cost of committing capital to 'sustain' a mine in production versus closure can tilt the balance in favour of the latter, as with those reaching maturity.⁷⁷ This was the case with the Pierina mine (Peru) which was initially extended to operate until 2014, and then to 2018 given the higher gold price. In 2013, the company reversed this decision and accelerated its closure as part of its 'portfolio optimisation plan' alongside its other non-core (also mature) assets in Australia (Barrick Gold, 2013). Thus, while the extractive industry is considered "far from foot-loose" (Bebbington and Bury, 2013: 11) and mineral resources 'fixed' by nature (Fine, 1994; Prudham, 2005; Bunker, 1985), larger firms can walk away from projects or divest mines that do not meet the new cost criteria. They can also maintain and shelve projects until prices recover or socio-political conditions improve if the cost of shifting location comes at a high cost for capital (in light of the industry's high fixed cost). Given the geographical spread of their operations, they have relatively more manoeuvrability, allowing them to shelve assets while securing cash flows from mines already in production. In comparison, small

⁷⁵ This is found in Technical Reports. Available at the SEDAR database.

⁷⁶ This is of course mediated by the natural occurrence of ore in the ore body.

⁷⁷ Mature mines are those at the end of the mine life cycle, when cash flows are at their lowest levels and the cost of extraction high as it typically involves extracting lower-grade ores.

and medium-sized companies “cannot afford the long wait time that the larger gold miners can afford”.⁷⁸

Although the operations of Barrick, Kinross, Goldcorp and Agnico Eagle have always been more heavily reliant in North and South America, the premium placed on being “highly diversified” has led to an increase in the number of mines that have been put in operation (including acquired or re-started) within and beyond these regions during the boom. The cost-cutting during the bust period has led to a more focused geographical base for future production, with core-assets drawing the bulk of budgetary allocation for (brownfield) exploration. Barrick Gold is an emblematic example, having been the most diversified: the company decreased its holdings from 26 operating mines and 9 projects to 17 mines and 2 projects. North America (Nevada) and South America (Dominican Republic, Argentina, Peru) form its core regions, which also account for almost its entire exploration spending (at 85 per cent) alongside investments in new technologies in its high reserve, long-life mine, Goldstrike, to further increase shareholder value.

Considering other options open to firms to bring down costs, such as through economies of scale, technological innovation, or diversification to other metals, further elucidates the requisites of a low AISC. Unlike other mining companies that have more leeway in streamlining operations through economies of scale (and thus can forego peripheral mines in places where they lack sufficient scale to cut costs), or embark on mergers/acquisitions of nearby companies to increase operational synergies, in gold mining there are few opportunities to do so (Dundee Capital Markets, 2014). The geographical spread of gold and its relative scarcity make economies of scale costly and non-sensical for capital. Of the largest producers, the Nevada operations of Barrick Gold and Newmont Mining was the only location determined to provide significant cost savings (reported to be around \$1 billion dollars).⁷⁹ Diseconomies of scale also mean depletion set in sooner with gold in comparison to other minerals which shortens the payback time of investment in technology, and further limits the options available to

⁷⁸ Interview, mining contractor, January 2014.

⁷⁹ Predictably, the merger of the two companies was pushed for by investors (Wilson, 2014b).

bring down cost per unit ounce produced. As a supplier at the Prospectors and Developers Association explained, to contextualise the relatively low technological advances in the mining industry:

“In the past, miners just didn’t look much into investing in new technology especially in the middle of a project. From the return on investment point of view, it didn't make sense. So they just always built the way they used to”.⁸⁰

The particularities of ore types and ore bodies also require different treatments, limiting the applicability of technological advances to a specific mine or specific type of ore. Thus the potential returns from investing in technology must be justified by the economics of the project (see Chapter 4). Diversification to other metals would in principle open new spatial opportunities by expanding the commodity basis of production. But even this option, given the method of accounting for the AISC, was limited to processing only up to a maximum of 20 per cent of total revenues drawn from another mineral (called a by-product).⁸¹ The AISC internalises this ‘natural’ attribute (since gold tends to co-exist with silver and copper) by placing an in-built corrective—designed to limit the processing of what naturally comes with gold.

Under conditions when shifts in location cannot be executed without courting a massive devaluation of capital (if the cost of relocating is far greater than staying in place), a low AISC will require a re-working of all possible combinations in the cost structure. It is perhaps not surprising then that renegotiating electricity rates, import duties, contracts with suppliers, and reducing employed workers were some of the measures employed to make a particular mine meet the cut-off,

⁸⁰ Interview, supplier, March 2015.

⁸¹ Anything over 20 per cent will be classified a co-product and will use a different accounting (co-product accounting) that is counterproductive to a low AISC. Revenues within a 20 per cent cut off can be used as a ‘credit’ against cost, therefore creating an incentive to abide by this limit. Under the previous cash cost measure, by-product accounting was loosely implemented by gold mining firms.

to deflect the adjustment to deliver shareholder value *on-site*, in *place*.⁸² Labour, being a substantive operating cost component, makes it an effective and immediate measure to cut (variable capital) cost. As Bowman and Isaacs observed (albeit in the case of the platinum industry), shareholders have benefited “extremely well over the last fourteen years in comparison to labour” (2014: 5). These skewed power relations can be aggravated by the lack of effective state policy to ensure that investments are made to serve development aims and to counter the tendencies of mining firms that are “overwhelmingly concerned with off-shoring” their profits to shareholders rather than redistributed locally (Makene, Emel and Murphy, 2012: 4). An “unequal distribution” of costs and benefits (Martinez-Alier, 2007; Martinez-Alier et. al., 2010) is therefore at the heart of mineral extraction as a *condition* of value expansion.

The case of Kinross’ gold project in Ecuador is illustrative of how the higher investment return criteria can stand in the way of developing projects that are considered integral to the company’s growth; and indeed, how states that refuse to internalise the adjustments required by shareholders can pose an effective challenge to shareholder value. The windfall tax of 70 per cent for the Fruta del Norte operation demanded by the government of Ecuador was deemed to reduce margins to levels unacceptable to shareholders. The tax regime was aimed at exacting a greater share of the benefits for the country from its mineral resources. The company was reported to have ‘reached a preliminary agreement with the government on a deal that included the tax, but pulled back after shareholders reacted negatively to it’ (Koven, 2013).

For companies with significant stakes in considered high risk jurisdictions, justifying further investment or continued operations has entailed renegotiating with shareholders. Barrick Gold, Kinross, IAMGold, Goldcorp and Agnico Eagle have all been faced with the challenge that the most prospective districts do not necessarily coincide with shareholders’ geopolitical preferences. While a number of these high-reserve, high-risk projects have been shelved, in the experience of

⁸² An analyst in Chile pointed out that almost all the contracts with suppliers had been renegotiated.

one gold mining firm, securing approval to move forward required getting institutional shareholders to come around the company definition of ‘mining friendly’—or countries and provinces where the company is a large contributor to the economy and that gives it leverage to negotiate concessions. High geopolitical risk therefore does not automatically mean withdrawal, but the returns have to justify the risk *on capital* as compensation. As one investment analyst also said: “Having an investment asset in Canada could justify a lower return target given that there are lower political risks here, energy stability, lower fiscal uncertainties, better labour quality... Higher risk jurisdictions such as West Africa, where you have more uncertainty, political risk, fiscal risk...it would be reasonable to expect companies to target a higher return criteria.” This gives a view on how “geopolitical risk” is defined (and negotiated internally) by companies and shareholders, and points to where adjustments are expected to be made to deliver a commensurate return. Evidence from an earlier study by Emel and Huber (2008: 1405) shows how the language of “risk” can be a powerful means to set the terms of distribution between states and companies, putting “the landlord state at an a priori disadvantage.”

A final point is that the “disciplined capital allocation” framework that companies have adopted for flagship projects carry important implications for the pacing of mineral investment. With Barrick Gold and IAMGold, a more careful monitoring of capital expenditures led to the adoption of a staged approach to mine development, a break from the build-all-at-once model traditionally followed by the industry. As *The Mining Journal* also observed, projects are being developed “differently...with a focus on slower investment, limiting the profile of the initial capital spend and replaced with subsequent incremental build-outs” (2014: 33). A staged approach is expected to make more palatable to shareholders the capital resources required for mine development and the ability to adjust to mineral prices and socio-political conditions. It also avoids sinking the large up-front investments that lock in companies and give the state greater leverage in (re)negotiations in an attempt to rebalance the terms of engagement with the state. The outcome, according to one employee of a gold mining firm, is

that “you have a voice...because it will affect your decision to invest further in that country”.⁸³

3.7 CONCLUSION

The movement of mineral investments that characterise boom and bust cycles are more than just responses to commodity prices. In this chapter, I placed focus on the nexus of mining and finance to contextualise the high level of gold mining activity displayed in the past decade. Circumstances particular to gold’s social and investment function in times of crises, a high margin between the gold price and cost of production, and strong demand from emerging economies and central banks that guaranteed its consumption, made for a highly conducive environment for gold extraction as well as for raising mining finance. I conceptualised the geographic expansion of mining activities as a particular moment when money capital was re-embedded in production on speculation of surplus value realisation. This was enabled and influenced by the appetite of institutional investors for gold and gold mining stocks. Institutional investors anticipated high returns from investing in gold mining companies fuelled mergers and acquisitions and an aggressive drive for production growth as the means to maximise shareholder value, i.e. through stock appreciations and rising dividend payments. Following the fall in the gold price, which signalled the end of the commodity boom, the curtailment of mining activities reflected attempts to liberate money capital from production. This was executed through the sale of non-core assets, mine closures, and cuts in overall spending.

Institutional investors have also been shown to have actively shaped the parameters of growth throughout the boom and bust cycle. The investment preference for gold producing firms and gold from production limited expansion into other types of metals. Even after the boom, growth remained an important strategy but with the parameters of its expansion re-defined. The adoption of the AISC metric, used as a benchmark to guarantee high returns on invested capital, conditioned the kind of projects that companies pursued. Identified core mines and

⁸³ Interview, employee of a gold mining firm, March 2014.

projects, integral to a low AISC, have been the focus of capital spending and the basis of (present and future) cash flows, margin growth and shareholder value. The restructuring was spatial in nature and illustrative of the geographic possibilities of disciplined growth under finance, a shift in the organisation of finance capital's reproduction in the bust period.

By focusing on the transformative role of finance in this chapter, I do not wish to imply that what materialises is determined by the compulsions of capitalism or finance capitalism alone. Places are of course co-produced and subject to countervailing forces.⁸⁴ Nature can be unwieldy, social regulations can be prohibitive. We would, however, be remiss to dis-embed these reconfigurations from the mobility and value expansion required by finance capital at this stage, as adjustment to the changing conditions of accumulation and as resolution to its crisis tendencies.

As we shall see next, shareholder value maximisation does not merely manifest geographically but also involved a different approach to the production and appropriation of nature. Disciplined growth required greater attention to the characteristics of specific mines and projects (e.g. type of ore, ore grade, maturity) that can deliver higher margins. What shareholder value signifies for capital-nature relations will be the subject of the following chapter.

⁸⁴ Countervailing forces include the socio-material arrangements found in place. Harvey (2004: 390) argues that these first appear to “push the space economy of production into some seeming state of chronic disequilibrium” but “have a potentially important role to play in staving off, limiting, or resolving aggregate spatial crises of accumulation.”

CHAPTER 4

Re-making a commodity: Fixing the (in)compatibilities of high finance and the primary sector

As new majority owners, institutional shareholders brought with them key changes in the way mining companies operate, demanding from management the aligning of extractive activities to their investment and return criteria. This was in part accomplished through geographical restructuring as discussed in the previous chapter, but also, as will be argued here, by re-configuring material extraction in an attempt to discipline productive capacity to generate a more pro-cyclical return on invested capital.

With the financialised turn in company management, the interface of capital and nature needs to be revisited. Finance capital has moved into a whole range of resource-based industries over the past decade—ecosystem services, carbon offsets, mineral and oil extraction, and agriculture—as these came to be regarded as a new ‘asset class’ for investment (Kaltenbrunner, 2012). Financial entities have penetrated these markets with the same expectations as in other industries: short-term returns that can deliver a stable if not constantly rising income stream. These bear marked differences with mining activity: a long term affair, requiring large upfront investment, and often delivering countercyclical results. The spatial fixity, non-renewability and variability of minerals make its investment returns uneven if not uncertain, while exploration for the economic re-

source alone can absorb great amounts of capital that are lost in the process. The extension of financialisation in these industries open up new questions on how the specific properties of minerals can pose a challenge, or create an enabling condition, to the normal workings of financialisation and the kind of readjustments necessary to facilitate financial accumulation.

The aim in this chapter is to examine in greater depth the interface of nature and the financial conditions of production. Taking the extractive process, the physical act by which ‘classic gifts of nature’ enter production and from which financial value has been premised, helps illuminate the objective conditions of financialisation. Aside from spatial readjustments with firms scaling back to operating in mature frontiers, ‘shareholder value creation’ as a financial strategy also entailed harnessing the biophysical properties of gold that are most conducive to creating financial value. Finance’s transformative role is apparent in the reframing of the parameters of extraction: on what defines or constitutes reserves, what cut off grade to adopt, and how much ore is extracted that is aligned with expectations of financial returns.

The first part of the chapter revisits scholarly debates on capital and nature, and on financialisation’s extension in nature-based sectors. This is followed by a discussion of the biophysical characteristics of gold extraction to capture the unique opportunities and challenges that gold presents for capital accumulation. As in the preceding chapter, I consider the evolution of capital-nature relations across the commodity cycle, focusing in particular on the distinct process of material transformation required by the implementation of the AISC. A critical question (taking cue from Moore, 2015) is how nature’s work/energy is transformed into capital, into value in motion, that “produces new conditions for [finance capitalism’s] recurrent booms, and through which the contradictions that follow have been resolved,” or transposed (Moore, 2015: 383).

4.1 FINANCIALISATION ‘ALL THE WAY DOWN’

Financialisation represents a particular moment in contemporary capitalism that is transformative of society’s relations with the natural world (Moore, 2010; 2015). Financial institutions, actors and financial motives have become dominant as they expanded and intensified their reach in environmental domains. Neil Smith pointed to how it has brought about a shift in the purpose for assimilating nature: moving from producing raw materials for their use-values to exchange values, with production ‘incidental’ in the process (Smith, 2007; Knox-Hayes, 2013; Robertson, 2012). According to Smith (2007), nature has become an ‘accumulation strategy’, with the distancing of the exchange value from its objective material basis: tethered on ‘assets’ that are stabilised or rendered legible, but for the purpose of exchange (see also Katz, 1998). Evidence to this are the new types of commodities that have come in line: ecosystem services and carbon markets whose very ‘use values’ are in the realisation of their ‘exchange values’ (Smith, 2007; Knox-Hayes, 2013).

In established markets like mining, oil and agriculture, financialisation has evolved differently—a difference that needs to be accounted for more fully. These traditional markets are not typically faced with the primary challenges of commodification, or of classifying and calculating nature (see for example Robertson, 2006; Sullivan, 2013; March and Purcell, 2014), in order for trade to commence. They already sit squarely in established financial circuits (i.e. through stock exchanges of the firms engaged in physical extraction), with clear regulations that govern and standardise information disclosure on productive activities, and classification systems for mineral resource/reserves estimates that guarantee their reliability to investors (Majury, 2013). Their ‘fundamentals’, the interplay of supply and demand, are moreover better understood, which is an important source of confidence and basis for investment, including speculative ones. Speculation on these commodities, be it through stock ownership or in derivatives trade, is highly liquid and robust, trading in volumes that far outpace the market for new entrants like carbon. In 2014, the size of the entire carbon market was valued at €45 billion (or \$50 billion USD) (UNFCCC, 2015), while the size of the

financial market for exchange-traded funds in gold alone was at \$120 billion, and its futures markets at \$22 trillion (Thomson Reuters, 2015). This is not to diminish the relevance of the carbon market and the flourishing work on it, but more to make the point that a 'deep market', such as the one occupied by traditional commodities like gold, perhaps requires a different treatment that is attendant to their existing embeddedness in financial markets and, just as important, to the clearly defined physical markets that underly them. By extension, asking whether, despite their established status in financial markets (with a wide range of securities and financial instruments leveraged on their movements), 'materiality' remains salient in these commodities can lead to a different path than those encountered in incipient markets, that is also sensitive to their differing embeddedness in systems of production. A more productive route of inquiry is to take a historically, place and commodity specific approach to unravel finance's significance and complicated relationship with materiality.

The interest of institutional investors in gold mining, as came to be expressed in their demands for shareholder value creation, shows that production remains important in generating financial value. Production is an active strategy to be pursued, instrumental and valued as it is for what it can bring to stock valuations and dividends. Mining stocks, as part of a diversified portfolio, are perceived to fulfil this requirement: they provide leverage to gold, act as a counterweight to other assets in a portfolio (given its inverse-correlation) and through leverage to a company's production, generate high income in boom periods. Ensuring the reliability and predictability of this income gave institutional investors greater incentive to intervene in company activities and at disciplining productive capacity. As discussed in Chapter 3, the valuation and performance of mining stocks are very much dependent on their ability to deliver high earnings, meet production targets, and secure replacement for mined reserves upon which future claims on profitability are based. This points to the entanglement of stock movements and dividends in the material, even those that have yet to be realised at a future time.

As in incipient commodity markets, the question of legibility in mining remains an important issue, albeit differently. Mineral extraction is an old industry, with legal frameworks in place, established industry standards and practices for mineral identification and classification, and that has developed mechanisms through time to mediate the biophysical and cyclical vagaries of the business. There is no shortage of metrics and representations that make minerals visible and quantifiable (despite their existence in the subsurface). ‘Uncontroversial measures’ (Robertson, 2006) of grade, weight and volume/tonnage are used to achieve close approximations of the physical quality and quantity of minerals. Given gold's long history as money, it is also a metal that is well accounted for.⁸⁵ Gold reserves held in banks, bullions loaned, demand and consumption as well as recycling provide a (near) accurate picture of its circulation alongside the new supply that comes in line from mine production. Its largest producers divulge their cost structures, earnings and overall company profitability following standardised procedures and regulatory requirements in home countries or stock listings. Technical reports, for example, are standardised and made compliant to codified practices of divulging information about mineral properties, a requisite for all publicly listed firms. This ‘transparency’ attenuates some of the risks attached to investing in companies whose product is ‘invisible’ prior to extraction.

The push for shareholder value creation, as discussed previously, was accompanied by the introduction of a new metric, the all-in sustaining cost (AISC), that made mining financially legible and comparable to other forms of investment. The AISC operates outside of the International Financial Reporting Standards or Generally Accepted Accounting Principles (GAAP)⁸⁶ followed by businesses (including non-mining) and is specific to the gold mining industry and the in-

⁸⁵ There are admittedly some grey areas in information such as the total gold reserves held by countries like China and Russia. Most recently, the attributable mine production of both countries rose and disclosure has been selective. The reported numbers are approximations at best.

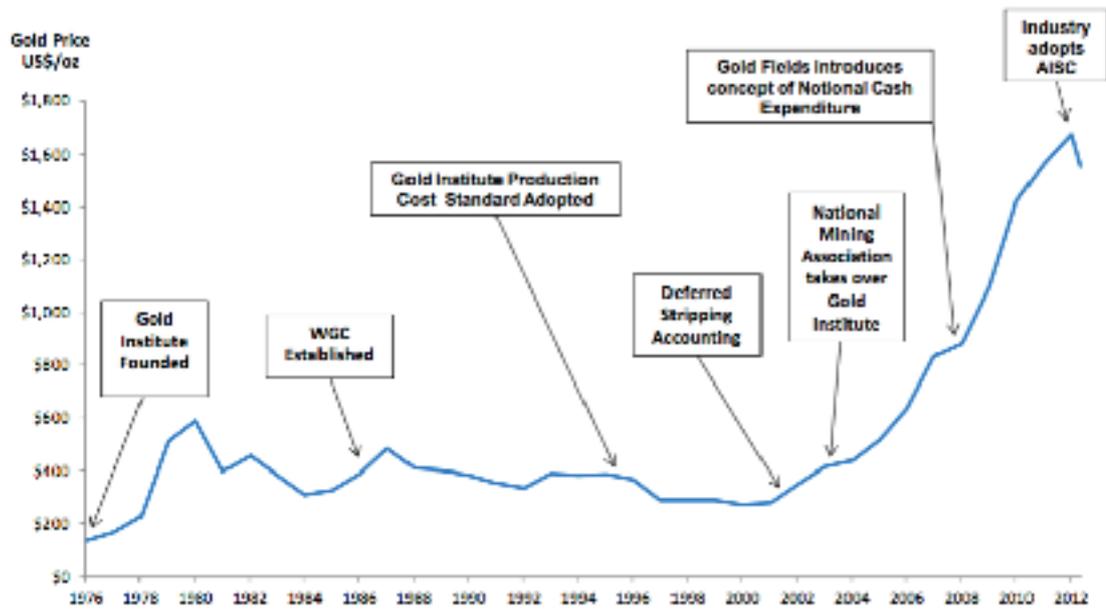
⁸⁶ The GAAP is a standardised form of accounting used by business entities that sets out the rules and procedures for accounting for costs and income.

vestors it attracts.⁸⁷ The nature of accounting of the AISC reflects the investment strategies of institutional investors that dominate the gold market: as speculative, short-term investors, they require an all-in measure to inform decisions to buy or sell gold stocks at every movement in the gold price; as large asset managers, they require measurements of the investment returns of every given commodity/commodity stock alongside a basket of assets within their portfolio; and as 'activist' investors, they require not only the end-profit margins but how these are achieved at every node of the production process and how these can be reorganised (or foregone) to deliver the 'shareholder value added' that finance capital requires. Aside from the AISC providing a tool by which to compare the performance of companies in the same industry and a measure through which commitment to cost discipline can be read, it also positioned institutional shareholders to oversee with greater visibility mining activities throughout the life cycle of a mine.

The AISC is the latest round of accounting measures adopted by the industry to quantify the affordances of nature, to perfect capital's functioning in a nature-based industry (Christie, 2013; Lazenby, 2014). It follows earlier attempts at standardisation in reporting across mining firms that began in 1996 with the implementation of the Gold Institute production cost standard (see Figure 7). The production cost standard is a representation of the cost of production (per ounce) and sale. It is the sum of total cash costs or in-site costs plus depreciation, depletion and amortisation, reclamation and mine closure. Other accounting measures have been used since then, most of which were introduced or voluntarily adopted by individual firms. Prior to the AISC, the (total) cash cost measure has been used to estimate company margins per ounce of gold (total cash cost per ounce minus the gold price), which investors felt erroneously overestimated the profitability of mining firms during the commodity boom. The AISC is more expansive in scope and is deemed to be a better representation of extraction

⁸⁷ As mentioned in the previous chapter, the new measure encompasses a broader range of the expenditures tied to extracting an ounce of gold. Each mining company publishes its AISC, expressed in dollars per ounce of gold, that when subtracted to the gold spot price is indicative of the profit margins made by the company.

Figure 7. Evolution of Gold Cost Standards



SOURCE: CHRISTIE, 2013.

costs. In differentiating the AISC with the cash cost measure, Goldcorp's CEO Chuck Jeannes remarked that:

“[T]he traditional measure of cash costs is not a realistic view. To produce an ounce of gold, we not only incur operating costs, but we spend sustaining capital at the sites, we spend [general and administrative costs] to keep the lights on, and we spend dollars to explore, to sustain our future. If you put all those together, that's an all-in sustaining cash cost. It's a much more transparent and accurate way of judging the real costs of getting an ounce of gold out of the ground.” (Lazenby, 2014)

In the same way that crises of capitalism are followed by new arrangements, the AISC, albeit still imperfect,⁸⁸ constitutes one such response by the industry to ensure that the law of value could be guaranteed.

⁸⁸ Certain costs not tied to specific projects or mines are not included, such as the costs of maintaining regional offices and headquarters, albeit these are relatively small capital commitments in comparison to the costs tied to mineral operations.

Accounting metrics carry tremendous disciplining powers. Writing about shareholder value added (SVA) methodologies adopted by BHP Billiton (the largest mining company in the world) in the late 1990s, O'Neill argued that SVA "are constructed as normative models of organisational behaviour: managers are urged to use the model's financial criteria in strategy formation and decision making; resources are shifted to areas where returns can be maximised, making other investments redundant; and efforts are focussed on the sustenance of dividends and the accrual of sharemarket-based capital gains" (O'Neill, 2001: 190). The institutionalisation of these types of metrics brings about a wide range of changes in the operations of companies, regardless as to whether companies succeed to meet investor expectations. Froud et al. (2000: 25), while skeptical on firms' ability to deliver, allowed that "dramatic implications" can ensue in "the pursuit of the unattainable, in the gap between investor expectations and what management can deliver". Management "must now oversee new forms of competition based on capital market not product market performance which rework the balance between productive, market and financial goals within many firms" (ibid). Thus, even as these metrics are supposed to be important measures of the financial value of the subsurface in the first instance, they bring about a response that reassembles the product market in order to (to borrow the words of Froud et.al, 2000) 'compete based on capital market'. This strategy includes, among others, greater control on the organisation of production 'all the way down and through' (Moore, 2015) the minute details of extraction.

4.2 CAPITAL IN NATURE-BASED INDUSTRIES

Nature-based industries differ with other economic-based activities. At the most basic level, they confront nature in a direct way: they rely on resources ‘spontaneously provided by nature’ (Smith, 2007), ‘produced not by capital but by ecological processes’ (Prudham, 2005: 8)⁸⁹. The accumulation process in these industries is considered fraught with difficulties and contradictions, requiring capital to come to terms with ‘the problem of nature’: the spatial and material characteristics of the resource that must be subordinated for production to take place. As pointed out by Boyd, Schurman and Prudham: “the physical properties of natural resources, the time required for geophysical (re)production processes to occur, and the fact that natural resources are extensive in space, found in particular locations, and vary in quality, all affect the capital accumulation process in unique and important ways” (2001: 556). This tripartite framework of time-space-form, pursued in greater depth by Prudham in his study of wood production in Douglas-fir country, illustrates how the particular biophysical characteristics of a resource can present a set of opportunities, obstacles and surprises to capital. Underpinning this is the proposition that the production of nature is not a thoroughly capitalist undertaking, that there exists “a necessary discontinuity between capitalist production and biophysical nature” (Prudham, 2005: 11) that must be accounted for.

Mineral extraction and fisheries, for example, dictate different handling time, occur differentially in space, and vary in form which require specific strategies that are attendant to their biophysical properties. Ores have to first be explored for, as they exist in the subsurface, and their types and existence in space (near surface or deeper down) can mean shorter or longer periods of extraction. In

⁸⁹ Prudham draws from Karl Polanyi’s conception of ‘fictitious commodities’ in recognising the specific category that nature occupies. In referring to land (‘is only another name for nature, which is not produced by man’ (Polanyi, 1944: 75)) as one such commodity, Polanyi pointed to how the inability of the self-regulating market to produce and fully control this natural input posed a challenge to its functioning. Nature presented a limiting factor, where ‘the extension of the market organisation in respect to genuine commodities’ can be ‘accompanied by its restriction in respect to fictitious ones’. (Polanyi, 1944: 79).

fish, capital must also take cognisance of biological/reproductive cycles: fish need time to grow and reproduce.

Boyd, Schurman and Prudham (2001) would make the distinction between formal and real subsumption of nature to distinguish the extent to which resources can be successfully altered or manipulated to increase industrial productivity. Formal subsumption, using this typology, refers to those industries whose biophysical properties offer resistance to manipulation, while real subsumption to those that can be directly augmented to meet the requirements of capital. Biologically based industries are characterised as belonging to the former given capital's successful attempts to control natural reproduction, growth, and perishability, among others, in crops and fish species. Non-biologically-based industries, such as mineral extraction, on the other hand, are only formally subsumed, where "firms may invest in gaining access to or control over natural resources or ecosystems, but are unable (or unwilling) to control, intensify, manipulate, or otherwise 'improve' upon nature to suit their purposes" (ibid: 562).

This delineation of the formal and the real is instructive for understanding how capital has operated through or around nature. Under formal subsumption, the inability to directly 'control', 'intensify', 'manipulate' or 'improve' biophysical properties leads to a variety of strategies to overcome these constraints and turn them into opportunities. For example, the long geological time periods required for ore formation effectively makes it a non-renewable resource. Access and control of mineral-rich regions and highly prospective properties become thus competitive strategies to generate rent (Bridge, 2008; Boyd, Schurman, and Prudham, 2001; Barham, 1994). The structure of industries, i.e. the division of labour across firms that split up different segments of the supply chain, constitutes another response to the challenges of production in nature-based industries (Bunker, 1985; Dougherty, 2013; March and Purcell, 2014). Dougherty finds, in his study of junior gold mining companies, that gold's "geological occurrence" and "high geographic dispersion" has "spawned a value chain characterised by crowding and competition around exploration and low-end production" (2013: 340). With junior gold mining companies taking on majority of the exploration activities in

gold, senior firms can expand reserves and production potential through acquisitions, avoiding the time commitments and risks of exploring for a geographically dispersed resource. This illustrates how social relations around resource extraction and the specific strategies for profit generation come to be shaped by the materiality of resources.

These categories are of course far from static. Firstly, formal subsumption can lead to real subsumption as technologies evolve. Labban's work on 'biomining' shows how evolving technologies in the mineral industry to use microorganisms to extract metals turns a previously considered non-biologically based industry into a biologically-based one (Labban, 2014b), a key distinction between the real and the formal. While biomining has yet to be implemented at an industrial level, this shows that the drive to innovate in order to surmount the difficulties of accumulation is ongoing in the capitalist project.

Secondly, real subsumption can also proceed alongside (Saguin, 2015)⁹⁰ or as part of measures to take hold of a formally subsumed sector. Mining activities involve a wide range of processes that are not merely limited to direct encounters between non-reproducible ores and capital. In some mining operations, the real subsumption of weather (i.e. to lengthen seasons or work around seasonal timeframes, see chapter 6) have been employed to help extend the time available for extraction during summer months. Topographic challenges in sites of mine construction can also be directly augmented or subsumed to the requisites of operations, or be turned into sources of productivity. The presence of glaciers in mining sites that previously inhibited exploration and mining have been overcome by advances in technology and engineering. Companies are no longer limited to working around glaciers (i.e. by mining underneath), but can now 'manipulate' their presence through relocation or removal or by turning them into natural 'waste rock dumps' to keep transportation and operating costs low (Kronenberg,

⁹⁰ A study by Saguin (2015) on aquaculture also demonstrates how the real subsumption of fish aquaculture (that can be subjected to genetic improvements) is mediated by water's 'fluidity and circulation.' Saguin (ibid: 6) notes how "[W]ater bodies can serve as sinks for various effluents from surrounding activities, and waste by-products tend to undermine the conditions necessary for sustained production."

2013). The formal and the real can therefore overlap or reinforce each other as capital moves to progressively break down this delineation.

Thirdly, there are gradations of control by capital even within formally subsumed industries. ‘Revolutionary’ and ‘evolutionary’ advances in the past decades have contributed to the hastening and smoothing out of the unpredictabilities of the extractive processes.⁹¹ Advances considered ‘revolutionary’ by the industry included the introduction of cyanidation in the late 1800s. Its wide application and demonstrated success in gold recovery led to the doubling of global annual production in gold by 1907 (Hilson and Monehimus, 2006). Even at present, about 60 per cent of gold operations worldwide still employ this process (Sterling, 2015). Another was heap leaching in the early 1980s, a process that allowed the cost-efficient recovery of geologically dispersed low-grade gold deposits in an ore body. This not only immensely improved recovery rates of extracting ores but also changed the landscape of extraction, opening up whole new regions that were previously considered uneconomic to mine. ‘Evolutionary’ technologies have also allowed for increasing legibility of the subsurface, allowing mining companies to improve their processes. As explained by a senior geologist:

“Technology has changed. Before, it is all about looking for the largest veins of gold with the highest grade. Now, scattered gold in big deposits are *‘rentable’* (in Spanish; ‘profitable’), and because you can put your drill holes deeper, you know more about your deposits.”⁹²

Fourthly, the temporality of high commodity prices and financing also exert considerable influence in defining the desirability and intransigence of ores, a definition that fluctuates not (only) due to the material affordances of nature, but to their perceived profitability given the prevailing commodity price or creditors/investors return criteria.⁹³ As such, efforts to ‘control’, ‘intensify’, ‘manipulate’ or

⁹¹ Interview, Micheal George, US Geological Survey, March 2015.

⁹² Interview, senior geologist, November 2014

⁹³ That is, ores previously considered profitable do not just suddenly become ‘intransigent’ in and of themselves when commodity prices fall.

‘improve’ biophysical properties, in consideration of their changing materiality as defined by capital, also changes in response to price swings to which firms respond by changing strategies. As example, the period 1973-2000, which was characterised for the most part by long periods of low metal prices, was also considered “a time of great innovation” (Jébrak, 2012: 37).⁹⁴ To survive low metal prices, the industry responded by driving down costs through the introduction of innovative approaches in the production and exploration process, and through the pursuit of economies of scale (i.e. through vertical integration). In copper for example, the capacity for increased production was dramatic in response to lower profitability, with daily mill capacity rising to 352 per cent (Crowson, 2006). Innovation has likewise been driven by the need to quickly respond to periods of high prices, especially in exploration, and the need “to respond with the same tempo as that of the financial markets” (Jébrak, 2012: 7).

Commodities show differing articulation with capital in part due to this mediation, i.e. of institutions and practices that undergird their status as tradable commodities, and the processes through which their existence are guaranteed, defined, stabilised, or improved upon for production and exchange. The other part has to do with the unique biophysical properties of natural resources that exert different resistances and opportunities that modulate their successful integration into capitalist circuits. All these come to bear with the implementation of the AISC, a measure that requires a new way of internalising nature. Companies are expected to lock in optimal returns to investors as a starting point, and to work downwards from there to realign operations to satisfy this goal. It is at its core a socio-ecological endeavour that requires whipping ‘quality assets’ within strict budgetary frameworks to deliver the returns that financial investors seek. This includes, among others, the reining in of spending through a more targeted extraction of the most profitable ores, signalling a different way by which minerals are defined and internalised by capital. While remaining by definition a ‘formally-subsumed’ industry, mining companies’ management of investor expect-

⁹⁴ Most but not all metals suffered low commodity prices during this period. Aluminium and uranium are exceptions due to growing industrial demand for both (Jébrak, 2012). Gold prices also tend to move differently to the price movements of other metals and resource-based industries as it is considered a hedge and safe haven in times of crises (see chapter 5).

tation has led to reinvigorated attempts to selectively ‘control’, ‘intensify’, ‘manipulate’ or ‘improve’ biophysical properties where capital returns can be justified.

4.3 BIOPHYSICALITY AND THE RE-MAKING OF NATURE

4.3.1 Time, Space and Form

In mineral extraction, locating and defining a resource in the first instance can present a challenge to capitalist production. A firm must first set out through exploration to find a resource which, depending on the mineral’s geologic occurrence, can take time and absorb sizeable risk capital in the process. The existence of minerals in the subsurface makes it a complex undertaking: resources are hidden and conditions can be inhospitable for extraction. The search for a resource—the ‘prospecting’ for mineral deposits—carries a strong element of speculation. Gold’s relative scarcity amplifies this further. Gold is estimated to be at .0038 ppm (parts per million) or just shy of .004 grams per ton of earth. By contrast, metals like copper, that tend to exist alongside gold, are found at 58 ppm, making gold one of the scarcest metals on Earth. In Chile, a local saying explains the elusiveness of the metal as a sort of devil’s trickery: “it is located where the devil struck his tail”.⁹⁵ Indeed, the hunt for the metal has been described as ‘a local mix of local folklore and verified science’ that comes with all sorts of “prospecting paraphernalia: geological reports, assay figures, maps, contracts, aerial photographs, electromagnetic surveys, gravimeter readings, lawsuits, letters from people who think they have gold on their property, letters from people who know people who have gold on their property” (Manaugh, 2013).

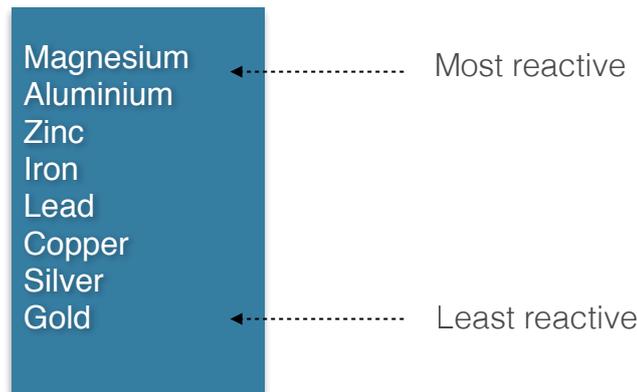
While physically scarce, gold’s geological distribution is widespread, and found in equally wide-ranging geologic environments. This contributes to an industry that is geographically dispersed in operations and production (Dougherty, 2013). Gold mining occurs in over a hundred countries, in mines that go vertically over four

⁹⁵ Interview, mining contractor, October 2014.

kilometres down such as those found in South Africa, or in high altitudes such as the Yanachoca mine in Peru at 4700 meters, with varying temperatures, pressures and humidity. Gold is one of the earliest metals to be mined in human history as it exists in its native form: it does not require the mixing of other elements to create it (Kirkemo, Newman and Ashley, 1994). Its lustre, rarity and near-indestructibility sets it apart to many other metals. It is one of the few 'coloured' metals; it doesn't tarnish and can be continually recycled.

Minerals, as they are found in nature, affect the accumulation process in several ways. Nowadays, gold exists in the form of scattered particles rather than nuggets and its successful recovery and processing depends on its geochemical environment. The occurrence of gold in an ore body, in shape, size and depth, largely determines the mine's design and the kind of processes and technologies employed to extract it. Gold ores that occur near the surface present an advantage due to their accessibility, flexibility, and lower capital costs (i.e. no pre-stripping required to expose the ore). They are easily and quickly mined, often in bulk, since they contain little impurities and do not require crushing. They also respond quickly to metallurgical processing, with ore being coaxed out at a much shorter time. By comparison, ores that occur at deep levels pose greater technical and financial challenges. Hard rock deep-level (underground) mining is associated with higher cost requirements, higher capital investment in specialised technologies, and long lead times between development and production. It entails greater logistical complexities to ensure workers' safety and provide sufficient ground support and ventilation underground. Its advantages, however, include lower visible impact on the surface and access to higher grade ores that cannot be extracted through open pit methods.

Gold being the least reactive metal (Hammer and Norskov, 1995) allows for ease of extraction as compared to more reactive metals like copper and aluminium (see Figure 8). Being a native metal, gold liberates easily and can be extracted through physical rather than chemical means, as is the case with compounds. This makes the methods employed for its extraction relatively simple—gold does not require heating (which is the case for lead) nor the decomposition of its

Figure 8. Metal Reactivity (in decreasing order)

compounds through electrolysis (as with aluminium).⁹⁶ Processing on-site can reach a near-pure end-product in the form of a doré bar of as much as 92 per cent purity (Goldfacts, 2015). This allows for “a more streamlined production chain”,⁹⁷ with fewer intermediaries and value-adding steps from the point of extraction to its end use, be it for jewellery or its ‘purest’ end-product, the gold bar of 99.9 per cent purity. This production chain also makes value capture to be highest from mineral extraction, value that is then passed on to those who mine it. And since gold is found with fewer mineral impurities (Norgate and Hague, 2012), it proves “easier for gold companies to come close to being a pure gold play”—the investment play that investors require.⁹⁸

The methods required to liberate the ore need to take into account the type of ore, which can be metallurgically complex. Refractory gold deposits, for example, where the gold is bound up with or encased in other minerals, do not respond well to conventional methods of extraction (e.g. carbon-in-leach, carbon-in-pulp). The sulphide matrix in these ores must first be destroyed or decayed through pre-treatment like leaching and pressure/bacterial oxidation, making the whole process longer and more costly. Depending on the interaction of metals that are found with gold, recovery rates can vary. High concentration of copper with gold, to which it is typically associated, can hinder the effectiveness of

⁹⁶ Although chemical processing may be required to separate it.

⁹⁷ Personal communication, mining analyst on precious and base metals, August 2015.

⁹⁸ Personal communication, mining analyst on precious and base metals, August 2015.

cyanidation. Copper bearing gold ores require greater amounts of cyanide to separate gold. Sulfur-carbon ores on the other hand have a tendency to ‘steal[s] the gold’ in cyanidation which leads to uneconomic recovery rates (Barrick Gold, 2015). In addition, an ore’s hardness dictate different time and cost requirements: oxides that are softer are in principle desirable as they require shorter processing time and lower capital.

The grade of ore, or simply the amount of gold contained in a mass of ore, is one of the most important factors that can change the profitability of a mining project. High grade ores, all else held constant, are desirable to low grade ones since they are more cost-efficient to extract. Low grade ores (about 1 grams per tonne) entail having to turn more earth to get the same amount of gold, resulting in lower gold output, and making them uneconomic to extract in a low-price environment. An ore body will often have a mix of both, with lower grade ores present alongside high grade ones. The ore grade can occur in varying concentrations, and certain ore bodies may require the processing of the low grade area to reach the higher grade ores, while others provide greater flexibility. All these are taken into account in the mine design and the processing of gold ores. Document reviews of mine technical reports reveal how specific attributes—in grade, oxidation state and gold particle size distribution—require different leaching time, grinding techniques, and equipments (leach pads, mills, and plants).

Variations in the type of ore can also require different technologies, which have driven, and at times frustrated, their development and application. The use of thiosulfate technology to liberate ‘double refractory ores’ that have proven very resistant to cyanide leaching took over 20 years to perfect, adjusting and manipulating the process to correspond to the mineral composition of the ore to maximise recovery (CSIRO, 2015). But even in cases of success, the process cannot be easily replicated as it relies on specific natural conditions such as the concentration of gold in the ore and the concentration of other minerals that require different pH, temperature and pressure levels to achieve stability, and different ratio of ammonia and thiosulfate concentration to improve recovery. Experiments conducted on the use of thiosulfate technology affirm that varying percentage

recoveries result from these natural variations (Rath et. al., 2003; Aylmore and Muir, 2001; Hiskey and Atluri, 1988). This accounts for the rather limited impact of metallurgical breakthroughs which can be very specific in application. The low applicability of such technology moreover acts as a disincentive to its further development, and contributes to making the move from cyanide to thiosulfate technology difficult, something that has been initially explored by the industry since thiosulfate is non-toxic.

In sum, variations in time, space and form carry important implications for the design, processes, and overall economics of a mine. But while certain biophysical characteristics of gold extraction mean that capital has to deal with considerable challenges, nature can also be made to align to an extent with capital accumulation strategies.

4.3.2 Working through nature

Natural resources are ‘part physical entity and part social category’, with the economy being an important part of the transformation of material things into valued commodities (Bridge, 2009). Being part social, resources are dynamic, where changes in human needs, valuations, and innovations over time and space can alter what falls under it:

“Change the historical or geographical context and a given material slips into or out of this social category. For example, the pungent, greasy ‘tar sands’ of Alberta—valued for their utility by indigenous peoples—can, with a rise in the price of oil (and an exemption from the need to purchase carbon credits to offset the emissions associated with processing them into liquid hydrocarbons), become an ‘unconventional oil resource’ for managing the transition to a post-oil future.” (Bridge, 2009: 120)

The definition of a ‘resource’ itself denotes the part-physical and part-social nature of the term and its variability through time. A ‘resource’, as defined by the

US Geological Survey, refers broadly to the “concentration of naturally occurring solid, liquid, or gaseous materials in or on the Earth's crust in such form that economic extraction of a commodity is regarded as feasible, either currently or at some future time” (US Geological Survey 1980: 95). A subcategory, ‘reserves’, speaks to their current economic legibility, from which a “usable mineral or energy commodity can be economically and legally extracted” (ibid). These terms are a testament to the intertwining of nature and capital, where the physical is reconciled with their utility, economic value, and legal feasibility in time and space. As an article published in the 1970s by the Canadian Institute of Mining and Metallurgy recognised:

“profitability is the critical factor on which the definition depends—the determinants of which are recognized as being in a continuing state of flux. In fact, by this definition, measures of physical quantities of minerals could logically be expected to appear as reserves at one moment and, at the next, disappear into the resources abyss.” (Nash and Pearse, 1976: 3).

Considering these categories as co-produced by the confluence of physical and social variables helps us think through material changes in resources (i.e. in terms of availability or depletion) as at least partially the consequence of factors that are located above ground. Technology, for example; has played a key role at sharply altering the rate of discoveries in mineral resources. Modern metallurgical techniques ushered in the discovery of otherwise ‘invisible’ gold in the Carlin deposit in Nevada in 1961, one of the largest gold deposits in history (Cline et. al, 2005). Through technological improvements, mining companies now have better knowledge of their ore bodies that mitigate the unpredictabilities that nature presents. Shafts can go deeper, and improved drilling techniques can give more accurate information on mineralisation that enable better planning of the mine design and more specific targeting of desired ore grades. The difference that such improvements make in production can be significant. The example of Round Mountain gold mine in Nevada, operated by Kinross Gold Corporation, illus-

trates how ‘expansions’ and ‘refinements’ facilitated by technological advances can significantly change the productivity of the extractive space:

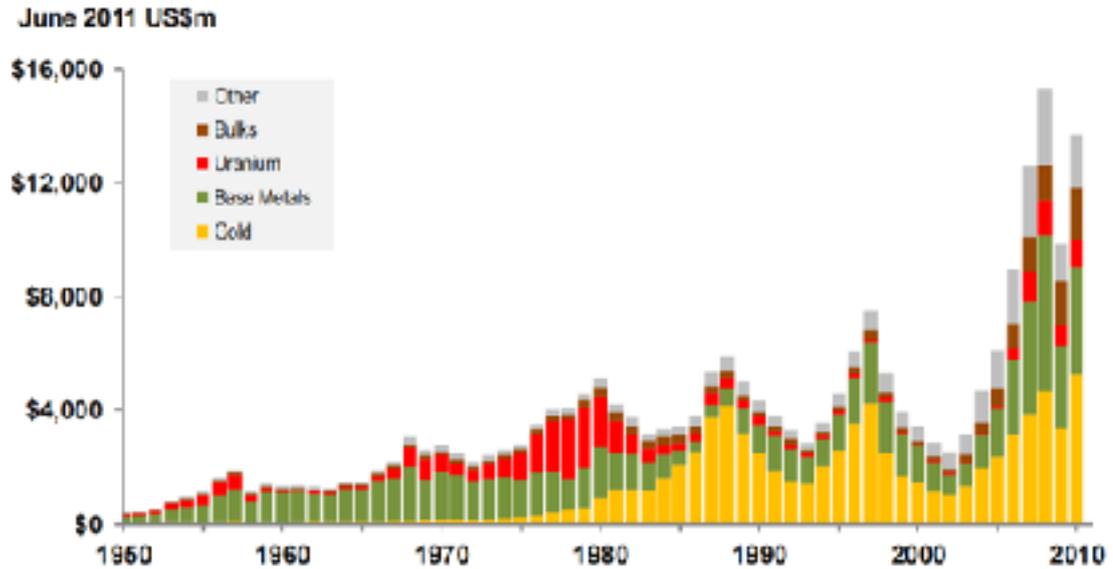
“Since 1977, development drilling has continued and the reserve base has been significantly expanded and refined. As a result, the total mining rate (ore and waste) increased in a step-wise fashion from 6,000 tons per day in 1976 to an average of 303,188 tons per day in 1999. The production rate for 2005 averaged 259,000 tons per day. The decision to construct a mill to process sulfide ores resulted in a significant increase in reportable reserves in the early 1990’s.” (Kinross, 2006: 5-2)

In much the same way, the lack of technological advances can also change the perceived viability of reserves, a challenge faced by South African mines:

“South African gold proven reserves decreased from 31,000 tons to 6,000 tons in 2009 as estimated by the United States Geological Survey (USGS)...This is based on the fact that most of the gold resources occur at a depth of 4,000 metres and more beneath the earth's surface and are therefore currently not viable to mine. The future of the gold industry in South Africa therefore depends on new technologies for deep extraction.” (Statistics South Africa, 2009: 11)

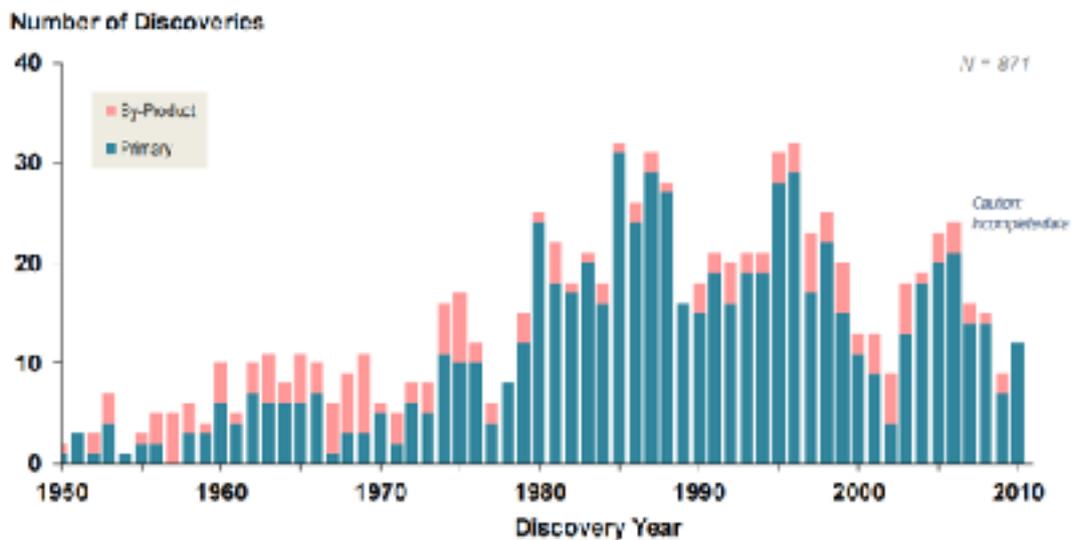
Changes in the economy is another variable. Again in the case of the Carlin trend, the rush to discover and extract low-grade ores took place on the back of higher gold prices in the late 1970s, following the end of the gold standard (Hausen and Kerr, 1969). This allowed the price of gold to free float from a fixed \$35 per ounce, an important turning point that breathed life into gold mining (see Chapter 5). The availability of capital typically follows high commodity prices as capitalist firms adjust to price signals from the market. Mining has been around for centuries and the technologies and processes that humans have employed have evolved through time. Simple panning methods still exist but mining operations have grown in scale and complexity, using sophisticated machineries

Figure 9. Trends in mineral exploration expenditures in the Western World, 1950-2010, in constant June 2011 US dollars



SOURCE: SCHODDE, 2011

Figure 10. Reported number of discoveries, 1950-2010



SOURCE: SCHODDE, 2011

and equipments that can process bulk tonnage and that require massive amounts of capital. To illustrate the impact of increased exploration capital, consider the share of gold in mineral expenditure exploration in the West from 1950-2010, which has grown dramatically, as can be seen in figure 9. In the same period, the number of reported discoveries has also increased (see figure 10). The exploration segment is considered by the industry to be highly responsive to increases

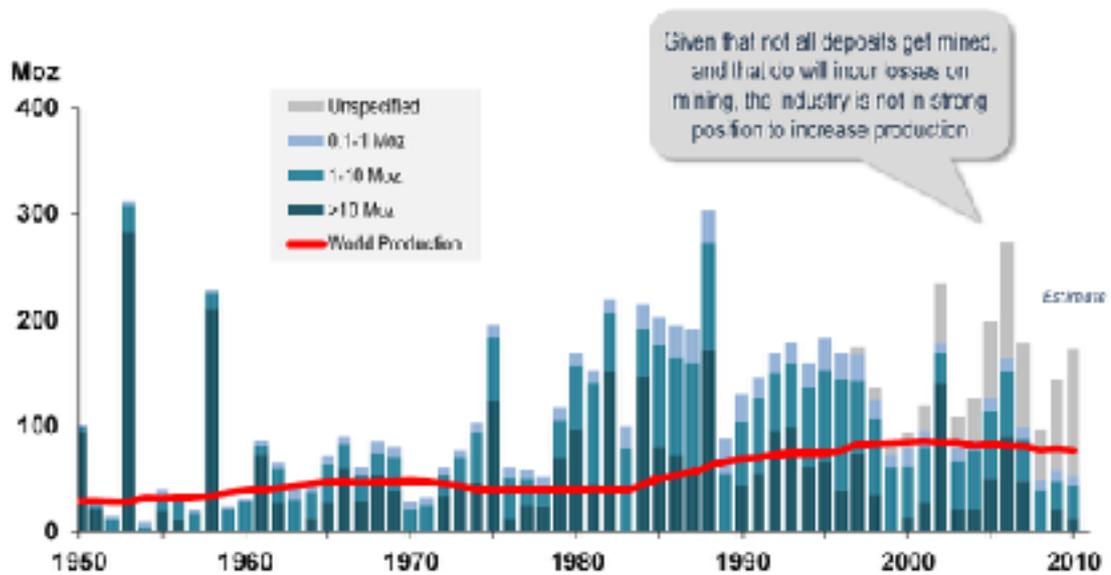
in capital availability and its shortfalls, an observation that is broadly confirmed by historical trends in gold exploration expenditures and discoveries. A report by Metals Economics Group (2013) also establishes how developments in the macro-economy (i.e. the 2007/8 crisis) have impacted capital availability and the nature of mineral exploration programmes being funded, with greater focus being given to advanced-stage explorations following the 2008-2009 downturn, and again to earlier-stage exploration in 2010 that would lead to higher reported new discoveries.

Extending this further, the need to demonstrate economic viability for a mining project to commence means that the number of discoveries do not directly translate to operating mines. Discoveries have to establish the size of the ore body and the grade of ore, which are to an extent fixed; however these will be then modelled alongside commodity prices, exchange rate and forecasted cash flows during the lifetime of the project. Questions of how much exploration a firm is willing to invest can change the geometry of the ore body, and the cost assumptions made can turn a lower-grade body into a profitable project. As remarked by a gold analyst of GFMS Mine Economics:

“Strategy is the overriding factor, dictating the scale of operation, mining and processing techniques used, and mine lifespan. This is in turn dependent on resource quality, which is to some extent uncontrollable, but a key point in this regard is that resource size and grade can be influenced by strategy. How much is management willing and able to invest in exploration ahead of production? What cut-off grades do they select?” (Fellows, 2010: 3)

Depending on the availability of capital, an exploration company can decide to bring a deposit into production. Additional adjustments are then made depending on capital and operating costs. Equipments, infrastructures, wages and transportation fall under these cost categories that are in part dictated by the location of the ore (e.g. proximity to roads, water and electric grids), the methods required for its extraction (open pit or deep-mining), and the social policies in

Figure 11. Total gold production and ounces found in the World 1950-2010.



SOURCE: SCHODDE, 2011

place for labour costs. Resource quality, input costs, macro-economic changes and socio-political factors all exert varying influence on mining operations. The interaction of these factors will determine whether a project can be justified to proceed or be shelved. The variability of items such as metal prices, labour, and financing in time and space also means that the perceived risk and reward of proceeding with mineral extraction can vary geographically and in certain periods. What gets produced, ultimately, at any given time has been the result of the interplay of what is physically inferred and (to an extent) controlled, what the market will pay for it, and what it will cost to extract it. One way of illustrating this is in the variance between 'discovered ounces' and actual ounces that are produced by the industry (see figure 11) where the millions of ounces that are found do not necessarily lead to the same amount of produced ounces. Indeed, to the extent that production levels can be credibly used as an indicator of the abundance/depletion of the supply of the metal elides the highly socially-mediated nature of resource-making.

4.3.3 Extensification, intensification

The rise in commodity prices and capital investment in the commodity boom, as one could expect, can sharply change these calculations. The gold price

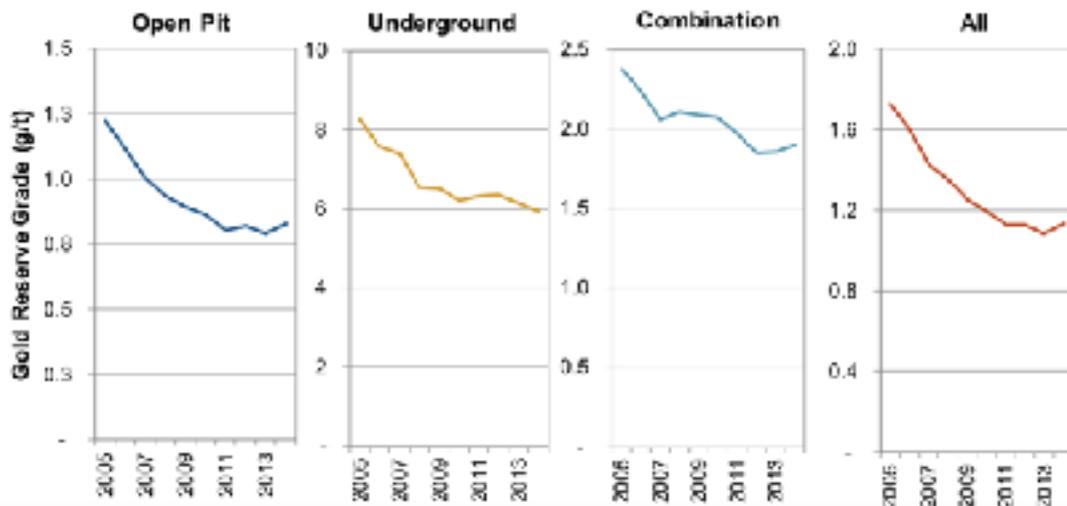
saw a quintuple rise from 2000 to 2011, and an estimated \$78 billion in new capital was raised during the same period by gold mining companies via equities markets alone (RBC Capital cited in Sprott and Morris, 2011). The effect of the boom in mineral extraction, as in previous bull markets, manifested itself through a geographical expansion in mining activities as explorations picked up and previously shelved projects were brought in line. With mines in operation, an equally dramatic material transformation accompanied this, as mine plans were changed to adjust to the new economic environment: the reported ore grades dropped, and reserves jumped up. Ore bodies and mine life⁹⁹ were expanded and extended. The rise and fall in ore grades and reserves had less to do with changing mineralisation as they are indicative of a change in strategy. Ore grade, or more accurately the cut-off grade, refers to the lowest grade of ore determined to be economically viable to extract. Each grade scenario is premised on present and forward-looking prices that are then adjusted in the course of a mine's life—a routine strategy that mining companies adjust on a yearly basis. Including lower grades as a production target leads to a higher reserve count and opens up new spaces in the ore body that were previously classified as uneconomic. Thus, while “the grade is what the grade [of ore] is” as explained by Micheal George, a gold analyst at the US Geological Survey, “the cut-off grade will move based on the price. If the price is very high they can process very low grades to an extreme, so their pit will become bigger and bigger...”.¹⁰⁰

The boom years in effect allowed mining firms to extensify their activities through an expanding frontier and intensify their pursuit of lower grade and marginal ore that had now become profitable to mine. This strategy of intensification, or ‘commodity deepening’ (Moore, 2010), is clearly captured in the continuing decline in the ore grade reserves cut-off used by the industry from 2000–2012, by as much as 44 percent (Wolfson, 2015) as mining companies exploited the flexibility their ore bodies permitted. The impact is a higher calculated reserve count which is strongly correlated with the gold price (see figures 12 and 13,

⁹⁹ Mine life refers to the span of time it takes to extract mineral reserves in an ore body. Gold's mine life can range from 10 to 25 years.

¹⁰⁰ Interview, Micheal George, US Geological Survey, March 2015.

Figure 12. Gold Reserve Grade



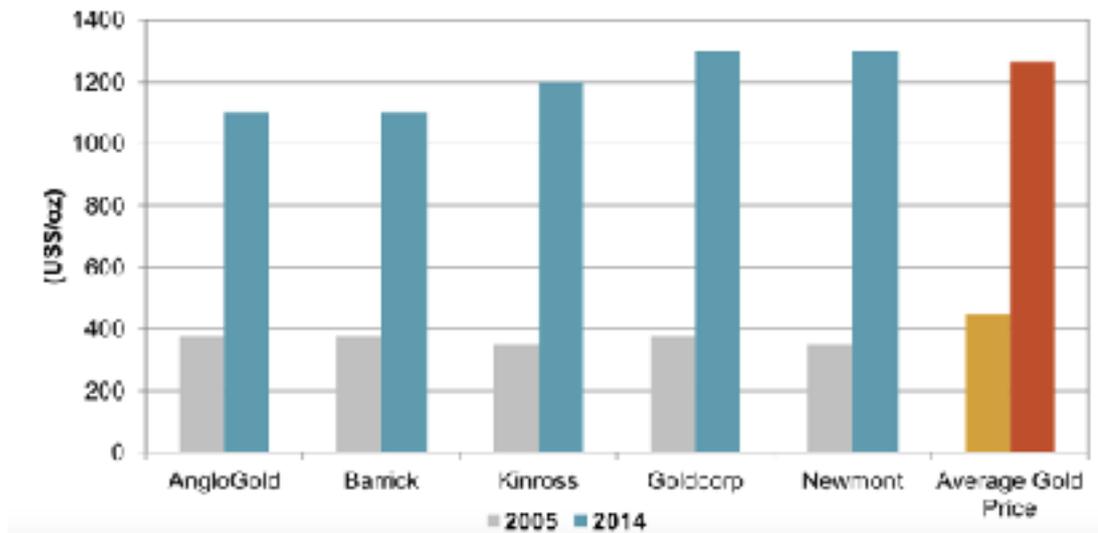
SOURCE: WOLFSON, 2015

ibid). A similar trend can be observed with the average production grade going down by 31 per cent (ibid; also see Fellows, 2010). This points to an intensified pursuit of previously classified ‘recalcitrant’ ores, pointing to the variability of this definition, and their re-alignment and integration in circuits of capital accumulation. Similar research by SNL Metals and Mining, a mining database firm, confirm this correlation across a larger database of operating mines. The decrease in ore grade is attributed to a gold price response as mining companies are incentivised to boost reserves and target low-grade production. As a fund remarked in an interview with the Wall Street Journal, “The nature of geology is such that gold does not occur in large volumes, but the capital exploiting it is robust” (MacDonald and Miller, 2014).¹⁰¹

This strategy, however, must deal with new sets of constraints: production is slowed as tonnage—or the amount of earth that has to be moved—increases as the ore grade goes down. The economies of scale seen in coal and copper mining, which operate on the assumption that unit operating cost declines with larger scale production, are relatively difficult to sustain in gold since it is not as abun-

¹⁰¹ “In gold mining” as another study pointed out “there’s always a chance that higher and higher prices could make up for poor geological potential” (Davis and Samis, 2006).

Figure 13. Gold price and reserve



SOURCE: WOLFSON, 2015

dant.¹⁰² Estimates placed unit operating costs for gold to have increased by 156 per cent, and capital cost per unit of production output by 602 per cent from 2000 to 2012 (Wolfson, 2015) as input cost rose up and cut off grades lowered—a strategy that, it should be emphasised, was incentivised by the prevailing optimism by companies and shareholders on the gold price at the time. While the cost of critical inputs like oil contributed to the rise in costs, grade is considered the second contributing factor to cost inflation—by as much as 20 per cent in the past 5 years (ibid). Other estimates by BMO Capital Markets placed ore grade as the single largest contributor to costs.¹⁰³

In the context of a prolonged period of high prices and capital availability, practices of low-grading were allowed for. Lowering the cut off grade is one of the most immediate measures by which companies can react quickly to price changes. While it is industry practice to model reserves and resources in mineral projects and operations using conservative pricing and a long-term gold prognosis (i.e. to ensure the profitability of a mineral operation or project throughout

¹⁰² As mentioned previously, technological advances has contributed to ‘dispersed’ gold being profitable allowing for economies of scale in gold operations. In relative terms however, gold projects reach maturity sooner than other metals, incurring higher costs for production. This, it should be noted, is not necessarily a material constraint in and of itself, as it is equally a function of the mine economics that North American producers abide by.

¹⁰³ Interview, VP of an investment firm, March 2015.

the mining cycle), mineral reserves and resources are also annually adjusted to reflect changing economic circumstances.¹⁰⁴ As Barrick Gold pointed out in its 2009 annual report:

“A key trend that could reasonably impact reserve estimates is rising market mineral prices, because the mineral price assumption used in preparing reserve estimates is calculated based on the trailing three-year average market price. As this assumption rises, it could result in an upward revision to reserve estimates as material not previously classified as a reserve becomes economic at higher gold prices. Following the recent trend in market gold prices over the last three years, the mineral price assumption used to measure reserves has also been rising. The gold price assumption was \$825 per ounce in 2009 (2008: \$725 per ounce; 2007: \$575 per ounce). The copper price assumption was \$2.00 per pound in 2009 (2008: \$2.00 per pound; 2007: \$2.00 per pound).” (Barrick Gold, 2009b: 76)

The amendment of reserve and resource counts are not only done in paper but are followed by new mine plans and cost commitments. During the boom period, fixed capital costs and investments attached to extracting new ‘profitable’ reserves were made on higher price assumptions.¹⁰⁵ Simultaneous to this is the development of new projects that in the long-term are expected to contribute to lowering cash costs, while incurring a large capital outlay at present.¹⁰⁶ These new projects represent the new ‘frontier’ of ‘appropriation’, new ‘cheap nature’ that can be the cornerstone of future volume production and margin expansion.

¹⁰⁴ The method and processes to account for reserves and resources are divulged in the Annual Information Form/Form 40-F that are filed with regulatory authorities in Canada (at the provincial level) and the US (US Securities Exchange Commission).

¹⁰⁵ Barrick, for example, used a \$950 per ounce assumption for the gold price in its 2009 report

¹⁰⁶ In Barrick's case, aside from recalculating its reserves and resources, it also invested in new growth projects such as Buzwagi (Tanzania), Cortez Hills (Nevada) that came in production in 2009. The Pueblo Viejo (Dominican Republic) and the Pascua-Lama projects (Chile and Argentina) also moved into construction phase that same year that, as “world-class, long-life mines, will add low cost production to [Barrick's] portfolio” once in production.

The value composition of this cheap nature denotes a lower share of the costs of reproduction for capital (Moore, 2015). These calculations then inform the accounting of expected total cash costs that investors used to assess company profitability, premised on buoyant gold prices for production whose realisation and valorisation is to take place at a future time. This contradiction underpins the intensity of speculative investment moving into gold mining firms, exacerbated by the inherently speculative and long-term nature of mineral extraction.

As shown in chapter 3, gold mining companies delivered record-high dividend payments to shareholders during this period, despite a slow down in production. This exemplifies the fragmented sites of accumulation that emerged, with financial gains (from stock movements and dividends) only tenuously linked to actual material productivity. The fall in gold prices in 2011 that heralded the bust in the commodity cycle emerged the extent of this divergence. As Barrick Gold commented in retrospect:

“Many [reserves] came from lower-grade ore bodies, erroneously justified by expectations of higher gold prices, and yielded ever more expensive ounces, at ever-growing capital costs. These growing capital commitments virtually eliminated free cash flow generation. Yet that was what investors expected to be available to them—in direct proportion to increased gold prices. It didn’t happen—and the disappointment of investors was severe.” (Barrick Gold, 2012: 3)

Investors as a consequence demanded to know how growth was being achieved and at what cost for every ounce churned out. This required a different strategy for preserving profits and shareholder returns that must be reconciled with nature’s cost and affordances at a given price and return target. As part of their reassessments, mining companies have revisited pertinent questions surrounding physical extraction: which ore is extracted, how much deeper, and how quickly as to deliver the most optimal returns. These questions were reframed around new thresholds of profitability and returns on investments that were higher than be-

fore in order to ensure a good margin between overall cost, as captured in the AISC, and the gold price.

4.4 MINING SHAREHOLDER VALUE

The particular strategies that shareholder value creation entailed bore the imprint of the biophysical opportunities and constraints of physical extraction. Faced with cost overruns, companies must deal head on with key material differences in mining operations that can tilt the balance between profitability and loss. Large mining companies that have a large portfolio of mines have undergone extensive reviews to weigh the suitability of the specific characteristics of their mines to the new target company cost profile. Mines are not all the same, with some proving more responsive than others to changes in mine plans and designs. More mature mines with depleting reserve base require a larger capital allocation to operate. Depletion from production, which occurs much sooner in gold than in other metals, means mine life extension could potentially operate at a loss. This had to be balanced with considerations on the time requirements of bringing new projects into production to replace reserves. The social regulations in place in the country where the minerals are located (to which they are 'fixed') can extend or shorten the wait, but also the challenges of defining the ore body and studying the mineralisation of a given site which vary from one location to the next and which may require expertise that the company does not possess.

These uncertainties contribute to greater conservatism in geographical expansion plans in moments of bust, which often see mining companies withdrawing into more traditional areas where their 'core competencies' lie. But since mining companies must eventually replace reserves given the non-renewability of mineral resources, expansion by some of the biggest gold mining companies has been accomplished through exploration in places that are of close proximity to existing mines. Gold veins in currently operating mines provide clues of mineralisation, which are then traced and drilled to establish the quality of the minerals in place. The conservatism of capital in downturns mean there is less inclination to move into higher risk exploration that is highly uncertain in its returns. Nature

at times yields additional high-mineralisation zones that add additional high grade ounces to the reserve base. Such is the case with Barrick Gold's Cortez mine in Nevada, giving the company room to expand to nearby areas as well as underground, with the discovery of higher grade ores that exist in deeper levels in its operating mine.

Using a target AISC as benchmark, operating mines have been assessed individually, reconciling the decline in the gold price to recalculate reserves and re-assess production. Gold mining companies like Barrick have pushed this further by adopting a much lower price assumption that includes a percentage rate of return built in, which ranges from 15 to 20 per cent. The effect of a conservative price estimate is a drop in gold reserves; a built in rate drives this even lower. Emblematic of this change were the readjustments made by Barrick, where from 2012 onwards millions of ounces have been eliminated from the reserve base through price adjustments and the use of a built in rate combined. The company used a price of \$1300/ounce for 2013 to recalculate its reserves and production, a \$200 dollar drop from its 2012 pricing and lower than the gold spot price of \$1,531 (average) an ounce that year. Explaining these moves in its annual report:

“While this is well below the company's outlook for the gold price and below current spot prices, it reflects Barrick's focus on producing profitable ounces with a solid rate of return and the ability to generate free cash flow. Gold reserves fell to 104 million ounces at the end of 2013 from 140 million ounces in 2012. The majority of the decline is a result of our decision to use a significantly lower gold price... additionally, we chose to remove a smaller percentage of our reserves that were still profitable at \$1,100 per ounce and met the regulatory requirements to classify as reserves, but did not meet our hurdle rates for return on invested capital.” (Barrick Gold, 2013)

Alongside these recalculations was a strategic shift to high margin production by mining high grade ores early. Although mining companies high grade to an extent in the first few years of mine production to generate cash (to pay off debt for ex-

ample), mine plans have been compressed forward to deliver high profit margins. Cost savings from mining only higher grade ores, and the improvements that this leads to in the production chain, are expected to be significant which makes it an important measure. Time is another consideration, as high grading speeds up production time, increases the value of the project and improves payback as conditioned by the time value of money: that of delivering ‘near term cash flows’.¹⁰⁷

But far from a complete and successful conquest of nature, mining companies must continually innovate and reconcile these changing strategies with the material realities of their operations. It is an evolving dialectical relationship that generates new material difficulties that must be surmounted, and that in turn rolls out new strategies to overcome them. Differences in the type of operation, underground or open pit (strongly influenced by the occurrence of a mineral in an ore body), as well as in the ‘age’ of the mine, account for differing responsiveness to this strategy. In underground operations, the mines allow for access and targeting of higher grade ores, but are much older, deeper, and significantly more complex, running kilometres underground. Extraction is often hampered by lack of direct access, which makes any change in strategy costly and operationally risky for capital. Conversely, a challenge for open-pit mines is that lower grades often have to be processed in order to gain access to higher grade zones. Reports of ‘lower-than-expected grades’ are commonplace since grades are not homogeneously distributed even in those considered to be ‘high grade zones’. The largest mines of the industry that have been earmarked for high grading, such as Pueblo Viejo, Yanacocha, Goldstrike, and Cortez all had to contend with these natural differences and devise new ways of surmounting them: through increasing throughput (i.e. processing more materials) or innovative processes (e.g. thiosulfate circuit technology) to allow for better and faster recovery for certain types of ores, albeit with varying successes. Revising the grades that have to be processed also carries wider implications in the leaching process, the industry preferred method for separating ore from waste. Since leach pads are optimised to take a mix of high grade and low grade ores to produce a given percentage of

¹⁰⁷ Interview, VP of an investment firm, March 2015.

gold purity, changing grade mixes also alters the recovery rate, leading to levels that are “less than optimum.”¹⁰⁸

Recourse to technology at this stage is also hampered by limits imposed by capital. A mineral operation has to be able to guarantee the return on technological investment before money is deployed to pursue intransigent ores. This is a key reason as to why technological innovation in the mining sector is behind that of other industries, as innovation is considered “another risk factor” for capital in an already high risk sector (Filippou and King, 2011). Indeed, the history of innovation in mining has taken place not directly from the efforts of mining companies, as through the transfer and application of theory-based research conducted by the academic community (Jébrak, 2012: 7), by space and electronic industries (ibid: 37),¹⁰⁹ or as in the case of thiosulfate technology, through collaborative work between a government-funded corporate entity and a mining company.¹¹⁰ The need by the industry for external actors to internalise the cost of technology and infrastructure-building is especially acute due to the already large capital cost requirement of mining. In Chilean operations for example, the challenge posed by operating in high altitudes and water-scarce environments (i.e. in the Atacama desert in Northern Chile) are heightened as a lower gold price makes investments in additional infrastructures (for both new projects and operating mines) precarious for capital. As Andres Poch, the former President of Asociación de Empresas Consultoras de Ingeniería de Chile (Association of Engineering Consulting Companies of Chile) pointed out in an interview: “[Mining companies] just want to pay for the cost of water, they do not want to invest the money to produce desalinated water; they want to pay for the use of road but they do not want to invest the money to build the road; they want to pay the

¹⁰⁸ Interview, gold mining analyst, SNL Metals and Mining, July 2015

¹⁰⁹ Jébrak (2012: 37) moreover notes that the discovery of new deposit types in exploration “ha[s] been initiated by serendipity, by the unexpected detection of mineral concentration using indirect methods, such as geochemical and geophysical techniques, or even false geological reasoning.”

¹¹⁰ CSIRO is a corporate entity operating as part of the Government of Australia that undertakes research and technological innovation for science and industry. The thiosulfate technology research was part of a collaborative work between CSIRO and Barrick Gold.

electrical rate but they do not want to build the electrical line that will allow them to reduce the capex [capital expenditures]; they want to see themselves have a territorial project, not mining project that have to drive all the territorial structure.”¹¹¹

Selective intensification, this time in the singling-out and timing of the extraction of the most value-adding ores (and foregoing those that do not), betrays the material and time requisites of capital in the bust period. But such a strategy has its contradictions. Firms change their mine plans and optimise their processes to generate more cash, but the long-term implications are far from value-creating. As Citi Research notes:

“Even though we view this action as correct, and inevitable, it’s somewhat of a double-edged sword. The reason being that gold companies have to spend an increasing amount of capex [capital expenditures] just to fight falling production trends and prevent a blow-out in unit costs...a slow-down in capex will invariably result in a fall in production, which in turn will lead to a faster rise in unit costs. Whether they cut capex or not, we see both scenarios as bad for shareholders. There seems to be no easy way out.” (Citi Research, 2013)

The aggressive push to realise value quickly also has the effect of eroding the basis of future long-term production. Accessing only high grade ores jeopardises the mineability of other parts of the ore body, making it more difficult to recover what remains. In the end, as a senior geologist from a mining firm explained, “exploiting only the higher grade reserves is not a responsible practice. It compromises the long term profitability of the mine operation and the long term availability of the resource.”¹¹²

¹¹¹ Interview, Andres Poch, former President of *Asociación de Empresas Consultoras de Ingeniería de Chile*, November 2014.

¹¹² Interview, senior geologist, March 2014.

4.5 CONCLUSION

As embodied in shareholder value creating strategies, the requisites of finance capital entailed even greater control of production. ‘Shareholder value’ disciplines companies, expanding and at times curtailing the drive to expand within cost metrics and profit margins that would deliver the most optimal returns. Building on the previous chapter, I focus here on how measures such as the AISC and the inclusion of hurdle rates on investments are aimed at achieving not only what is necessary to abstract and secure the value of their assets through recalculated operating parameters, but also to get close to achieving what is materially necessary to signal if not fully back up claims of creating shareholder value. This sets in motion practices that alter nature’s integration in capitalist production impacting what is ultimately extracted out of the ground. Mine plans had to be altered, target ore grades increased, and reserves slashed.

The internalisation of nature within a financialised regime of production illustrates the dialectical and evolving relationship between capital and nature. During the boom period, changing cut-off grades as the most immediate adjustment to high prices, resulted to higher reserve counts, thereby increasing expectations of cash flows from production. As value maximisation was constrained by lower prices and ore grades that were no longer profitable, shareholders and mining companies had to recalibrate their strategies around these new ‘limits’. Nature re-scales, delays and at times expedites the rate of accumulation, but it also emerges new difficulties following every re-working given its ‘co-evolutionary capacity to resist control’ (Moore, 2010: 248). This made its intersection with the new requisites of finance capital at times awkward and imperfect, forcing even greater sensitivity to the distinct characteristics of minerals and mineral ore bodies that are more amenable to value maximisation, captured in the drive for high margin, high grade growth as a way forward. The contradiction however is that while achievable in the short term, it constrains further what can be realised in the future in production growth. This has the effect of amplifying gold’s relative scarcity and dampening the anticipated value of future profits which remains an important basis for speculation and (value) circulation in the mining sector.

In the next two chapters, I shift focus on Barrick Gold, the largest gold producer in the industry. In chapter 5, I first take a historical look at the company's (and industry's) evolution, situating it amid the reconfigurations of the 1970s that marked the end of the gold standard and that saw finance capital take a more dominant role. This allows us to see how its structure and financing prospects has evolved over these decades alongside the development of financial markets prior to the commodity boom. In chapter 6, I position its flagship project Pascua-Lama in Barrick's history of growth and geographical expansion and the financial practices that shaped its development from the mid-1990s onwards. It is these we turn to in the succeeding chapters.

CHAPTER 5

The financialisation of the corporation: the case of Barrick Gold

Barrick Gold was founded in Canada in 1980 initially as a petroleum and oil company (then named Barrick Petroleum Corporation) by founders Peter Munk and David Guider. The failure of this oil venture a few years later led to a reconstituted Barrick Resources Corporation emerging as a mineral prospecting company in 1983. Since its inception, Barrick has transformed itself into the largest gold mining company globally, boasting 27 mining operations spread across 5 continents at its peak. In 2014, the company accounted for approximately 6 per cent of total world gold production,¹¹³ producing 6.25 million ounces of the metal (Barrick Gold, 2014).

Within the industry, Barrick is considered a success story, a company that has withstood the unpredictabilities of the gold mining business. Its success is attributed in no small part to the central role that financial markets and institutions have played in its growth and evolution, and its own active insertion of its activities in the financial sphere. In the context of key political and economic shifts in the 1980s, 1990s, and early 2000, Barrick's financing and 'risk management' practices co-evolved with the opportunities and challenges that opened up for gold mining firms in these periods: the increasing role of the stock market as

¹¹³ Total world mine production in 2014 stood at 2,990 metric tons (USGS, 2016)

a source of financing and as a means to 'grow', the access to central bank bullion reserves as a form of loan, the availability and wide use of financial instruments to inflate profit from production (i.e. hedging), and finally, the formation of large institutional investors as dominant players in stock markets. Barrick's history as a gold mining company, so to speak, was inextricably linked to the transformation of financial markets themselves.

The task laid out in this chapter is to situate Barrick alongside the changing political and economic circumstances that scripted its evolution as a gold mining company. Barrick is in many ways emblematic of the financialisation of the firm. Its wide use of hedging techniques (mainly in the 1980s and 1990s) and commitment to shareholder value creating methods fit existing characterisation of a 'financialised' company. Approached historically through the lens of finance capitalism's evolution, firm financialisation is shown to be deeply embedded in the socio-economic reconfigurations of the past three decades that re-defined parameters of financing, competition and profitability for industrial firms.

Situating Barrick in this process moreover provides a historical optic to the shifting alignments between the mining industry and different factions of finance capital. Barrick's relations with commercial banks, institutional investments and central banks were in a constant state of flux, as circumstances warranted shifts in financing strategies. It also emerges Barrick's role as agent rather than (just) target of financialisation, drawing out its own motivations emanating from the specific challenges and opportunities of its business, which turned it into an active agent of financialisation.

The first section of the chapter focuses on the structural changes of the 1970s and 80s, notably the end of the gold standard that led to a rejuvenated gold business (including Barrick's) and the neoliberal restructuring following the collapse of the Fordist-Keynesian system. The second section considers Barrick's hedging programme as a form of financial engineering and its impact on the company's growth. The final section looks at institutional investment in particular, its

changing composition and strategies, and its impact on industrial firms like Barrick to further contextualise the re-alignments discussed in chapter 3.

5.1 THE RESURGENCE OF GOLD MINING AND THE BIRTH OF BARRICK RESOURCES

Barrick Resources was born under specific, and opportune, historical and social conditions. Of particular significance was the end of the gold standard and the neoliberal turn in economic management in the late 1970s and early 1980s that rekindled business interest and opened up financing opportunities for the gold mining industry. Aside from serving as catalysts, these had a lasting legacy for the industry as they reworked the institutional infrastructure upon which firm competition and profit-making took place.

5.1.1 The end of the gold standard

The business environment in the early 1980s when Barrick was formed contrasts markedly to the decades prior when the gold price was fixed. Politically, gold was bound up with the functioning of the international monetary system given its role as a support for the US dollar, the dominant reserve currency. Under this system, the valuation of gold was set to the US dollar at \$35 per ounce, an exchange adopted since the US Gold Act Reserve of 1934 (Eichengreen and Flandreau, 1997; Bordo and Capie, 2006). The price was kept stable as part of monetary control, to regulate the dollar's convertibility. It was not until 1971 and then again in 1972 that the gold price was raised incrementally to \$38 and \$42.22 —(only) the fourth time it changed in almost 140 years (see Green, 1999).¹¹⁴ In 1976, all official links to US-gold convertibility have been abandoned by the US government under Richard Nixon and a fiat system took its place. By extension,

¹¹⁴ The price was set at \$20.67 per ounce for 100 years prior, as established in the US Coinage Act of 1834. This moved up to \$35 per ounce under Roosevelt as part of an overhaul of banking and monetary policy at the time.

all formal linkages to gold by the international monetary system were severed and the price was allowed to move based on market pricing.¹¹⁵

The gold standard had important implications for the development of the mining industry. With the price fixed, support for profit generation rested on the ability of mining companies to make the necessary adjustments in costs. This was difficult to sustain as the mining industry tends to incur higher costs as operations mature, absent any significant advances in technology or new discoveries. Even for South African companies, the industry leaders at the time, maintaining profitability in the 1970s had to rely on a combination of government subsidy and operational adjustments such as through high-grading¹¹⁶ (Jones, 2002; see also Pogue, 2000). Despite their control of gold mine supply, South African producers could not influence the price and were forced to sell at a price set by the United States (South Africa Chamber of Mines, 2013). A study by Jones (2002) captures the impact of the artificially low gold price on the profitability of gold mining firms:

“Rising costs were becoming a major problem. The [South African] mining companies’ response to this situation was to concentrate on high-grade ores. By 1970 five [gold] mines were able to keep going only because they also produced uranium and 19 of the 48 producing mines were being subsidised by the government. In 1970 only ores with a grade of 12 grams of gold per ton were being mined and the future looked increasingly bleak as American hostility to an increase in the price of gold threatened the economic viability of almost all the mines”. (Jones, 2002: 74)

The geopolitical significance of gold in Western economies also made for a highly regulated market. Politically and economically gold served an important func-

¹¹⁵ This shows how the volatility that now has come to be associated with, and normalised as characteristic of, the gold price is indeed a more recent phenomenon when viewed in gold’s long history.

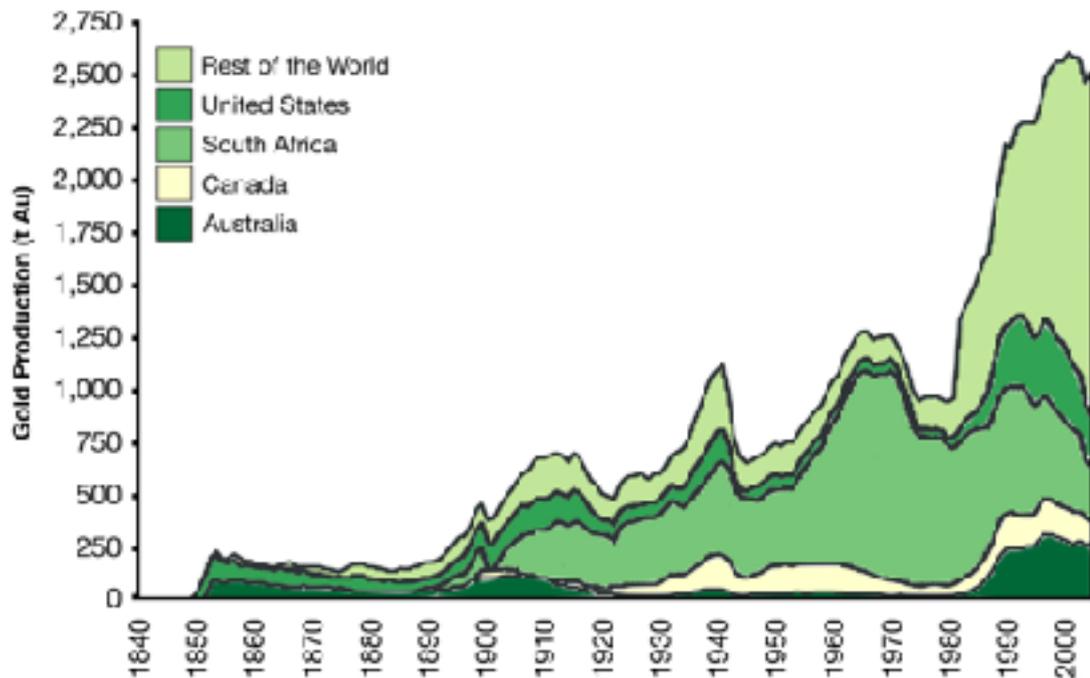
¹¹⁶ The practice of targeting higher grade ores that are more cost-efficient to extract. Chapter 4 discusses this at length.

tion, creating incentives for the most powerful states to exert control on its movement. In 1971, gold ownership was heavily concentrated: US, French and German Central Banks and international institutions (World Bank and International Monetary Fund) held 55 per cent of total gold reserves (Schoenberger, 2011). The United States alone accounted for 25 per cent, which made it the single largest holder of gold (*ibid*). Maintaining central banks' hold on the gold market entailed disallowing private ownership and the guarding of gold mine supply as a new source of gold stock. South African discoveries in the 1890s were after all what facilitated the consolidation of gold in central bank coffers (Green, 1999). As set out in an agreement between South African producers and the world's central banks, African production was contained by pre-determining its market. Under this agreement, almost the entire production of South African mines were destined for the official sector (monetary institutions and central banks) (South Africa Chamber of Mines, 2013). From 1948 to 1964, central banks took in nearly 45 per cent of new mine supply, mainly drawn from South Africa, while at the same time accelerating its production (*ibid*). The configuration of price regulation and geopolitical entanglements were strong disincentives for new entrants in gold mining, despite the industry's relatively low barrier to entry.

It is in this context that the shift to a market-based system was a historical turning point for the gold mining industry.¹¹⁷ With the price liberated and supportive of the actual necessary cost of gold production, gold mining activities took an expansionary course globally. This moreover coincided with technological advances, in particular carbon-in-leach technology, that allowed for low cost processing of previously unprofitable ores. The late 1970s and early 1980s experienced unprecedented levels of investment, with gold becoming a main target (see Schodde, 2011; Dawson, 1991). Production also started to show a growing share of gold being increasingly drawn from sources outside of South Africa illustrating the globalised effect of such dramatic shift in the political economy of gold. Figure 14 captures the geographical diversification and expansion in gold's produc-

¹¹⁷ There are some disagreements as to whether the 1980 presents the sharpest rise in gold price history as compared to 2009's \$1,890 dollar mark. This is mainly due to differing methods of inflation adjustment. However, in comparison to the sustained increase in the gold price prior to 2009, the price appreciation in 1980 was short-lived, dropping sharply in two weeks.

Figure 14. World gold production, 1840-2005



SOURCE: MUDD (2007).

tion base. Within North America, this was apparent in the blossoming of interest in the gold mining business, with companies in other industries moving into exploring or developing gold projects (Lucas, 1984). Formerly base metal companies in Canada shifted into gold exploration (Newman, 1983), while companies like Echo Bay, then a medium-sized silver company, and Placer, a diversified company with investments in coal, timber, and fisheries, re-oriented their operations fully on gold mining, spearheading the development of some of the largest mines in North America. Barrick itself emerged in the wake of its failed oil and gas business, as oil prices slumped between 1982-1983, seizing on gold mining as the next business venture. The subsumption of gold pricing and access to market rules set the stage for optimism on the value of its extraction.

5.1.2 Finance's ascendancy

The liberalisation of the gold market was part of systemic changes underway that reshaped industrial formation as a whole. In the late 1970s and early 1980s, following the collapse of the Fordist-Keynesian model of capital accumulation, an 'empowered' finance capital emerged, and indeed, led the way (Boyer, 2000;

Harvey, 2007 and 1989; Clark, 2000; Cerny, 2008). The period was marked by waves of restructuring and reorganisation, pioneered by the US and UK economies (Cerny, 1997; Helleiner, 1994), with other countries like Canada following suit (Jessop, 2002). Whereas before, finance capital was tethered by regulations to service the needs of industrial formation, of ‘oiling the wheels of commerce’ (Aalbers and Pollard, 2016: 1), the deregulatory moves of the late 70s and into the 80s, changed these dynamics, re-positioning finance into a more dominant role (Harvey, 2007).

In Canada, neoliberalism took off “less as a 'national' hegemonic project than as a passive revolution” (Carroll, 1989: 87), but the restructuring followed a similar trend among advanced economies: the liberalisation and the elimination of capital controls, the deregulation and subsequent internationalisation of bank activities, and the increasing role of external (rather than internal) financing for productive industries (Fennema and Van der Pijl, 1987; Carroll, 2008). The reforms instituted under the Trudeau and (especially) Mulroney governments freed up the financial sector which removed the distinction between commercial banking, insurance, trust and mortgage lending, and investment banking (Carroll, 1989: 88). This saw banks owning strategic interests in investment banks, concentrating further the control of money capital (*ibid*). Reforms of the stock markets were akin to the deregulation of the New York and London Stock Exchanges, and were instrumental for concentrating economic power in larger enterprises through mergers and acquisitions.¹¹⁸

Specific to mining firms, incentive mechanisms were being introduced at the exchange to propel mining companies to incorporate and investors to invest their money in the resource sector (e.g. the flow-through-shares). The home country of Barrick, Canada, had several stock exchanges in operations governed at the provincial level in the late 1970s. Canada has a long history as a fundraising site for mining firms, particularly up and coming ‘junior’ companies, dating back to

¹¹⁸ Some of the policy initiatives to liberalise the financial market took place as early as 1967, such as the Bank Act revisions which saw the fusion of functions of trust companies and depository banks. But it was not until later under the Mulroney government that came to power in 1984 that the neoliberal project in Canada took hold (Carroll, 1989).

the ‘penny stocks’ of the 1890s (Majury, 2013; Naylor, 2014). Of its stock exchanges, the Toronto Stock Exchange (TSE) stood as a key stock listing (especially for oil and mining firms) and was heavily populated by resource firms (Financial Times, 1980). By the 1970s, the composition of the TSE and the interests of its membership has started to diversify (Condon, 1998), leading to “deep divisions...within its membership” (Majury, 2007: 2193). According to Majury:

“These reflected the growing power of institutional investors within the marketplace and the success of the ME [Montreal Stock Exchange] and NYSE [New York Stock Exchange] in attracting order flow in TSE interlisted stocks... Cohesion within the exchange's membership ruptured as the viability of the domestic securities industry and Toronto's place at its heart was challenged by structural changes in demand for its services and by the associated internationalisation of capital markets. By the mid-1980s the ME and NYSE captured as much as 13% and 40%, respectively, of the value of trading in Canadian-based interlisted stocks. Much of this was institutional order flow. Meanwhile on the TSE itself the proportion of institutional trading by value rose from less than 30% in 1970 to 59% by 1989.” (ibid)

While different from banks, the stock market became an equally important financial intermediary by providing alternative liquidity to what banks can or were willing to provide.¹¹⁹

In the 1980s, mining finance underwent an important structural shift facilitated by capital markets restructuring in advanced economies and the capital needs of a rejuvenated mining sector. Traditional debt financing and internal financing

¹¹⁹ The relationship between stock holders and firms is a more flexible coalition of interest than that which typically govern that of banks and companies. As discussed in Chapter 3, compared to bank loans, stockholding provide flexibility for the capitalist: holders of these claims are not locked in to the long time commitment associated with investments like mining since stocks are easily tradable. Capital can be withdrawn by the investor during the life span of the project or at any stage in the company's development. This, in theory, mitigates the risks of investing on the part of the investor while providing the funds needed by firms.

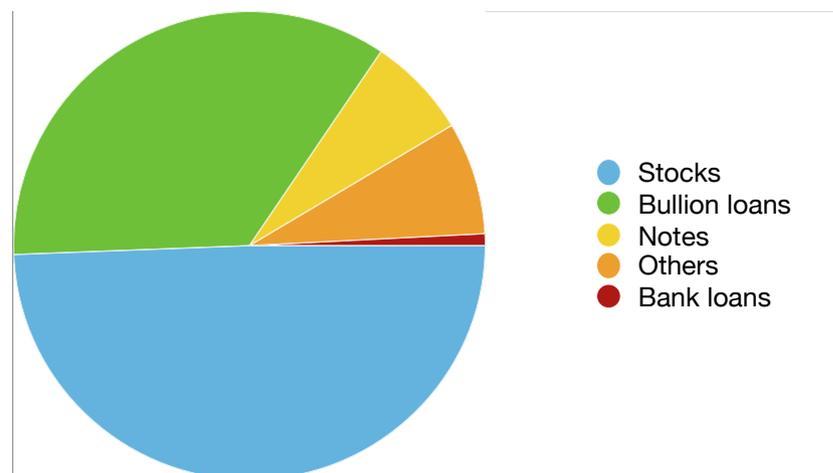
(money from company earnings)—the most important sources in the 1970s—became harder to secure and/or were deemed unattractive (due to higher cost of borrowing) for financing the capital requirements of mining activities, and a generalised growth of the stock market made available larger pools of capital (Kearney, 1986; Gocht, Zantop, and Eggert, 1988). This took place at a time of significant expansion in gold exploration and production in North America, when Canadian companies, according to the US Mineral Yearbook archives: “were planning to bring at least 40 underground and open pit mines into production in Canada and the United States before 1992...with more than one-half of the potential mines expected to be gold producers.” (Newman, 1984: 164)

Coming out of a period of recession in the late 70s and early 80s, which saw ‘a massive centralisation of capital...struggl[ing] for control of existing sites of valorisation’ (Carroll, 1989: 89-91), money found its way in industries such as mining. Kearney (1986) recalled that in the wake of the 1981-1982 recession, the industry experienced “a period of unprecedented interest in mining stocks from capital markets” (Kearney, 1986: 369). The limited access to debt financing and shortage of internal company finances “prompted companies to increasingly seek other external sources of financing and to try to develop new financing structures, spreading the risks among other parties and reducing the perceived amount of financial leverage [on debt]” (ibid). Mining companies in Canada progressively gravitated towards the stock market as a source of external financing and actively created strategic financing structures to further boost investment in mining stocks. Between 1981-1985, the Canadian mining industry as a whole was able to raise \$6 billion dollars from external financing (both debt and equity but excluding government financing), of which nearly \$4 billion was accomplished through the sale of common shares (or 67 per cent of the total), with debt accounting for less than \$1 billion (Kearney, 1986). In comparison, the market total across all types of industries shows common shares accounting for 28 per cent, preferred shares for 25 per cent, and debt for 47 per cent, an almost equal role for debt and equity (ibid). The market total is consistent with studies documenting the share of equity markets at this time (see Clark, 2000; Jacoby, 2008), but this

illustrates how the mining industry's reliance on stock issuances was far more pronounced as compared to other industries.

Fundraising through the stock market has been critical for emergent companies like Barrick. Barrick's initial public offering at the Toronto Stock Exchange earned it CAD\$2.5 million dollars in 1983 as start-up fund, launched at a time when the gold price jumped from \$300 to \$500 in six months and capital market interest in mining stocks was on the rise, with interest in gold figuring prominently. Aside from its IPO, the period 1983 to 1986 also showed innovative financing schemes being launched by the company, with stock offerings being linked to the gold price to tap into speculative interest. Parallel to this was an expansion of its funding prospects in the US, through an IPO at the New York Stock Exchange in 1987. Barrick's shares were also trading in Montreal, Paris Bourse, and New York as the key financial centres at the time. The financing of Barrick's operations (at the time named American Barrick Corporation) were drawn mainly from a combination of stocks and loans, with the former constituting the largest single source of financing from 1984 to 1993. The total amount raised from stock issuances was \$707.5 million US dollars, or approximately half of total cash financing during this period, with traditional bank debt financing arrangements (excluding central bank bullion loans) negligible (see Figure 15).

Figure 15. American Barrick's sources of financing, 1984 to 1993



Reports from 1986 (including 1984/1985 data) to 1993, filed under the name American Barrick Resources Corporation in the Mergent Archives database.

SOURCE: COMPANY ANNUAL REPORTS

However, despite the growing share of stock issuances across the industry, banks remained critical players, albeit this was no longer reflected in traditional debt financing arrangements. Banks assumed a prominent role as underwriters in equity financing as well as intermediaries in bullion loans, the second largest source of financing.

Corporations were incorporated into heightened forms of competition as the terrain for financing shifted significantly to stock exchanges. ‘Dramatisation’ of future surplus value is critical for raising capital in such exchanges, even as the ‘fictitious’ claims that stock holdings represent can be even more illusory in mining (Tsing, 2000; Majury, 2013). Stock exchanges also played a very direct role at the centralisation of production into fewer firms, with larger capitalist entities commanding greater market share in a shorter period through the agglomeration of individual firms. Claims on company profitability can be leveraged in acquiring or merging with other firms (i.e. by revaluing the latter’s tendered shares, rather than paying (wholly) in cash), buoyed by expectations that the acquiring firm’s greater market share and capitalisation can deliver higher value in the long run. In its first years of operations, Barrick ‘grew’ by merging with Camflo mines (a Quebec-based gold producer) and buying stakes in several operating mines in Nevada, Utah and Ontario. The acquisition of mines already in operation also allowed it to expedite its growth by moving straight into development, using its capital to bring acquired mines into new levels of productivity instead of spending for exploration. Of its six operating mines in 1990, only one, the Holt-McDermott mine, has been taken by Barrick from exploration to production stage. Growth by mergers and acquisitions, as opposed to internal growth, became the new norm in the industry, that allowed companies to purchase their expansion by buying up competitors over any actual prospecting—a strategy that would be a mainstay for a company like Barrick. This strategy of growth supported the rise of new rising stars in gold mining, such as Teck Corp, Placer and Echo Bay, that “challeng[ing]ed established giants of the industry for leadership” (Borland, 1986). A “new breed of mining company” was emerging, wrote the *Norther Miner* (a Canada-based industry publication) in 1986, “characterized by aggressive, acquisition-minded management”—a rank quickly joined by Barrick (ibid). By

the end of 1988, Barrick owned seven operating mines in Canada and the United States, with its production rising ten-fold in 5 years of operation (Barrick Gold, 1988). As the Financial Times reported:

“The group has transformed itself in the past five years from an oil and gas producer into one of America’s major gold companies and one which next year will probably rank fifth. This has been achieved mainly by a vigorous programme of acquisitions and mergers rather than grassroots exploration and development” (Financial Times, 1988).

The timeline in Box 4 shows Barrick’s expansion from 1983. Its merger with Placer Dome in 2006 made Barrick the largest gold mining company globally.

Box 4. Barrick’s history of mergers and acquisitions

- 1983 - Purchase of interest in Renabie mine
- 1984 - Acquisition of Camflo
- 1985 - Acquisition of Mercur mine
- 1985 - Acquisition of Pinson mine
- Purchase of 23.125 per cent interest in Valdez Creek placer mine.
- Purchase of 50 per cent interest in Western States Minerals Corporation
- 1986 - Acquisition of PanCana minerals
- 1986 - Full acquisition of Goldstrike, Nevada
- 1986 - Acquisition of Holt McDermott mine;
- 1986 - Acquisition of Mercur mine from Texaco
- 1994 - Acquisition of Lac Minerals
- 1996 - Acquisition of Arequipa Resources
- 1999 - Acquisition of Sutton Resources
- 2000 - Acquisition of Pangea Goldfields Inc.
- 2001 - Acquisition of Homestake Mining
- 2006 - Merger with Placer Dome
- 2011 - Acquisition of Equinox Minerals

5.2 DERIVATIVES AND THE HEDGING OF PRODUCTION

Derivatives, as the name implies, are financial instruments that ‘derive’ their values from underlying assets, commodities or events. Their usage is primarily to hedge against risk, such as to guard against price changes at an affordable cost. In the gold mining industry, gold hedges were first used to weather the unpredictability of the gold price. Coming out of the gold standard, gold was susceptible to fluctuations resulting from disturbances in the world economy, especially the US economy to which it is perceived to be inversely correlated, a remnant of its previous association with the US dollar. This contrasts to the fixed-price system, where even significant political instability was unable to impact its valuation.¹²⁰ Having inherited the vulnerability of their product to economic and price cycles, company revenues and profits were prone to fluctuate alongside price movements. Since mining activities extend to an average of 10 years for a gold project, shielding against price volatility that can undermine profits caught on quickly as industry practice, with Barrick among its pioneers.

5.2.1 From risk management to financial engineering

In the first few years of its operations, Barrick first entered into derivatives use as a special feature to its financing, as an additional lure to institutional investors whose economic weight in stock exchanges has become manifest. In 1986, Barrick issued a gold purchase warrant¹²¹ alongside an equity offering worth \$43 million dollars, money that was subsequently used to purchase a mine in Nevada—now known as GoldStrike—a strategic mineral property that remains one of Barrick’s considered flagship assets. Under this scheme, the warrants entitle the holder to buy gold at a set price over a period of years in exchange for (additional) financing while at the same time giving Barrick a means to sell gold

¹²⁰ At the time of the Cuban missile crisis and the Vietnam War, the dollar-US conversion was maintained. With the end of the gold standard came price volatility, punctuated by the price going up to a record high of \$850 in January 1980 as investors sought out gold following the OPEC oil price hike, severe inflation and political uncertainty globally, and then dropping again to \$613 in the same year.

¹²¹ ‘Warrants’ were subsequently re-classified in 1996 as a type of derivatives instrument.

forward at an advantageous price.¹²² Recognising the volatility of the price of its product in the mid-80s, Barrick's gold production was also sold in forward markets (and not only on spot markets), with a proportion of its production sold in short contracts, typically the subsequent year to guard against short-term price fluctuations. As it evolved, however, derivatives were used by Barrick and other companies not only as a risk management tool but as a means to derive higher income from realised production.

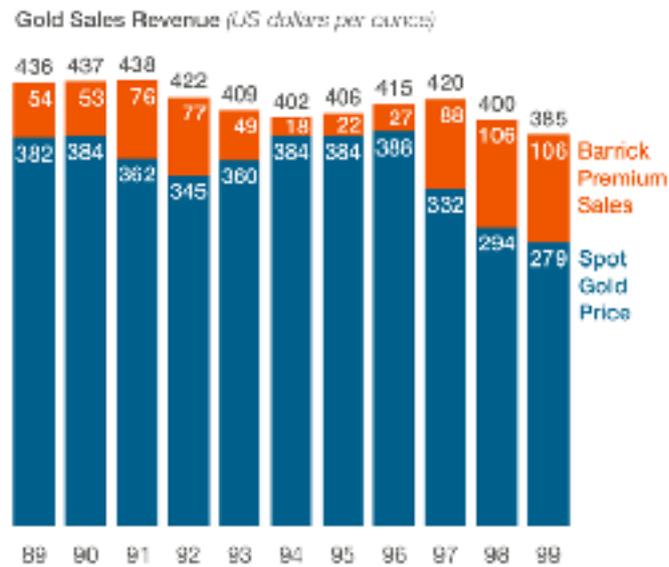
In a typical hedging transaction, Barrick would enter into an agreement to sell gold at an agreed price in the future—above the prevailing market price—using a wide range of derivatives. A study by Tufano and Serbin (1993: 1100) documented the company's employment of a “rich menu” of derivatives: “put and call options, gold warrants, bullion loans, forward sales, spot deferred contracts, and customized gold-linked equity financings”, placing it as one of the largest hedgers in the industry. In the late 1980s, as the gold price started to slide, Barrick embarked on an aggressive hedging policy, hedging between 75 to 90 percent of its entire production for three successive years and about fifty per cent of its production for the three years after, showing an important shift in duration and extent of its hedged production. By the 1990s, the length, breadth and nature of hedges in the gold mining industry had evolved into more sophisticated contracts that reflected the development of financial instruments employed in credit and currency markets while tailoring it to the specific needs of the sector. An example of this was Barrick's pioneering use of spot-deferred contracts in the industry—a type of forward sale that allowed the company to defer delivery over longer stretches, enabling it to adjust delivery (or the return of the loaned gold) to the time requirements of production. As its hedge program became more expansive in scope, Barrick deployed different instruments to compound its earnings whether the gold price rises or falls, and to lock in longer maturity and flexi-

¹²² As explained by Borland (1986): “if the gold price is less than the exercise price of the expiry date, it is unlikely the warrants will be exercised. In the end, the gold will not have to be delivered. In effect, the companies lose nothing because they were selling gold delivery at a more distant future date and at a higher price than they have got on the futures market, getting more money in their equity financing and adding some speculative interest to their offerings all at the same time”.

ble settlement dates. From prudent hedges, they became an extensive program of revenue generation.

By design, derivatives present a mechanism by which fictitious values are made in advance of real commodity production. They “dramatically expand[s] the possibilities to trade present-day assets against (potential, in the case of options) future liabilities’ (Mugge, 2009: 517). The size of hedges were determined based on the size and quality of current reserves, with the company cashing in on this potential income. This allowed Barrick to “sell[s] its gold at the current spot price while the ounces are still on the ground” (Barrick Gold, 1997). By essentially ‘pawning the future’ (Mugge, 2009: 517), profits were guaranteed (albeit decoupled from the timing of actual production), giving the company greater certainty on its growth.

Through derivatives use Barrick was able to amplify capital accumulation. Hedging contracts lead to enhanced revenues by fixing (versus ‘taking’) the price or the price range, at which a company sells its future production and the date upon which delivery is due. By doing so, Barrick brought in higher and more predictable returns for every unit of anticipated production that was hedged. In the company’s estimation, gold priced above the prevailing market price brought in an average of US\$61 dollars per troy ounce to its revenues from 1989 to 1999. Figure 16 shows Barrick’s gold revenues per ounce and the contribution of the premium sale or the price above the current (spot) gold price at the time. Hedging became an important part of company revenues, in real terms and as percentage of total gold sales over the years. Hedges contributed US\$25 million dollars in 1989 or approximately 12 per cent of revenues. By 1999, Barrick’s Premium Sales Program—a label it adopted for its expanded hedging program—contributed as much as US\$391 million dollars, or 28 per cent. Indeed, from 1997 to 1999, the company was registering its highest revenues from hedging at US\$1 billion more, leading to a 27 per cent increase in its profit margins, the highest in its industry peer group. Pivotal to this success was company management actively speculating on gold price scenarios, locking in a 4-billion dollar hedge position (of 10 million gold ounces at \$400 per ounce) while the gold price was high. Bar-

Figure 16. Barrick Gold's Hedging Programme

SOURCE: COMPANY ANNUAL REPORTS, 1989-1999.

rick's premium—or the difference between the spot price and the hedged price—grew to constitute between 27 per cent to 38 per cent of the prevailing spot price as the gold price slid from 1997 onwards. This helped Barrick not only to undercut the market price but also surpass its competitors. With value realisation taking place in the sphere of exchange, the company was able to 'make' (rather than 'take') the market price of the commodity, an advantage over other firms. At a time when gold declined to an 18-year low in 1998, Barrick delivered its highest net income in its history, emerging as the most profitable gold company (at six times more profit than other gold companies), and with the best performing shares, a leadership that was secured not only through production¹²³ but by financialising its activities.

¹²³ There are other means by which gold mining companies can further maximise revenues, such as by driving down the cost of production which expansion to 'untapped' territories managed to deliver. The cash operating cost of Barrick decreased from US\$160 per ounce to US\$125 in 1998, with a resulting US\$35 savings that contributed to a high revenue. In relative terms however, Barrick's 'premium' from hedging stood at \$106 per ounce at the time, which made it the largest contributor to earnings.

5.2.3 The role of banks

The mobilisation of gold above ground served as the important first step, the basis upon which large hedging positions were placed. Due to the low interest rate of borrowing gold (which would have been otherwise sitting in bank vaults) versus borrowing cash (i.e. through traditional bank loans), a company can instead enter into a contract with a bullion bank to borrow gold. The bullion is then sold on the market and its proceeds (in cash) used for mineral operations. Repayments are done through the return of gold from production. Gold bullions, dormant assets that do not turn in an income, were effectively ‘extracted’ from vaults and allowed to circulate, and in doing so were able to earn an interest. We find here a return of gold’s traditional function as ‘lubricant’ of exchange by functioning as a loan facility for gold mining firms,¹²⁴ as the underlying commodity upon which hedge contracts were based, while also providing interest earnings for bullion banks. As a study commissioned by the World Gold Council finds, “[I]t is the availability of this gold credit supply, which rose from about 100 tonnes at the beginning of the 1980s to more than 3,000 tonnes by the end of 1996, that permits the necessary gold borrowing – underpinning as it does all hedging components of trading activities – to happen.” (Doran, 1998: 13).

As mine hedging grew, the borrowing of gold increased with gold mining companies responsible for approximately 65% of all gold borrowing (ibid). This partnership—of bullion banks, central banks and gold companies—was critical for fuelling a very liquid trade in gold that surpassed the volume traded in physical markets.¹²⁵ Given their status in the financial industry, bullion banks were pivotal for unlocking central bank reserves for the use of the gold mining industry. At

¹²⁴ For the largest gold mining firms, notably Barrick, bullion loans were the second most significant source of financing after stocks in the 1980s to the late 1990s.

¹²⁵ Gold mining companies were not themselves involved in the trading of hedge contracts. The paper market was dominated by institutional investors. Hedge contracts became fodder for speculation as these could exchange hands countless times until the settlement date when the gold is delivered. Fictitious values, anchored on anticipated production, surpassed the actual value of gold production in any given year. Doran (1998) reports that at its peak, the physical and paper contracts “has reached over 300,000 tonnes per year, well in excess of 100 times the annual output of newly mined gold, and more than twice the total stock level.”

first bullion loans were drawn from bullion banks' reserves of private bullion ownership, which was quickly absorbed by growing demand from companies. This required tapping into its largest holders — central banks — by offering them a means to earn interest on their vast gold holdings. By functioning as middlemen or counter-parties in hedging contracts, bullion banks also provided assurance to official institutions that the borrowed gold would be returned, while themselves earning from fees for setting up such arrangements.¹²⁶ The largest bullion banks were Union Bank of Switzerland, Credit Suisse, Republic National Bank of New York and NM Rothschild. However, as a consequence of neoliberal reforms in the financial sector, the economic power of other commercial banks has also been reinforced by consolidation and by taking on gold-related functions. The takeovers of the 1980s, and into the 90s, fused commercial, investment (merchant), and specialised bullion banking together, with companies like Standard Chartered, HSBC, Deutsche Bank, Nova Scotia and Westpac acquiring bullion operations (Doran, 1998). The internationalisation of banking services also made possible the sourcing of bullion across borders, mirroring the geographical distribution of its largest holders. As example, the largest bullion loan made, taken out by then-American Barrick, involved a 1.05m troy ounce gold worth \$225 million US dollars, underwritten by Union Bank of Switzerland, WestPac Banking of Australia and Royal Bank of Canada. The link between industry and banks was transformed, its alignment bolstered by new economic and geographical configurations for capital accumulation.

5.2.4 Material and financial expansion

Strategies of growth and hedging went hand in glove with running a gold company. Competition among gold companies was simultaneously about competing in financial markets as it was about growth and expansion. Corporations have internalised both finance and production functions, formally separate but mutually reinforcing. Company policies like hedging formed a core part of Bar-

¹²⁶ As an additional safeguard to these loans, the mining company is prohibited from taking on heavy debt obligations which further explains the deteriorating use of traditional bank debt in this period.

rick's competitive strategy, in much the same way as market dominance in strategic regions of its operations.¹²⁷ As the use of derivatives picked up in the industry in the 1990s¹²⁸ companies benefited financially from lower interest payments and from hedging revenues. Barrick's hedged transactions saved it tens of millions in interest payments¹²⁹ and were bringing in revenue at par with the size of a bank loan, giving its proceeds the impact of internal financing.¹³⁰ Hedging became the recourse for 'beating the market' (Glyn, 2007: 72) and other firms. Financial skills and favourable hedge contracts became sources of competitive advantage. These point to a shift in how companies were benchmarked, re-defining what it means to succeed as a gold mining company or to dominate the industry. As one analyst observed, the program 'allowed [Barrick] to profit in markets that left competitors in poor shape...and was able to use its competitive advantage to acquire other companies, fuelling huge growth' (Eichenwald, 2003).

Financial manoeuvres and production growth were pursued as complementary strategies. Hedging techniques helped build the financial capacity to fund operations and support growth. As Barrick consistently emphasised in annual reports and media interviews, a dependable future income stream was vital in the development of its long-term, capital-intensive projects and provided it the finances to make strategic acquisitions swiftly. This proved especially critical in the 1990s, a time when Barrick and many other companies moved to take their mining operations internationally in response to the opening up of developing countries to foreign investments as neoliberalism took hold.¹³¹ Merger and acquisitions deals

¹²⁷ As Harvey pointed out, "If all corporations seek to survive by purely financial manoeuvres without enhancing or restructuring production, then capitalism is not long for this world" (2007: 320).

¹²⁸ The degree of hedging varies in the industry, with Barrick considered the most aggressive given the size of its hedges.

¹²⁹ As example, the Financial Times reported that a 3 per cent interest on gold loans made for \$30 million savings in 1990 (Simon, 1990)

¹³⁰ Upon the maturity of the contract or on the settlement date. Prior to this, hedged contracts are accounted for as 'deferred revenues'.

¹³¹ As explained in its annual report, "a number of countries are now changing attitudes and structures in a way that makes it attractive to review the mining operations they may present" (Barrick Gold, 1993)

in the mining industry escalated, with companies competing to acquire the most prospective projects and companies in regions speculated to be ‘mineral-rich’. The promise of a new, market-friendly frontier at a time of low gold prices was expected to contribute positively to production costs. Between 1990 and 1998, 253 companies and projects¹³² changed ownership worth \$48.2 billion, and an estimated half of this number are gold companies (Metals Economics Group, cited in Malherbe, 2000: 25). Barrick benefitted from having the financial means to launch an acquisition without need for external financing, a rarity in the industry, albeit tapping into stock financing when it deemed favourable. It also positioned the company favourably with the shareholders of the companies it sought to acquire, which allowed it to outmatch competing offers by capitalising on its financial strength as a major gold company, as in the case of its acquisition of Lac Minerals (Farnsworth, 1994).¹³³ The completion of the acquisition gave the company a new global status as a major gold producer in North and South America, prompting a name change from American Barrick to Barrick Gold Corporation to reflect its internationalisation, as its future source of growth became significantly more diversified with the addition of operations in Latin America accounting for about 50 per cent of its gold reserves. This was followed by other acquisitions in succession, notably in 1994 (Pascua property in Chile), 1996 (Arequipa acquisition) and 1999 (Bulyanhulu gold project in Tanzania). Geographic expansion of the scale embarked on by the company was heavily dependent on continued revenue from its hedging practices. Hedged revenues, in part and in whole, have been used to meet acquisition payments.

Acquisitions achieved more than just strategic geographical expansion for the company. The expansion of the reserve base also had the effect of expanding the size of its hedge contracts. This was clearly demonstrated in the acquisition of

¹³² The total count only includes transactions worth more than US \$25 million dollars.

¹³³ A competing cash and stock offer by another company, Royal Oak, was higher than Barrick’s bid for Lac Minerals but Barrick was viewed favourably by shareholders as it is a company “with more financial muscle”. As Farnsworth (1994) reported: “Although Royal Oak’s cash and stock offer, which is higher than Barrick’s at \$16.50 (Canadian) for each Lac share, is still on the table, Mr. Reid and other analysts said American Barrick shares were more acceptable to large institutional investors who are the major stockholders of Lac.”

Lac Minerals in 1994, which led immediately to a 13.4 million ounce addition to its hedged positions with all of the potential production from Lac mines being added (Barrick Gold, 1995). Moreover, since hedge contracts were bound by the underlying commodity, in this case the reserve base as indicator of production potential, companies cannot exceed in borrowed ounces more than the equivalent ounces of what they have on the ground. Maintaining a large reserve base relative to hedged future production therefore had implications for what can be borrowed and when structuring and negotiating contracts. In the calculation of bullion banks that serve as intermediary, the reserve base was factored in as testament to a company's capacity to service its contracts into the future. The practice of hedging several year's worth of production by Barrick was often contrasted to the percentage of reserves held by the company to buoy up confidence that the gold will in the end be delivered. Reserves therefore served as vital 'assets' enrolled in circuits of accumulation prior to physical extraction; they were the 'collateral' that secured hedges by which delivery was read as guaranteed.

The type of contracts have also evolved alongside the growth of Barrick's reserves. While Barrick has always maintained a gold profile, its expansion in places like Chile brought in significant mineral by-products to its mining operations. A financial consequence was the creation of hedge contracts on copper—an expected by-product of the El Indio mine in Chile (part of Lac's repertoire of mineral properties), and subsequently, silver hedges as a by-product of other acquired mines. Barrick's strategy of acquisition, followed by exploration in newly acquired mineral properties, established the potentiality of the subsurface and in so doing also mobilised their performativity as collateral. In Barrick's mineral operations, two parallel but interwoven processes were thus taking place: speculative expansion through hedging to acquire and expand mineral operations, and geographical expansion that broaden the potential of its speculative enterprise. Speculative expansion fuelled geographical expansion and vice versa.

Through such financial manoeuvres, coupled with the integration of new geographies as sources of low-cost production, the 1990s was also a period of production growth for Barrick and the industry in general. Financial strategies like

hedging had significant implications for mineral operations. With financing through bullion loans tailored to correspond to the cash flows of the mineral project (in order to limit, if not eliminate altogether the need for re-financing to make sure the borrowed gold is returned),¹³⁴ and its valorisation ensured, companies were able to optimise the production process. The strong working relations between gold producers, bullion banks and central banks ensured that the financing arrangement could remain flexible enough to adjust to movements in the gold price as well as the rate of mine extraction, leading at times to counter-cyclical developments in investment, with more financing being made available when the gold price goes down (Doran, 1998: 28).¹³⁵ In short, with money capital (M, and M') fitted to the requisites of the production process, mining firms were able to focus on volume growth, calibrating their extraction rate to getting as much gold from the ground as is profitably allowed for by a pre-set M'.¹³⁶

Hedging was of course only useful to the extent that it served as a logical extension to capital accumulation. It was heavily predicated on assumptions of lower gold prices continuing in the future, and on central bank lending and interest rates. In Barrick's history of hedging, hedge positions were managed in a way that returns to capital were maximised as economic circumstances change. Even throughout the 1990s which showed a long-term trend of increasing hedged positions, the extent of mining firms' participation in the derivatives market was dependent on the prognosis on the gold price, its supply and demand, variations in gold lease rates and LIBOR (interbank lending) rates, and other factors that

¹³⁴ This served as a safety net for the lender, to ensure that the borrowed gold is returned. In Barrick's contracts, clauses are included preventing Barrick from entering into another loan agreement.

¹³⁵ As Doran (1998: 28) notes: "If the price of gold falls, mine investment and the need for expert financing arrangements can paradoxically increase in the short and medium term. This is because the return on new lower-cost facilities becomes more attractive, relative to existing higher cost mines."

¹³⁶ In Barrick's case, the sales as mentioned previously, are also amplified through a premium, a competitive advantage over other firms. At the most basic level however, hedge contracts were designed to ensure that a firm remains competitive and profitable for as long as the locked-in price remains higher than the spot price and the locked-in price set higher than the cost of production.

affected the attractiveness and benefits of hedging. In the mid-1990s for example, the demand for gold borrowing shot up, bringing about an increase in bullion lending rates. This led to a situation where the gold premium on futures contracts ‘disappeared entirely’, a period that Barrick used to unwind its hedges partially and temporarily (Gooding, 1996: 33; Gasparino and McGee, 1996: C1).

5.4 BARRICK’S OWNERSHIP STRUCTURE

5.4.1 Corporate interlocks

In the 1980s and 1990s, the structure of ownership of mining companies was mainly across firms, rather than dominated by large institutional investors as is the case today. These arrangements were akin to the mining houses of South Africa, with companies owning minority stocks or controlling interests in other companies. The interests were interlocking, with cross-ownership among large and small firms. American Barrick in its first years of operations held 63 voting interest in another company, United Siscoe Mines, that simultaneously owned 30 per cent of American Barrick (Dingwall, 1987). Siscoe Mines, in turn, held a minority stake in Consolidated Gold Fields, which extended to Barrick; and Consolidated Gold Fields was a subsidiary of South African Gold Fields (*ibid*). While this made for complex organisational structures, they represented the network of power that helped build and reinforce industrial powerhouses like Barrick in its early years.

Corporate organisations and their ‘interlocks’ characterised the organisation of capital accumulation throughout the 1980s and (to some extent) the 1990s (Scott, 1997; Carroll and Alexander, 1999). In the Anglo-American setting, corporations were typified by organisational ties between businesses, a distinctive pattern of ‘interlocking’ directorates across distinct businesses. Specific to Canada, the financial-industrial axis was much more integrated, with a domestic elite of financiers and industrialists at the core (Carroll and Alexander, 1999). Proxy

statements issued by Barrick from 1997¹³⁷ point to investor concentration and internal management ownership. Ownership of American Barrick was in the hands of a few individuals that dominated several businesses, including company directors themselves. In the mid-1980s, Horsham Securities, a private Ontario corporation controlled by Peter Munk (founder and then-President of Barrick), owned about 22 per cent of American Barrick (Drogin and Freed, 1986). Siscoe Mines held the other 30 per cent. However, in contrast to the predominantly nationally-held ownership of Canadian businesses, Barrick had significant foreign interests within, particularly by Saudi Arabian investors (Horsham was 40 per cent owned by a Saudi investor). American Barrick was also much more internationalised in its stock market, albeit controlling interest remained in management hands. A study by Petersen and Thiagarajan (2000) placed management equity ownership at 26 per cent on average between 1986 to 1994. This model of managerial stock ownership prevailed until the late 1990s. Company reports from 1996 onwards showed that stock control of Barrick was consolidated in Peter Munk, through ownership of companies with significant voting rights in Barrick (e.g. TrizecHahn Corporation). Munk's ownership shares were between 15.7 per cent in 1997 to just below 10 per cent in early 2000 (see also La Porta, Lopez-De-Silanes and Shleifer, 2002). Barrick follows a one-share one-vote structure, giving an equivalent percentage of votes to shareholders for each share.

Such formal measures of ownership within firms as indicated by percentage stockholdings are not themselves unproblematic. They are not clear cut indications of control as indeed corporations must also adjust to external conditions of financing (and competition) that impinge on the options available to firms over decisions of growth and expansion. There is, however, mileage for being attendant to changes in corporate governance as indicative of the re-composition of the capitalist class and as expressions of the restructuring that finance capitalism undertook in the past decades. Institutional shareholders emerged out of the re-organisations of the late 1970s first as vivid representations of the concentration

¹³⁷ The earliest SEDAR proxy statements were from 1997, as new regulations compelled companies towards greater disclosure of their activities.

of money capital and secondly, as increasingly dominant players in stock exchanges. It is this we turn to in the next sections.

5.4.2 Institutional shareholding in Barrick's stocks

The 1980s saw the increasing concentration of money capital in institutional investors. This became apparent in stock exchanges as the proportion of shares held by individual investors has been overtaken by these funds (Dumenil and Levy, 2004; Marsh, 1980). From the 1980s, the share of institutional investors in national (in the US and the UK) and global stocks grew steeply (Clark, 2000). In the case of pension funds, the amount of capital in their command increased tenfold (\$7 trillion) and twelvefold (£1.5 trillion) respectively between 1980 and 1997 (ibid).

The turn to a 'portfolio management model' was a key factor that propelled greater institutional investments being channeled to the stock market (Minns, 2001; Clark, 2000; O'Neill, 2001; Langley, 2004).¹³⁸ Portfolio management is a strategy of investing in a diverse group of assets that generate higher investment returns than investment in fixed-interest instruments (e.g. government bonds). 'Portfolios' are typically composed of a combination of choice (termed 'blue chip') companies and speculative ventures in assets of higher risk (Blackburn, 2002). The goal, and hence the term portfolio diversification, "is to diversify in such a way that the returns on the portfolio's securities are subject to many diverse, offsetting factors" (Jaffe, 1989: 53). Gold stocks, which move inversely to other assets, were then regarded as an important offset to balance out price falls in other assets in a portfolio (ibid). This perception on the function of gold was pervasive throughout the late 1980s and 1990s, with gold mining companies marketing themselves along these lines. Backed by financial analysts and studies that trumped up the return performance of funds with gold investments, gold

¹³⁸ In the UK for example, pension funds were shown to have made greater investment in stock markets by the mid-1980s as compared to investments made on fixed interest and property investments (The Investment Analyst Journal, 1985: 25; see also The Economist, 1987).

stocks were seen as the proxy for the gold bullion, a view that is still echoed in the gold mining industry.

While institutional investors, particularly pension funds, are mainly considered an Anglo-American phenomenon (Dixon, 2008; Clark, 2000; Dore, 2000), their investments have become increasingly internationalised through direct investment outside of the US and UK as well as investments in corporations with businesses internationally in the 1980s. Facilitated by the lifting of trade barriers and the liberalisation of capital markets, the financial sector expanded into a much more global terrain. For the gold mining industry, the growing relevance of institutional investors was already felt in their investments in gold mining stocks, especially South African producers. South Africa at the time accounted for nearly half of total gold output worldwide (Statistics South Africa, 2015) and gold mining played a pivotal role in the South African economy: in 1986, it contributed 35 to 40 per cent of all foreign exchange earnings and employed almost 10 per cent of non-agricultural employees (Overseas Development Institute, 1986). The mid-1980s was also a moment of political, social and economic instability for South Africa as the international community intensified trade sanctions and embargoes to erode economic support for the apartheid regime. In the US and the UK, public pressure was growing for firms and institutional investors to divest or withdraw (e.g. by selling off shares) from companies with operations in South Africa (Clifford, 1985; Feder, 1987). Following a succession of international measures from the 1970s onwards, one of the policies implemented in 1985 and 1986 was a mandatory ban put in place by the United States, Britain, and the European Economic Community (EEC) (South Africa's major trading partners) on the import of Krugerrands, the ounce-denominated gold coin produced by South Africa. The US Comprehensive Anti-Apartheid Act of 1986 also included, among other measures, prohibition of public and private loans as well as new investments. This heralded the beginning of the decline of South Africa's share of total global mining output for gold, as the industry was hit by mining strikes, economic sanctions, and lack of capital access to finance its more expensive mining operations (Tech, Welch, Wazzan, 1999; US Department of the Interior, 1988; Jones, 2002).

Seeing the turmoil and the ensuing capital flight in South Africa, Barrick first approached institutional investors in Europe to proffer itself as an alternative and more prudent investment to South African stocks. The company was considered “one of a handful of North American, mainly Canadian, gold producers which have wooed institutional investors by transferring themselves from single-mine operations to more diversified groups along the lines of South African mining houses”, a model that European institutional investors preferred (Financial Times, 1987; 1986).¹³⁹ The strategy proved to be successful. Looking back on Barrick’s early years, founder and chairman Peter Munk remarked in an interview with *The Economist*:

“In those days gold mining was the key industry in South Africa. But after Ian Smith was forced to step down (as prime minister of Rhodesia), the writing was on the wall. So it was easy for me to go up to investors in France, in Germany and in England and say: "You guys keep 3% or 4% or 5% of your assets in gold, why would you do it in South Africa. It’s just a matter of time before it goes. Why don’t you do it in a safe country like Canada or America?" That was our pitch. And that is how our first 10 years were built.” (The Economist, 2014).

A reflection of the growing traction of institutional investors in stock markets was the introduction of shareholder value conception within firms. As discussed in chapter 3, shareholder value is an ideological and operational shift which instills upon company managers the creation or maximisation of returns to shareholders. In Barrick’s reports, commitment to shareholder value can be gleaned as early as 1992. Its proxy statements also divulge the alignment of the company’s executive compensation to shareholder value methodologies that linked managerial salary and bonuses to dividend and share price performance. In form, it resembled the changes undertaken by a large swathe of publicly-listed corporations from the late 1980s onwards. An important difference however is that sharehold-

¹³⁹ As the Wall Street Journal reported in 1988, Barrick “has been helped by a surge of institutional investment in Canadian and US gold stocks, as fund managers sought an alternative to South African gold producers and tried to capitalise on rising gold prices” (Lamphier, 1988: 30)

er value creation was executed by Barrick less as an imposition than as a strategy. With competition in stock offerings being an important component of financing, gold mining companies like Barrick worked to ‘hustle’ the shares (Economist, 2014), issuing ‘promotional-type calls’ to portfolio managers (Schacter, 1986: 61) and embracing commitments to shareholder value to market themselves. As a gold company, Barrick was attuned to its embeddedness in an evolving capital market whose investment preferences could accrue positively to its business. Expectations of economic and political instability, or shifts in demand and supply that can positively impact the price were turned into opportunities to issue new shares. This made for a flexible coalition of interest, with ownership in gold stocks surging or declining depending on the price prognosis.

As Barrick maintained and increased the size its hedge programme notably from the mid-1990s, predictability rather than the volatility and exposure (to spot gold price movements) favoured by some institutional investors became the company’s main goal. Hedging practices by the industry at this time was considered by some analysts to be “counter to a shareholder wealth maximization strategy” and “suggests that decisions regarding risk management are not prompted by a desire to maximize shareholder wealth” (see Callahan, 2002: 19). However, Barrick’s strong performance with high cash flow and earnings positioned company management not only to deflect criticisms from investors but also to attract an investor base (including some institutional investors) that was comfortable with its hedge programme.

Rather than returning a significant proportion of its retained earnings to shareholders, Barrick’s dividend payments remained at levels considered modest. Using data drawn from its annual report, Barrick’s dividend from 1986 to 1999 rose in nominal terms alongside rising revenues and income but only stood at about 10 to 20 per cent of its earnings (net income) in any given year. As the company explained of its dividend policy in its report to shareholders: “it is the Company’s intention to retain most of its earnings to support current operations, to fund exploration and development projects, and to fund acquisitions of gold properties” (Barrick Gold, 1999: 73). The company was embarking on an aggressive

drive to expand its operations culminating in its expansion beyond North America in 1994, financing such endeavours through stock issuances, which it ‘justifies’ as necessary to unlock shareholder value.¹⁴⁰ Thus, while shareholder value became part of the narrative of the company in the 1990s, the actions of the company suggest an altogether different approach to shareholder value delivery when compared to the period 2003–2015.

The composition of ‘institutional investors’ has varied over time as the demand for ever higher portfolio yields—itsself a consequence of competition among the financial elites—opened up demand for new and more aggressive players in stock exchanges. As Dore (2008: 1104) reported:

“For the most part the institutions tended to be long-term investors, as interested in a firm’s long-term growth as in its immediate yields, which may have meant that they were willing to contemplate cash flow being used for investment, but still were bent on extracting maximum profits at the expense of other stakeholders. The intensification of pressure specifically for short-term yields came from newer forms of concentrations of capital, the private equity funds backed by investment banks, asset management firms, and hedge funds which grew steadily in importance from the 1990s ‘activism’—with clear aim to re-organise companies to reproduce short-term interest in firms.”

Reports from the industry started to refer to strong institutional investor interest finding its way into the gold market in 2003, contributing to a reversal of the low price levels of the late 1990s (AngloGold Ashanti, 2004). This initially manifested in the level of trading at the Commodities Exchange (COMEX), a parallel but distinct market for commodities where trading takes place through an electronic platform. The nature of the trades at the COMEX were price-speculative, and were responsive to cues from US monetary policy, macro-economic and geopolitical developments that can move the gold price. In 2003, the trading at

¹⁴⁰ This was the case with the acquisition of Lac Minerals, which was funded through stock issuance. I return to this in chapter 6.

New York's COMEX was reported to be at "all-time high levels since the exchange commenced trading gold over 20 years ago", worth almost 600 tonnes in (net) future and options contracts (AngloGold Ashanti, 2004: 125).

Commodity markets, as Harvey notes, "usually operate with real value lurking somewhere in the background" with investors "speculat[e]ing over conditions of realisation of values in different places and times" (Harvey, 2007: 277). The impetus for speculation in favour of gold, as discussed in Chapter 3, was rooted in the curtailing of mass selling of gold bullion by central banks, especially by the British and Swiss governments in 1999 that pushed the gold price to a new low in decades.¹⁴¹ With the signing of the Central Bank Gold Agreement (CBGA) put in place, an agreement to cap central bank gold sales to 2,000 tonnes over the next five years, institutional investors have started to reduce short selling and moved into 'long' positions, a sign of optimism on the gold price (Klapwijk, 2003). This renewed trading in the gold market, although arguably taking place outside of the firm, signalled to gold mining companies the interest of institutional investors as a potential source of investment demand. In a presentation at the Prospectors and Developers Association of Canada (PDAC) conference in March 2003, Barrick highlighted the 'need [for] more speculative capital' as a key solution to the challenges faced by the industry (Barrick Gold, 2003b).

Gold mining companies actively sought what was by then a different and broader composition of institutional shareholders. In 2007, institutional investors accounted for up to 76.4 per cent of stock ownership of the top 1000 companies in the US from 46.6 per cent in 1986 (Domhoff, 2005). Aside from pension funds, life insurance and mutual funds of the 1980s, the list included hedge funds, private equity funds and other professional asset management entities (ibid; Jacoby,

¹⁴¹ As the Financial Times reported: "... the outlook for gold seemed truly bleak...in 1999, when in London the Treasury announced it was selling half of the UK's official reserves. That prompted some pundits to proclaim the end of gold as a private and official investment asset class. The British decision, combined with the threat of more central banks selling, a booming stock market, falling inflation and a strong US dollar, shocked the gold market, with the bullion price sinking to a 21-year low of \$250 an ounce". (Blas, 2008)

2008). Most prominent among these were hedge funds¹⁴², whose ‘meteoric’ rise in assets under management was paralleled by increased activity in key stock exchanges (Anderson and Atlas, 2005). “[U]p to half of all activity in major markets, including the New York Stock Exchange and the London Stock Exchange,” have been attributed to them in mid-2000 (ibid). Their number also increased up to 74 per cent between 1999 and 2005, from 1,903 to 3,307 hedge funds during that period (ibid).

Industry conferences such as the Prospectors Developers Association of Canada (PDAC) annual meeting served as a key venue for companies to meet and discuss with prospective (resource) investors. Companies of all sizes, institutional as well as household investors, suppliers and contractors, and government representatives (i.e. from Ministry of Mines) participate in this yearly event, which during the commodity boom drew between 20,000 to 30,000 attendees from over 100 countries. The conference runs several events that provide companies¹⁴³ the platform to ‘market’ their mineral operations. The investor exchange exhibit space for instance is designed to allow for face-to-face encounters between companies and investors.

The ‘Core Shack’¹⁴⁴ (see Figure 17), found within the investor exchange exhibit space, is slated for new and mature projects with new significant, demonstrable (with sample mineralisation provided) drilling results that can be discussed with interested parties. A key goal of the PDAC is to act as a bridge between mining and investor interests, with sessions largely catering to both parties. Gold mining companies are some of its main sponsors (with Barrick Gold figuring prominently), and are in turn given visibility and exposure in the conference. But, as Casey

¹⁴² Hedge funds as mentioned in chapter 3 are a type of private investment vehicle with wider investment latitude than other institutional investors. Minimum capitalisation requirements are required in order to invest, thereby limiting its membership to high net worth individuals.

¹⁴³ In the past years, countries like Peru have taken a stronger presence at the PDAC conference to elevate the country’s profile as a mining-friendly state. Peru was the first ever country sponsor at the PDAC.

¹⁴⁴ The Core Shack booths in the Investor Exhibit Space is only open to exploration companies, mid-size and large producers, oil and gas companies, prospectors, stock exchanges, brokers and financial institutions according to PDAC rules, with priority given to publicly traded companies.

Figure 17. The ‘Core Shack’, Investor Exchange Exhibit Space at the Prospectors and Developers Association of Canada, 2014



SOURCE: AUTHOR'S PHOTO.

Research, an investor group noted, the “less obvious—but more important side of the PDAC”—are the networkings and business meetings, held on the sidelines and in the aftermath of the event “behind closed doors” (Katusa, 2012).¹⁴⁵

Aside from the PDAC, precious metal and gold-specific events widely attended by top gold producers included those sponsored by the largest banks and investment firms such as Scotia Capital, CIBC, RBC Capital Markets, Merrill Lynch, JP Morgan, Goldman Sachs, and CitiGroup which increased in frequency by mid-2000.¹⁴⁶ These more intimate gatherings are well-attended by key precious metal or gold-focused investors and top executives of mining companies. The Denver Gold Forum, perhaps the most important and prestigious gathering for gold producers and institutional investors, is by invitation only and is highly exclusive, limiting its attendees to ‘qualified institutional investors, equity research

¹⁴⁵ In my experience attending the PDAC for two consecutive years, large mining companies, and banks with investments in mining (e.g. Scotiabank) sponsor invitation-only ‘cocktail receptions’ in the evenings that allow for greater interaction among key players in the mining sector.

¹⁴⁶ Investor presentations are detailed in company webpages, showing the key events where companies have presented before investors.

analysts and select members of the financial media', excluding other members of the investment community such as 'investment bankers, marketing and IR firms, and corporate finance companies' (Denver Gold Forum, 2016). In these spaces, companies present before the world's largest 'institutions', and hear out their investment interests and expectations.

For institutional investors, hedging practices by mining firms weaken a company stock's sensitivity to the gold price thereby limiting the potential for speculation. Institutional investors desired 'full exposure' that required of firms the withdrawal of hedges. Internally, 'de-hedging' was also a key re-alignment assumed by mining companies to make sure that future production can take full advantage of the higher gold price (and thus increase profits) as optimism on expected future surplus value from de-hedged production increased. In Barrick's case, de-hedging was expected to boost its share performance by giving a clear signal to investors that the company was 'poised to benefit in 2004 and beyond' from expected price increases (Barrick Gold, 2003b). In its 2004 annual report, Barrick laid out its plans "to restore [the] company to its historic position as the investment of choice in the world gold industry" through a no-hedge policy (ibid):

"For most of Barrick's history, forward sales were a significant element in providing the Company the predictable revenue that helped fuel our growth. Barrick has a solid portfolio of assets and a very strong financial position, so as times changed and market sentiment imposed a penalty on derivatives of all types, we took a major step in late 2003, adopting a no-hedge gold policy. This means that we will not add any new ounces to the program, and will pursue opportunities to reduce our position to zero over time." (Barrick Gold, 2003b)

While Barrick began to reduce its hedging programme as early as 2003, as it itself re-considered its prognosis on gold price movements, it maintained some hedge to protect part of its future production from price drops. In the case of its long-life project Pascua Lama, it entered into a 6.5 million-ounce gold sale con-

tract that hedged 35 per cent of the Pascua Lama production to guarantee a predictable cash flow. But as the gold price rose higher in late 2000, the company faced pressure from shareholders and potential investors. A banker close to Barrick was quoted by the *Globe and Mail*, a Canadian newspaper, to have said that “Every institution Aaron [Barrick’s CEO] met said, ‘Get rid of the hedge book’” (Hoffman, 2009). Barrick finally bought back its hedges in 2009, using a \$4 billion stock issuance to cover the cost. The equity issue was made on the back of institutional investor interest to gain leverage to de-hedge production (and with it, the expectation of future production from the largest gold producer fully benefitting from high gold prices). During this time, company ownership became diluted and spread to a much more diverse group of institutional investors. The largest owners held well below 10 per cent (considered a metric for controlling interest in a firm), falling within a range of only 3 to 5 per cent of total outstanding shares. But despite this broadening of ownership, institutional investors as a class owned 61 per cent of the company. This shift in ownership combined with a commitment to a no-hedge policy strengthened the dependence of Barrick on institutional investment, a re-configuration in industry-finance relations deemed at the time to be the ideal arrangement through which value can be maximised.

5.5 CONCLUSION

The chapter takes a historical look at Barrick’s evolution as a gold mining company. By situating the company in the reorganisations of the 1980s and 1990s, we see how its stature as the industry’s leading gold producer has been achieved in large part through mergers and acquisitions rather than organic growth, drawing from the strength of stock markets at the time to fund such manoeuvres. The parallel evolution of financial markets, with the entry of institutional investment in stock exchanges, and the availability of financial instruments to boost earnings were important for the emergence of larger companies (i.e. through mergers and acquisitions) and to fund the expansion required to move mining operations overseas. Commercial banks, institutional investors and

central banks have in turns facilitated Barrick's growth and eventual dominance in the industry.

Barrick's hedging practice allowed it to determine the price to guarantee and compound its future earnings, cushioning it from gold price volatility and the prohibitively low gold prices of the late 90s, and securing the realised value of its production. With central banks taking on the role of 'creditors', the gold bullion was mobilised as a loan, providing the company very favourable interests rates (thereby increasing further its realised income) and flexible delivery dates. It is interesting to note that Barrick emerged as the most profitable company, and with high levels of production, under such conditions. By fixing the gold price above the spot price and production costs (that determines M'), and very permissive terms for bullion loans (M), the company was able to expand its operations, and increase its production, while keeping up with its loan commitments. This coordinated arrangement of money capital (between companies, bullion banks and central banks) also insulated production from the contradictory behaviour of individual capitalists (i.e. institutional investors) and catered better to the requirements of long-term production. $M-C-M'$ ran its course predictably over this period, under exemplary circumstances that diverged from the normal requirements of money capital (i.e. in turn-over time and interest rates) and buffered from the turbulence of commodity market prices.

The desirability of hedging, however, was diminished as its utility and value came to be questioned and penalised in an environment of higher gold prices. While Barrick embraced shareholder value creation or maximisation in the early 90s, dividend payments were secondary to growth motives. It was during the boom period that it rolled back its hedges and re-aligned its operations to the requisites of more short-term institutional shareholders. It is evident here how the relations between industrial and financial elites converged or diverged in response to changing macro-economic conditions and opportunities. Equally evident is Barrick's active management of the financialised component of its activities, re-scaling the insertion of its activities in financial circuits as may be needed to maintain its dominance and competitiveness, strategies that were as impor-

tant as its productive activities. This dual role in production and financialisation moreover illustrates how a gold mining firm is not simply an entity in the business of extracting a commodity, but also serves as an extension of financial interests in economic and social reproduction.

In chapter 6, I look at Barrick's flagship project Pascua-Lama in Chile, one of the properties it inherited in the 1994 Lac acquisition. I illustrate how different financial strategies, from Barrick's hedging practices to the maximisation of shareholder value as discussed in this chapter, lead to the remaking of mineral projects. The linkages between financial strategies and material transformations will be the focus of the next chapter.

CHAPTER 6

Re-making Pascua Lama

“Over the centuries, the pursuit of gold in South America has inspired exploration and established international trade routes. Yet early discoveries only scratched the surface. Barrick’s focused approach to development and modern mining methods will achieve higher production volumes than those pioneers could have dreamed possible.”

BARRICK GOLD, 1994

Pascua Lama has all the makings of a world-class deposit, the next ‘Gold-strike’ as the company marketed it to investors in reference to its longest running gold mine in Nevada. The Goldstrike mine has been in operation since the early years of then-Barrick Resources, an up and coming gold mining company in the 1980s that was poised to challenge the established gold producers (see Chapter 5). Goldstrike brought the company to high levels of productivity throughout the late 80s up to the present, ‘with no end in sight’ in the resources it contains (Barrick Gold, 2013: 2). Billed as ‘the world’s largest, lowest cost gold mine’, Pascua Lama was set to be the company’s next flagship asset, a cornerstone in the company’s future gold production. With its high reserves and a projected mine life of at least 25 years (more than double the life of the average gold mine)—it ticked the boxes for a category ‘tier-1 asset’. It is amongst the largest undeveloped gold

deposits in the world at 11th place, and third in Latin America after Cerro Casale (Chile) and Las Cristinas (Venezuela) (Natural Resources Holdings, 2012). As part of its core portfolio, Pascua Lama has been the focus of capital spending since 2009 when it entered construction, with over \$5 billion spent on the project so far—a cost that has been justified by the company to shareholders on the basis of its projected returns. In its 2012 estimates, approximately 18 million ounces of gold reserves (excluding resources) were estimated to lie under the surface, worth approximately 30 billion dollars in 2012 gold prices. [To visualise this, it equates roughly to the size of a cube of about 3 meters on each side.]

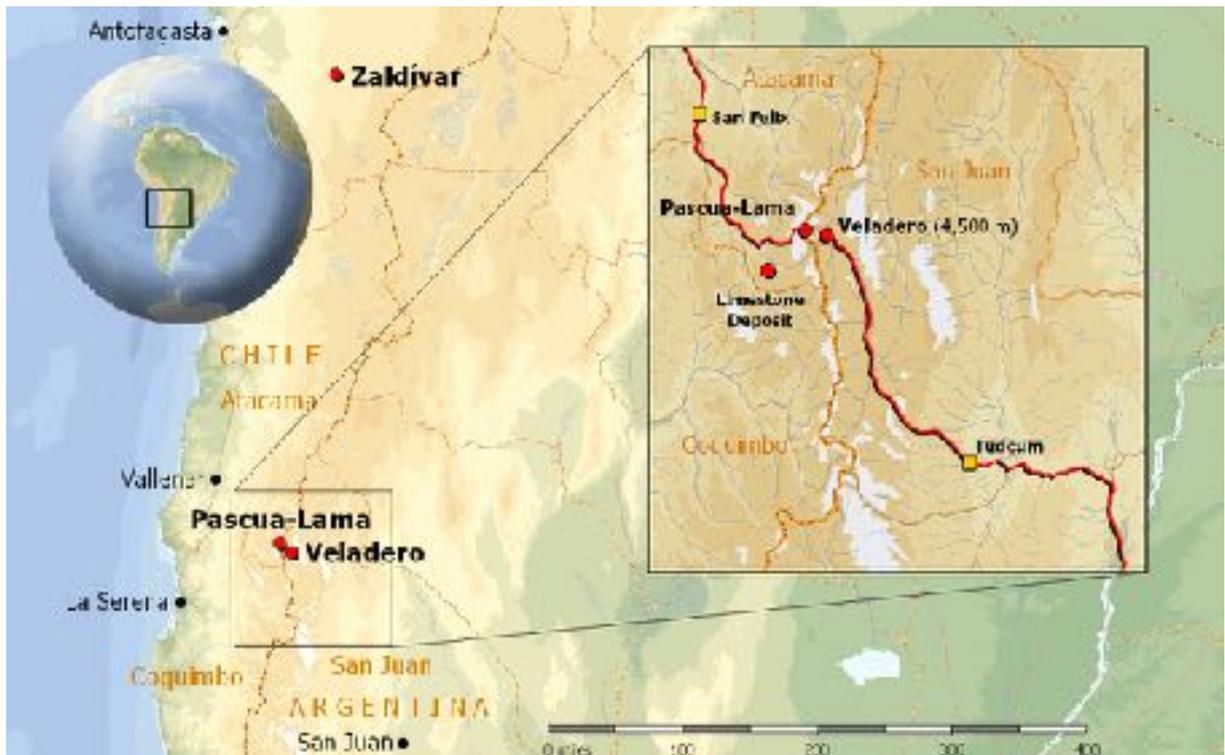
Years later, at the Annual Conference of the Prospectors and Developers Association of Canada in 2015 in Toronto, Barrick's Chief Sustainability Officer Peter Sinclair faced investors and industry players to discuss the stalled Pascua Lama project. Weighed down by cost overruns and embroiled in legal battles in Chile, the company placed the project under care and maintenance in November 2013. The challenges were substantial: it is “probably one of the most complicated projects I think in the world”, remarked Mr. Sinclair, “it is a bi-national project so it sits right at the border of Chile and Argentina. The project therefore has to deal with two regulatory authorities, two ESIA¹⁴⁷s, two approval processes, two reviews, two governments, two stakeholder groups, two communities, there is twice everything in this project...”.¹⁴⁸

Its development took almost two decades following political and legal challenges and its costs spiraled from an initial estimate of \$1.2 billion (in early 2000) to over \$8 billion dollars. The project was also faced with considerable natural challenges. It is located at almost 5,000 meters above sea level in the Tercera Region (Region III) of Atacama in Northern Chile (see Figure 18). Working conditions at such high elevation are inhospitable. ‘The air is thin’ (as Mr. Sinclair described it); it is difficult and costly to move goods up and down; and in winter, work

¹⁴⁷ ESIA refers to the Environmental Social Impact Assessment, a permitting process for identified environmentally sensitive activities.

¹⁴⁸ Remarks at the Prospectors and Developers Association of Canada Conference in Toronto, March 2015.

Figure 18. Map of Pascua Lama in Chile and Argentina



SOURCE: MINING MAGAZINE, 2015

grinds to a virtual stop, slowing down the construction process. Strong winds in high altitudes have also led to increased dust in the mine's open pit that disrupted pre-stripping work. Moreover, water is an important issue in the 600-mile Atacama region, the world's driest desert. To sustain operations for large scale mining, additional infrastructure is required to source water from the sea and for its desalination.¹⁴⁹ Energy cost in Chile is one of the highest in Latin America, and the mining industry is its largest consumer (KPMG, 2014). Powering the movement of seawater up to high altitudes has been one of the most expensive expenditures by mining companies operating in the region.¹⁵⁰

Within the industry, the Pascua Lama project now stands as a cautionary tale on the layered difficulties encountered in mineral extraction. It is considered one of the most controversial projects in Latin America and has become a 'paradigmatic example' of conflicts emanating from the resource boom (Urkidi, 2010; see also Gordon and Webber, 2008; Urkidi and Walter, 2011). Developing Pascua Lama

¹⁴⁹ Interview, Chilean mining engineer, November 2014.

¹⁵⁰ Interview, Chilean mining engineer, November 2014

brought about wide-scale transformations: livelihoods, the environment, and territory were altered in service of (or to make way for) large-scale mining (Arboleda, 2015). The nature of these interventions, as I argue in this chapter, must be seen as attempts to reconcile the imperfect fit between subsurface mineralogy, claims over territory above ground (the material bases of production) and the operational scale required to deliver on its anticipated future value assessed based on high cash flow and shareholder returns (the maximisation of surplus value). The Pascua Lama project is embedded in place *and* in the caprice of fictitious capital in financial centres of power. It is a space of encounter: financial expectations of cash flow and shareholder returns are enacted through particular material, social and political configurations which can facilitate and/or stand in opposition to its realisation.

Firstly, I situate the project in the context of firm competition in the stock markets of North America, where financial strategies of mergers and acquisitions have become the means to expand geographically. Pascua Lama was the result of an earlier acquisition of Lac Minerals in 1994 that secured an important foothold for Barrick Gold to expand into the South American region. The change in ownership has fundamentally transformed the project— from a modest 1.8 million reserve deposit into an 18 million ounce mega-project as the company deployed tremendous capital and stretched the affordances of labour and technology to remake the Andean gold belt. Pascua Lama in this regard was as much the result of the centralisation of capital as it is that of the hundreds of millions of years of ore formation in the Andes.

Secondly, mineral extraction is mediated by place-specific political and economic arrangements. States are critical, ‘extra-economic’ actors (Bridge, 2013) that must be wooed to produce an extractive space that is amenable to the requirements of accumulation—a political re-working that Barrick pursued. Although Canada, Chile and Argentina are ‘traditional’ mining states that have adopted mining-friendly policies, making Pascua Lama work required scale and operational synergies that can only be realised through a porous border. This entailed the creation of a new extractive space in the Andean border, inked through the *Tratado*

de Integración y Complementación Minera (Treaty of Mining Integration and Complementation) in order to allow for the cross-national mineral development that the project requires. I follow this with Barrick's attempts to stabilise control over this new territory (within the ambit of the Pascua Lama protocol) amid demands by communities and regulatory agencies, and its creation of a labour force assembled along the lines required by its operations.

Lastly, I link these material transformations to developments in the stock markets. The inclusion of Pascua Lama in Barrick's portfolio signalled its integration in the largely speculative markets of the Toronto and New York stock exchanges, freeing up finance capital for its development alongside expanding speculative claims on its future value as new ounces were uncovered and fitted to investment returns. The strength of the stock valuation accorded it had the effect of expanding capital circulating prior to it entering production, even as it sets in motion transformations that signalled commitment to the production of surplus value. Financial and physical geographies are linked in this sense, opening up distant places to the intensity of finance capital—and its vagaries—while rendering finance capital vulnerable to the uncertainties of mineral extraction. I use the Pascua Lama case to foreground this relation of mutual co-production and co-evolution.

6.1 CONQUEST BY ACQUISITION

The Pascua Lama project is located in the El Indio Belt in the Andes, straddling the border of Chile and Argentina at an elevation ranging from 4000 to 5,260 meters above sea level. It is a transnational mine, the first of its kind, and was set to be one of the most ambitious—and expensive—mineral projects in the gold mining industry. 75 per cent of the estimated reserves and resources are in Chile (the Pascua side) and 25 per cent in Argentina (the Lama side). The camp-site construction and processing were set to take place at Barrick Gold's nearby Veladero mine in Argentina.

Despite its apparent physical and social challenges, developing Pascua Lama was critical for the company. The project promised tremendous growth opportunity and, in the company's estimation, would have ensured Barrick's dominance as the largest producer in years to come. Millions of ounces are needed to replace the reserves it mines every year to maintain the same level of production in the future, ounces that are difficult to bring about through exploration or organic growth. The approximately 18 million ounces of gold reserves that Pascua Lama contains present a sizeable contribution to its total reserves. The large presence of silver alongside gold also sets it to be the one of the largest silver projects in the region.

Large mining corporations act to expand control over geographies critical to their growth. Latin America emerged as an important region for Canadian mining investment in the 1990s with the opening up of new geographies for mineral investment (Bebbington and Bury, 2013; Bridge, 2004; Gordon and Webber, 2008). While Canada itself has a long mining tradition stretching back to its colonial history, the strong presence of Canadian firms abroad has been facilitated by Canada's pursuit of international and bilateral free trade agreements that helped provide the legal and institutional support to the increasingly outward orientation of Canadian mining investment from the 1990s. As a consequence, between 1990 and 2000, the share of Canadian companies in mineral investment in Latin America grew from 12 per cent to 33 per cent (Clark, 2002). Pascua Lama was part of a suite of properties that came under the control of North American mining companies in Latin America during this period.

Although mining activity is not particularly new in Latin America, "the region of open veins" as Eduardo Galeano (1971) phrased it, referring to Latin America's contribution to capitalist development in Europe and the United States (see also Andre Gunde-Frank, 1967)¹⁵¹, modern day mining in an era dominated by finance capital is marked by important differences. In contrast to the earlier conquest of

¹⁵¹ Another key similarity is that mineral resources like gold are consumed by key (and emerging) centres of power. The export of the doré bar and gold concentrates are almost entirely for the consumption of Western countries and the rising economies of the East.

the Americas, where territories are acquired by ground force to gain proprietary rights, the El Indio belt that run the border of Chile and Argentina (that includes the then-Pascua property) has been fought over in the stock exchanges of Toronto and New York, with the winners able to define these areas to their strategic advantage. Acquisitions, not territorial conquest, have become the financial route of expanding claims to territories and integrating new geographies into new, ‘cheap’¹⁵² sources of value.

Pascua Lama came with the acquisition of Lac Minerals in 1994. It had a long history, even pre-dating Barrick’s inception as a gold mining firm. Industry accounts date it back to the 1970s, and it has changed hands and names several times since then. Pascua Lama is formerly known as Breccia Central, Breccia Oeste, Breccia Sur, El Nevada or Nevada sector, Esperanza, La Friolera, Penelope, Quebrada de Pascua reflecting the consolidation of overlapping/adjacent claims to the area it occupies and the history of acquisition prior to Barrick’s purchase of the company Lac Minerals that owned the project.¹⁵³

No prior production history has been documented in the area covered by Pascua Lama, but it has been the site of multiple exploration activities by several firms. The first recorded exploration took place in 1977, as interest in gold rose following the end of the gold standard. St. Joe Minerals and its subsidiary Compañía Minera San José (CMSJ), along with other smaller companies, undertook exploration activities in the area in search of gold vein deposits. Anomalous levels of gold mineralisation were discovered which subsequently led to the company acquiring the property (then called Nevada Sector/El Nevada). In the Argentina side, exploration was conducted by St. Joe through its subsidiary, Compañía Mineral Aguilar S.A. (CMA). In 1987, Bond Gold International, an Australian company, acquired St. Joe and expanded the exploration programme until it was itself acquired by Lac Minerals, a Canadian company, in 1989. Lac Minerals built

¹⁵² Cheap in the sense that the appropriation of commodity frontiers provides fresh sources of unpaid work from human and extra-human nature, as defined by Moore (2015).

¹⁵³ Information from the Raw Materials Group database, cross-checked with Barrick Gold’s 2005 and 2011 Technical Report on the project (Barrick Gold, 2005b and 2011b). Also see Silver Wheaton (2009).

on the previous work undertaken by Bond Gold in the then-named Esperanza deposit to locate and determine the grade of the reserves. Wide space drilling and tunnelling were carried out into the early 90s and, after locating additional mineralisation, budgeted exploration was increased to \$2.2 million to expand the ore zone. Lac Minerals then advanced the project into feasibility studies, just prior to Barrick's acquisition in 1994.

Box 5 shows a timeline of key historical events for the project as shown in Barrick's Technical Reports.

Box 5. History of acquisition and exploration activities in Pascua/Lama

- **1977** 'Discovery' of St. Joe and CMSA
- **1982** Joint Venture between CMSA, Anglo American and Compañía Minera Mantos Blancos
- **1984** Anglo American withdrew from the Joint Venture
- **1987** Bond Gold International acquires St. Joe
- **1989** Lac Minerals acquired Bond and its holdings in Chile and Argentina
- **1994** Barrick acquires Lac Minerals

SOURCES: BARRICK GOLD'S TECHNICAL REPORT 2005B AND 2011B; SILVER WHEATON, 2009.

The acquisition of Lac Minerals was an important step in Barrick's international growth and expansion. Having previously focused and capitalised on its position as a North American firm (see Chapter 5), the company moved to stake a parallel position in the South American region: to 'control...the largest land position on the best gold belt' (Barrick Gold, 1994: 6) as Barrick explained to its shareholders. Lac Minerals holdings in North and South America were sizeable, considered 'large enough to have a measurable effect on reserves, production, earnings and cash flow' (ibid: 8). For Barrick, "the future lies in South America" as the "new engine of growth for the next decade",¹⁵⁴ following Chile's political transformation to a neoliberal model (Diebel cited in Ismi, 1997; also see Clark, 2006). In making a bid for Lac, Barrick was favourably positioned since it is more highly

¹⁵⁴ Quote from Barrick's Chairman Peter Munk in a 1996 Shareholders Meeting.

capitalised than other competing firms.¹⁵⁵ Barrick inherited approximately 13 million ounces from the combined North and South American mines. The issuance of shares to finance the Lac acquisition (which increased the supply of company shares on the market, therefore diluting the earnings and cash flow that accrued per share) was justified by Barrick on these grounds—it increased reserves by 44 per cent (the source of future surplus value), which was expected to offset shareholder dilution (the depreciation of value per share) from the 23 per cent increase in its outstanding shares (Barrick Gold, 1994: 8).

Mergers and acquisitions lead to the centralisation of capital. Firms compete, are taken over by or merge with larger firms in contests that result to fewer firms in operation. Marx has argued how this, on the one hand, can result to “a mere change in the distribution of capitals already existing; from a simple alteration in the quantitative grouping of the component parts of social capital” (Marx, 1867: 627). Yet, centralisation, he allows, “completes the work of accumulation by enabling industrial capitalists to extend the scale of their operations” (ibid). It is “the starting point” for “a more comprehensive organisation of the collective work of many, for a wider development of their material motive forces – in other words, for the progressive transformation of isolated processes of production, carried on by customary methods, into processes of production socially combined and scientifically arranged” (ibid). The accumulation process is a slow feat and the fusing of capitalist units through takeovers and mergers accomplishes what would have taken years to realise. For mining companies that choose to grow organically by searching for minerals themselves, the uncertainties of discovery and replacement pose a threat to sustained accumulation. Acquisition such as that embarked on by Barrick aggregates decades of work to locate reserves in a single firm through a process of expropriation. The physical and financial assets inherited from the smaller firm are concentrated in a larger entity, assembling expertise, technology, and extractive methods in powerful new ways.

¹⁵⁵ Royal Oak Mines also attempted a hostile takeover of Lac Minerals but shareholders voted in favour of Barrick.

Mergers and acquisitions are materially transformative in this sense.¹⁵⁶ As more financial resources are allocated to explorations, machinery and personnel, a mineral project can be exploited to an extent that is optimal for returns on capital. The project can be re-scaled, impacting the contained resources and reserves — a company's claim to surplus value. Acquisitions are therefore important moments by which extractive spaces are re-made to extend or re-establish the material basis upon which value can be drawn.

Following the acquisition, Barrick as the new owner immediately slated half a billion dollars for the next 3 years for the exploration and development of the El Indio belt in Chile to establish and uncover additional reserves. At the time, the property spanned 500 square miles that covered 75 per cent of the El Indio belt in the Andes mountains, expected to be a prime district for gold, silver and copper deposits. The Pascua mineral project sits at the north of the El Indio and Tambo mines that together comprised Barrick's El Indio properties. From 1994 to 1999, the company undertook exploration activities in the Pascua side to define the extent of its mineable reserves. Additional surface RC and diamond drilling followed new zones of mineralisation in the Argentine side of the deposit in the Brecha Frontera or the Lama side, leading to Barrick acquiring Exploraciones Mineras Argentinas S.A. from Minera S.A. This gave Barrick 100 per cent ownership of the deposit and mining concession. Following additional testing and drilling at depth, the reserves jumped to 17.1 million ounces in 1999 from a 2.3 million ounce deposit in 1994. An interview by *Globe and Mail* with Luis Baertl, the former head of development at Pascua Lama, captured sentiments akin to the gold rushes of the past as “the dimensions of the fat seam of gold beneath the ice and silt seemed to expand with every test drill they sank” (Nolen, 2014). This was echoed in a company press release with Alan Hill, Barrick's Executive Vice President of Development, announcing enthusiastically that:

¹⁵⁶ In my experience assessing mineral projects with SNL Metals and Mining in London, the largest change in both historical and projected production figures, excluding cases of fraud, accidents or unexpected closure, occur in the context of mergers and acquisitions.

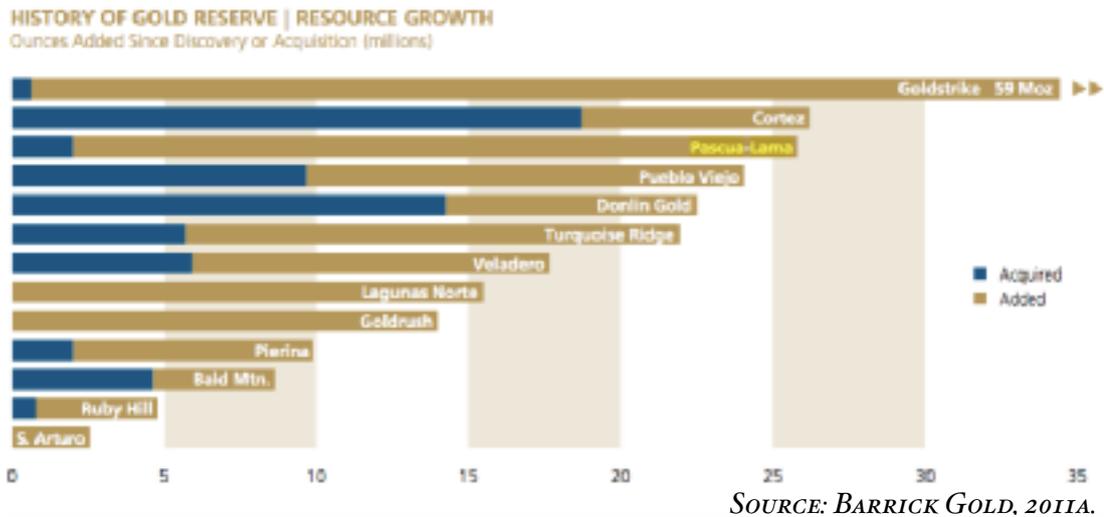
“Pascua's robust economics are proving to be tremendously exciting for us. Our success in increasing gold and silver reserves again this year have made this project even more compelling - it should be the world's lowest cost gold mine...And its potential is still unfolding.” (Barrick Gold, 2000)

With millions of reserves added every year, the project was single handedly the company's largest contributor to reserves growth. This intensified Barrick's stake in the area, and shaped its acquisition strategy: to control adjacent properties held by other companies. 10 kilometres down on the Argentinian side was the Veladero mine jointly held with Argentina Gold (60 per cent ownership; 40 per cent by Barrick¹⁵⁷) which was successfully acquired by its competitor, Homestake Mining in 1999, foiling its own plans for consolidation. In 2001, Barrick acquired Homestake which gave it full ownership of Veladero mine, an acquisition reported to be influenced by considerations of ‘operating synergies’ in the Andes (Heinzl, 2001). Indeed, following the Homestake merger, Barrick deployed an “integration team” with a “focus on developing Pascua and Veladero as a single, unified gold district, with the benefits that provides in the form of lower capital and operating costs” (Barrick Gold, 2001).

6.2 MAKING A WORLD-CLASS ASSET

The scale and intensity of capital and labour deployed towards Pascua Lama's development dwarfed any previous endeavours to create an extractive space in the area. Barrick had greater financial strength as a large corporation, helping it advance the project by outmatching the combined efforts of all previous owners of the property. Prior exploration work by St. Joe's and Bond Gold was hampered by financing issues that slowed down development of the project. Attempts to resolve this paved the way for joint explorations being forged in the 1980s. The involvement of Anglo American, a large mining company, in 1982 to 1984 initially bolstered exploration efforts towards identifying high-grade gold veins that were amenable to underground mining, but its withdrawal stalled ex-

¹⁵⁷ 40 per cent ownership of Veladero came from Barrick's acquisition of Lac Minerals.

Figure 19. Reserve ounces added following Barrick's acquisitions

plorations until the mine was acquired by Bond Gold (Silver Wheaton, 2009). Under Lac's ownership, which had more capital at its disposal, drillings increased significantly, but exclusively in the Esperanza area. The expansion of the project into an 18 million ounce deposit (see Figure 19) took place under Barrick's management, as sustained efforts to locate reserves, acquire firms operating in nearby locations, and optimise project economics turned it into a 'world-class asset'¹⁵⁸.

The determination of reserves makes the invisible space underground visible in both physical and economic terms. Since mining always carries an element of speculation ("you never really know how much is there until you get it out of the ground")¹⁵⁹ reserve claims are regulated and must be supported by 'bankable' studies—sufficiently accurate and detailed in assessment that (as defined by instrument NI 43-101) "it could reasonably serve as the basis for a final decision by a financial institution to finance the development of the deposit for mineral pro-

¹⁵⁸ While Barrick placed the project officially 'on hold' in 2001 following low metal prices, metallurgical testings and samplings continued as reported in its official filings.

¹⁵⁹ As remarked by Dennis Buchanan at the Guidelines to Exploration and Mining Investment course in Stockholm, Sweden, held in April 2013.

duction”.¹⁶⁰ The progression of studies that precede reserves definition—scoping, pre-feasibility, and feasibility studies—expands the knowledge upon which claims can be built and the degree of confidence on its accuracy. The process can take a few years and the costs involved increases from one step to the next, involving millions of dollars on average depending on the complexity of the project (thus making projects held by smaller firms difficult to advance to a feasibility stage). Aside from capitalisation, establishing the potentiality of the underground and determining the most optimal design for its extraction require a patient rebalancing of what capital requires and nature permits. As a company that is itself the product of multiple mergers and acquisitions, Barrick employed the concentration of technology and talent within its ranks for Pascua Lama’s development. It hired the top people for the job and Chile’s leading contractors, and through acquisitions of junior companies already steep in prospecting in the area, it was able to build on their experiences at locating mineralisations in these districts, given its unique topology and mineral make-up. Leveraging its expertise in open-cast mining, and the distribution of mineralisation permitting, it changed the original underground mine design of Bond Gold and AngloAmerican, converting it into an open-pit mine as the more economic option that allowed for full-scale exploitation of the mineral deposits (Barrick Gold, 2005b).¹⁶¹ Financing for additional exploration and feasibility studies were not hindrances for Barrick. Being a large miner, it could afford the time and costs necessary to explore further, to expand the previously defined perimeters of the deposit, as well as optimise and re-design its methods, processes and infrastructures.¹⁶²

¹⁶⁰ The National Instrument 43-101 sets out the Standard of Disclosure for Mineral Projects in Canada, covering all national and foreign firms trading in Canadian stock exchanges. The instrument codifies industry rules on reporting and publication of mineral resources and reserves, results of mineral exploration, among others. The NI 43-101 defines a feasibility study as ‘a comprehensive study of a mineral deposit in which all geological, engineering, legal, operating, economic, social, environmental and other relevant factors are considered in sufficient detail that it could reasonably serve as the basis for a final decision by a financial institution to finance the development of the deposit for mineral production’.

¹⁶¹ The near surface occurrence of ores (determined to occur between 4,420 to 4,960 meters) allow for an open pit design that will flank both countries.

¹⁶² Interview, mining contractor, October 2014.

Natural challenges were countered with investments in technology, infrastructures, and the commissioning of numerous studies. Gold in the area existed mainly as a native metal and was the result of repetitive intrusive volcanic activity hundreds of millions of years ago (Barrick Gold, 2011b: 11). As a high-sulfide epithermal deposit, gold and silver were the two main metals in existence considered economic to extract. The deposit contained ores that were ‘very complex’, by Barrick’s own admission, ‘from highly oxidised ore where the gold and silver can be recovered by conventional cyanide leaching, to highly refractory ore where the precious metal recovery is unacceptably low’ (Barrick Gold, 2005b: 64). Barrick firstly focused on non-refractory ores (as was done by its predecessors, as they are considered simpler and cheaper to extract) but found the project uneconomic. Between 1996 to 2000, the company invested in developing a process that is able to handle the metallurgical characteristics of both types at a more economic cost. Two different methods of extraction were planned, with non-refractory ores to be processed by direct cyanide leaching while refractory ores subjected to an additional flotation process. These measures allowed for the integration of refractory ores in its reserve base, increasing the company’s claims to mineable reserves.

Whereas earlier explorations by other companies were hampered by a seasonal time frame, with activities conducted between September to April to correspond to the summer months in South America, Barrick’s exploration commenced virtually unimpeded. The company constructed a 4 kilometre tunnel, called the Alex Tunnel, that gave it full-year access by bringing its exploration underground. This allowed it to intensify its activities, carrying out diamond drilling, mapping and metallurgical testing from 1997 to 2000 (Barrick Gold, 2011b). Barrick reported that of the 5097m of core drilling in 162 holes it conducted, only 30 of these holes have not been drilled from underground stations (ibid). Switching to underground exploration also enabled the company to build on the mineralised lithologies it encountered through surface drilling, giving the company a more ‘uniform’, more ‘tightly-spaced’ data and therefore a better grasp of the mineralisation (ibid: 62-63). As the project entered the construction phase in 2009 and activities switched overground, Barrick managed to ‘extend’ its activities beyond

the normal length of the summer season (when the construction work can advance faster). This was accomplished, according to Lucio Cuenca of Observatorio Latinoamericano de Conflictos Ambientales (Latin American Observatory for Environmental Conflict):

“through the bombardment of clouds that the company and government are making, under the guise of La Niña. These are intended to prevent snowfall in areas close to the project in order to extend the working season for the company” (The Prisma, 2012).

In order to make the most out of the summer construction season, labour was intensified. ‘Major hiring ramp up[s]’ were done every third quarter, employing new hires to speed up construction (Barrick Beyond Borders, 2013). Its mine plans were designed for full-year operations, only allowing for a 22-day adjustment for potential work days lost as a result of bad weather conditions. Equipments were developed and winter-proofed to withstand the temperatures of the Andes, which range from -25 degrees in winter (although severe winters have been reported, dropping to -38 degrees, see El Mundo, 2011) and 25 degrees in summer.

The attributes of Pascua Lama as the low-cost, high deposit asset it is known to-day is therefore equally the result of this concerted effort to shape it into the specifications that capital requires.

6.3 CARVING AN EXTRACTIVE SPACE

Pascua Lama is situated in a country considered to be mining-friendly. While Chile is mainly considered a copper country, given its large reserves and the significant contribution of copper production to mining revenues, the country has also been host to some of the largest gold projects in the region over the past decade. According to the 2008 International Gold Symposium in Lima ‘Latin America is the region where most gold prospecting took place in the world in the 1990s and 2000s (Urdika and Walter, 2011). Within the continent, Chile

has been among the top recipients of investments in gold projects, registering the most number with 10 projects in total and capturing the lion's share of the value of total investment, at 42.5 per cent (Cochilco, 2014).¹⁶³

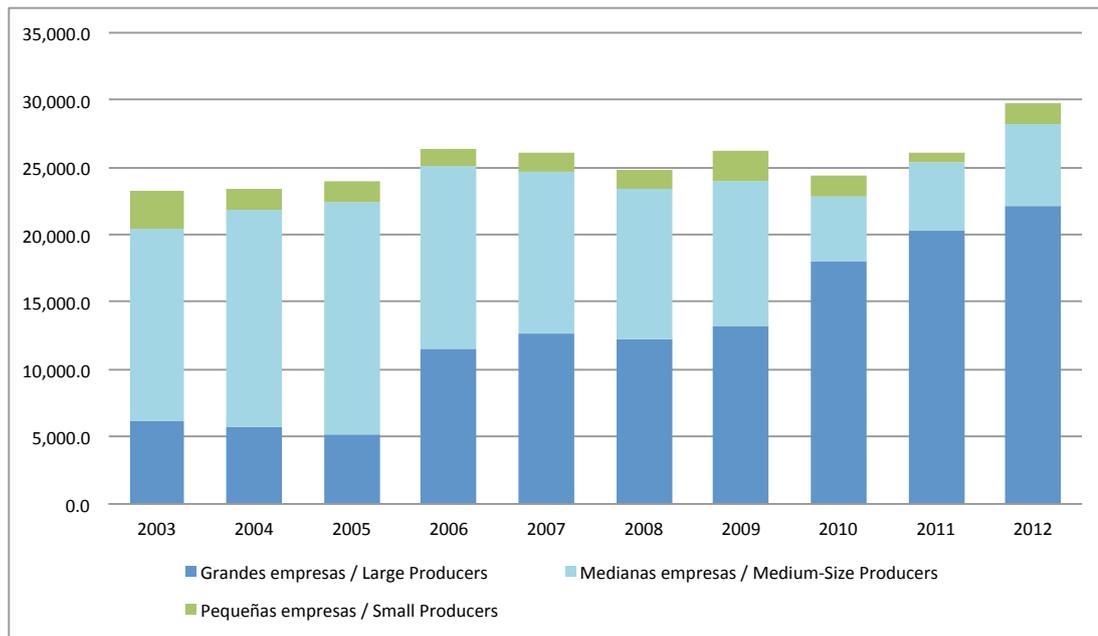
Compared to the copper industry where the state is a key player through state-owned Codelco (the world's largest copper producer), gold mining (i.e. projects that extract gold as the main product) is mainly in the hands of the private sector.¹⁶⁴ Of the country's total gold production, large enterprises have become significant contributors starting in the mid-1990s, albeit their share of production is demonstrably more volatile (Cochilco, 2012: 20)¹⁶⁵. From 2007, following the boom in mineral prices, the share of gold production by *gran minería* or large scale mining had the highest growth relative to medium and small scale mining sharply overtaking medium enterprises in the share of gold production. This is mainly due to sizeable contributions from the mineral operations by Canadian firms, that are also responsible for the largest gold investments during the boom period (*ibid.*)¹⁶⁶ With the expected production from Pascua Lama and a number

¹⁶³ In 2011, production from large projects like Pascua Lama, Cerro Casale, Lobo-Marte, El Morro and Esperanza coming into production was expected to triple the country's gold output by as much as 130 metric tonnes by 2016 that would have placed Chile among the top 10 producing countries in the world (Diario Financiero, 2011). More recent forecasts have pushed these back by 2026, but interviews with industry players, analysts and government officials in Chile have highlighted the expectations surrounding these projects, as a source of growth and employment for the country and as important precedents that would elevate the country's profile as a gold producer (Cochilco, 2015; interview, government employee, October 2014).

¹⁶⁴ Copper mines also produce gold as a secondary or tertiary metal. Even if they are not classified as 'gold projects', their contribution to annual gold production is significant, which ranged between 30 to 40 per cent between 2000-2007.

¹⁶⁵ Indeed, prior to 1998, there is no attributable gold production from large mining enterprises (excluding production of gold as a secondary metal) in the database of the Chilean Commission on Copper—a government agency that reports the official yearly production of copper and other minerals. Gold production in Chile was carried out by medium and small-scale enterprises and as a by-product in copper mining (Cochilco, 2012).

¹⁶⁶ In 2010 for example, two of the largest Canadian gold mining companies, Kinross and Yamana Gold, were responsible for 50.15 per cent of the country's total gold production.

Figure 20. Gold production by type of company, 1993-2012 (in kg fine gold)

SOURCE: COCHILCO, 2012.

of other new gold projects,¹⁶⁷ Canadian mining firms were set to increase their share further as the single most important gold producers in the country.¹⁶⁸

The strength of Canadian mining interest in Chile is strongly rooted in the social policies in place that encouraged mineral investment in the country. Indeed, while Chile holds untapped geological potential, its rank in world gold mineral reserves is not commensurate to the size of gold mining investment it captures. What tilts the balance in its favour is its mining-friendly reputation, secured by a web of free-trade agreements, binational investment treaties and national regulations that signal its openness and commitment to foreign and private mineral development in its territory. Chile is signatory to 59 bilateral and regional agreements with key trading partners, and 90 per cent of its trade occurs within the umbrella of its free trade agreements (KPMG, 2014). Its first free trade agreement was with Canada, inked in 1996, and also Canada's first free trade agree-

¹⁶⁷ Other companies like Kinross Gold, Yamana and Goldcorp also hold undeveloped gold projects in Chile, such as El Morro (Barrick Gold; Goldcorp), Lobo Marte and Esperanza, and Cerro Casale that represent significant mineral investments, with upward of \$2 billion budgeted for the development of each of these projects.

¹⁶⁸ The largest gold projects under development Pascua Lama and Cerro Casale (75% Barrick; 25% Kinross), both Barrick properties, were ranked as the largest contributors.

ment with a Latin American country.¹⁶⁹ Nationally, large, medium-size and small scale mining for all minerals (with the exception of Uranium and Thorium) are all subject to a common legal and regulatory framework. Application for a mining license is straightforward, an ‘administrative’ procedure not a political negotiation, with licenses issued by civil courts or a professional administrative body. Exploration and exploitation concessions are also very permissive, the former given an initial two years with no prior requisites for surveying or fieldwork to file an application, while exploitation concessions have no time limit as long as annual land payments are made (Baker and McKenzie, 2010; Urquiza, 2013). Royalties are kept low to attract investments, thereby maximising the gains for the private sector and the repatriation of profits to companies’ home countries. These policies secured Chile a favourable assessment in country risk rankings and business environment rankings such as the EUI and Fraser Institute that consistently placed Chile as the most attractive and investor-friendly destination in South America. The mining sector in Chile is one of the most internationalised and is a key hub for the operations and corporate business units of large mining conglomerates such as BHP Billiton, Anglo American, Freeport-McMoran, Xstrata, Barrick Gold and Kinross in South America.

The Chilean government maintains an openness to private and foreign direct investment and upholds the role of the business sector as a positive contributor to Chilean economy and development, albeit retaining key sectors under state control (Nem Singh, 2010).¹⁷⁰ Only 28 per cent of mining in the country is undertaken by the State, with 72 per cent controlled by mining companies (The Prisma, 2012). With respect to foreign investment, the Decree Law 600, crafted in 1974 the first investment regime in the country, guarantees non-discrimination between a domestic investor and a foreign investor—considered “a sacred contract”

¹⁶⁹ The agreement was signed in 1996 and came into effect in July 1997.

¹⁷⁰ Despite the country’s transition to a coalition government between Christian Democrats and Socialists (La Concertación) in 1990 that followed years of neoliberal experiments under the Pinochet regime, the democratic government has anything but overturned the key tenets of privatisation and liberalisation that guided Pinochet’s economic policy. Political scientists have argued that it was a ‘regime shift’ in institutional form—from military rule to civilian democracy—but otherwise a continuity and deepening of the free market ideology economically (Barton, 2002). This is strongly reflected in its mining policy.

between the State of Chile and the investor.¹⁷¹ This consolidated in the Chilean Mining Code of 1983 which enshrines the private property rights of the holder, allowing full and transferable ownership by foreign companies and ensures indemnity in case of expropriation.¹⁷² The Former Minister of Mines Hernan de Solminihac emphasised in an interview that it considers maintaining stability in government policy critical to attract investment in the country. Investors require guarantees in the form of “economic stability, political stability, rules that are stable in the long run because investment in mining is for a long period of time”, he commented.¹⁷³

Barrick was among the first to take advantage of the key transformations in Chile in the 1990s that created “a capital-friendly model” (in the words of Barrick’s Peter Munk, Ismi, 1997) favouring low corporate taxes and labour wages. As a foreign multi-national company, it enjoyed the same rights as other mining enterprises, both local and foreign, and was able to benefit from the competitive advantage that can be gained from a new frontier. Relatively high taxes, depleting reserves, higher environmental costs and wages underpinned the rush to new geographies in search of relative surplus value. Barrick noted, in a meeting with shareholders, how Chile represents “more profit per capita... than in any other country” as a result of its business-friendly policies and untapped resources (Diebel, cited in Ismi, 2007).

Throughout Pascua Lama’s development, the company benefited and operated under conditions of strong institutional support for its operations. Permissive mining policies allowed Barrick to develop the project following mining’s busi-

¹⁷¹ Interview with a representative of Sociedad Nacional de Minería (National Mining Society), January 2014. Sociedad Nacional de Minería (SONAMI) is an organisation composed of large, medium and small (local and foreign) mining enterprises with metallic or non-metallic operations in Chile.

¹⁷² Continuity more than change in its mining policy is apparent, despite a move to institute a new foreign investment law in 2015, Law 20,780, which is more of the same in its promotion and protection of foreign investment in Chile while dispensing with some of the privileges found in the Decree Law 600. Also, mining investments which are valued well above the threshold of US\$50,000 dollars will continue to enjoy invariability in taxation regime for 15 years.

¹⁷³ Interview, Hernan de Solminihac, Minister of Mines - Chile, October 2014.

ness cycle: advance the project as prices are high, shelve it (with no work commitments required to maintain the validity of the exploitation concession) and resume the project when gold prices recovered as it (partially) did in early 2000. But Barrick is not merely a passive beneficiary of mining-friendly policies. It also actively re-worked the socio-political landscape of Pascua Lama's operations. As a leading mining firm with a multi-billion investment, it managed to secure the highest level of government backing. This proved critical as making Pascua Lama possible required the creation of another treaty, the Tratado Minero or Mining Integration and Complementation Treaty, between Chile and Argentina that overturns the terms of sovereign land—a necessity if Barrick is to move forward with its development. With the resources split between the two countries, the company was faced with the challenges of cross-border mining operations. The Chilean side contains most of the resources, but its potential can be maximised by exploiting the entire deposit. As Juan Carlos Guajardo, director of Centro de Estudios del Cobre (Centre for Copper Studies or CESCO), explained in an interview conducted by Wharton University:

“Since a large part of Pascua Lama is located in Chilean territory, it would theoretically be possible for the exploitation to be done only in Chile. Nevertheless, from the geological point of view, this is a single deposit that should be simultaneously operated in both Chile and Argentina in order to maximise output and take full economic advantage.” (Wharton, 2009)

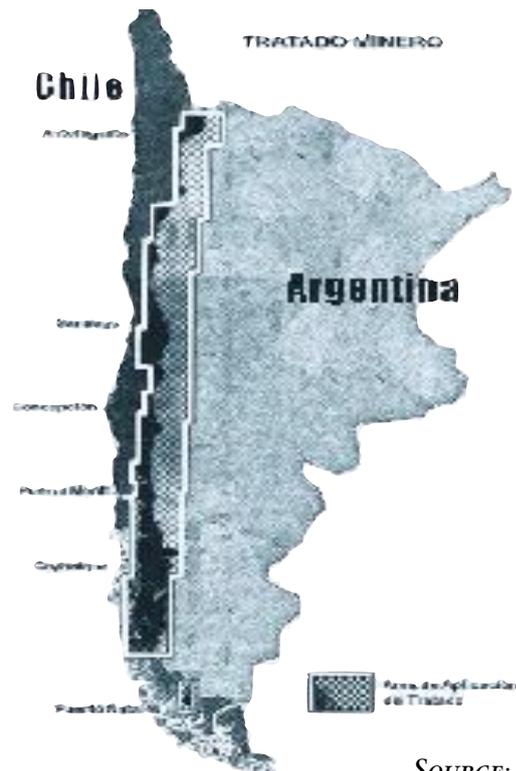
An interviewee with knowledge of the economics of the project affirmed this:

“It doesn't make economic sense to develop Argentina [the Lama side] separately. There is only one project, and the numbers are for one project, and it involves both sides of the border”.¹⁷⁴

In Chile, Barrick commissioned an “intense” corporate lobby work through the “influential lobby group” Extend to promote the mining treaty (Clark, 2006:

¹⁷⁴ Interview, January 2014.

Figure 21. Area of application of the Chile–Argentina Mining Treaty



SOURCE: SOBERANIA CHILE, 2006.

104). The draft of the treaty itself was reported to have been put together by the company's legal team and lobbyists (ibid). Signed in 1997 and ratified by Argentina and Chile in 2000, the Mining Integration Treaty sets out the terms for transboundary mineral development in the cordilleras—the Andean mountain range that ran the border of the two countries (see Figure 21). The treaty carves out a mutual, borderless territory that blurs the boundaries of sovereign lands to create a new extractive frontier conducive to mining capital and investment. As a legal instrument, and with a transnational mining project like Pascua Lama as blueprint, it reworks the sovereign rights of individual states over parts of shared natural resources occurring within their territories. It frees up approximately 340,835 square kilometres for mineral operations, surrendering 180,165 square kilometres of Chilean territory (or 25 per cent of Chile's total) and 160,670 square kilometres of Argentina's (or 6 per cent of Argentine land) to private and foreign ownership. The treaty included a provision for the creation of an Administrative Commission as a governing body, creating a 'virtual country' with powers to implement the treaty in full by granting mining concessions and adjudicating disputes, and with its own internal rules over resources that occur within the

treaty area. The treaty has a singular focus on mining and its development, particularly by private mining companies. As Cristián Letelier Aguilar, a lawyer of the Sociedad Nacional de Minería was quoted to have said before the Chamber of Deputies in Chile, “this Treaty has the peculiar characteristic of being the only work under Public International Law that contains implementing rules that are entirely for corporate and private interest” (Marin, 2009).

The treaty was intended to pave the way for the development of bi-national projects that can exploit areas previously considered inaccessible and uneconomical due to the high altitude and cross-boundary logistics. While it is limited to mining, it covers mining-related activities as may be required by exploration and exploitation activities. It extends towards considerations of economic feasibility for mineral projects (i.e. factoring in logistics and access to water), and the mobility necessary above ground to extract fixed minerals. Under the treaty, over 20 frontier mining projects qualify for exploration and exploitation activities without restrictions, although Pascua Lama remains the only active project (up until 2013) that utilised the treaty. Mineral operators are given maritime access to Chilean ports, which is a much shorter distance than the Argentinian sea in the Southern Atlantic and opens up access to the Pacific Ocean, a gateway to Asian markets. It also permits companies to access land and water in the Argentinian side. A tax coordination in place prevents double taxation on the movement of goods and services.

Barrick has been the foremost beneficiary of the treaty between Chile and Argentina. Interviews in Vallenar and Santiago have pointed out how, with the project falling within the area covered by ‘the Protocol Area’ of the Mining Treaty (an area previously covered by the Pascua Protocol)¹⁷⁵, Pascua Lama was effectively given a green light. Following its ratification in 2000 by the two countries, Pascua Lama was the first project to subscribe to the treaty. In 2004, the area was further expanded upon Barrick’s request for a Specific Additional Protocol to cover ‘project-related infrastructure’. The treaty and the additional pro-

¹⁷⁵ The earlier Pascua Protocol grants Barrick to conduct exploration (only) on both sides of the border covered by its Pascua and Lama properties.

protocol combined allowed for unhampered pursuit of scale and operational flexibility for the company: “Not having this treaty would have caused all kinds of administrative and managerial problems”, as a Barrick spokesperson pointed out (Devi and Morrison, 2000: 30). Expected efficiencies in its processes as a result of the treaty will allow the company to mine at a rate of 15 million tonnes per year, grind extracted materials in a primary crusher in the Chilean side to reduce its size and send this through a four kilometre long tunnel that will convey the ore from Chile to Argentina. This then allows the company to process the ores at its Veladero mine in Argentina ten kilometres away rather than constructing new facilities in Chile. As Professor Juan Ignacio Guzmán of the Pontifical Catholic University of Chile pointed out:

“On the Chilean side, there is no way to construct a processing plant for the minerals at a reasonable cost. That’s because there are lots of steep slopes and the region is very mountainous.” (Wharton, 2009)

Under the treaty, the company is also provided access to water resources in Argentina. The water needs of the project cannot be met by sourcing water from the arid desert of Northern Chile. Drawing water from the sea would have involved the building of additional infrastructures and high energy costs. By gaining access to Argentina, Barrick could tap into the Rio de Las Taguas for most of its supply. The treaty also overcomes other issues associated with border control. With the deposit straddling the border and an open pit design for mineral extraction, workers, materials and equipments must pass through the borders constantly. Land access on both sides means a seamless operation.¹⁷⁶ As a natural resource lawyer involved in the treaty remarked in an interview: “Can you imagine having mine employees go through passport checks every time they pass through

¹⁷⁶ Barrick’s Technical Report on Pascua Lama (2011) notes that “the transportation of people and equipment will be allowed with no requirement for customs and international police regulatory formalities to be carried out on each occasion the border is crossed.” (Barrick Gold, 2011b: 25)

the border?...Borders are defined by humans and deposits are defined by nature.” The latter, he argued, had to be re-drawn.¹⁷⁷

6.4 STABILISING CONTROL

The new configuration that emerged out of the signing of the Mining Treaty gave Pascua Lama a transnational character, a scale that is overlain by territories with distinct socio-ecological arrangements. The legal framework that created the Andes sans border limits quickly proved to be but one step of many as the transformed scale emerging from the treaty raised new challenges in its development.

For one, the perceived costs and benefits came to be questioned arising from the imperfect fit of resources and the expected socio-economic gains and risks. The treaty included provisions against double taxation, but determining each country's share became a divisive issue, with Argentina arguing for a 50/50 distribution while Chile demands a higher share given that it holds majority of the reserves. Even on the back of a broad agreement amongst parties to tax the minerals at source (i.e. on which side of the border it was drawn), Chile's Internal Tax Service said it would be very difficult for authorities to monitor this, amid calls by the regional and local governments for accurate accounting to determine the tax income due them. This escalated when Argentina opted not to renew a bi-national taxation treaty with Chile, which is a key basis for the tax agreement of the Tratado Minero that governs a special tax arrangement for Pascua Lama. According to a statement issued by OLCA, Mining Watch Canada and Halifax Initiative: “Because the tax agreement for Pascua Lama refers to the international treaty, the applicability of the former is thrown into question with the expiry of the latter” (Protest Barrick, 2012).

Since processing facilities are on the Argentinian side, Argentina was expected to benefit the most from the new jobs that the project will generate. By Barrick's accounts, approximately 11,000 people were employed in Argentina as of end

¹⁷⁷ Interview, natural resource lawyer, January 2014.

October 2012 where most of the facilities were being constructed, and 1,500 on the Chilean side (Barrick Beyond Borders, 2013). The nearby mining town of San Juan in the Argentine side about 300 kilometres from Pascua Lama depends mainly on mining as a source of livelihood. Meanwhile, the proximity of communities to the extraction site in the Chilean side raised concerns that the risks being taken by the country were significantly higher. The project occupies part of the ancestral lands of the Diaguitas, an indigenous community native in Northern Chile, and approximately 150 kilometres away are the communes of Vallenar and Alto del Carmen in the Huasco province. The Huasco valley that runs through it is an important source of water that residents feared will face permanent drought as the water requisites of such a large scale project could compete with the communities' water use.¹⁷⁸ The project sits at the junction of a network of rivers, Rio del Estrecho and Rio El Toro in the Chile side and Arroyo Turbio in the Argentine side, with surface water flowing downstream used by indigenous communities and about 70,000 small farmers in Chile to cultivate their land.

The area is considered prone to earthquakes, responsible for the rich mineralisation it holds but which poses operational risk for mining activities. The region has experienced a 6.7 to 6.8 magnitude earthquakes in 2002, 2003 and 2006 according to the US Geological Survey (Fields, 2006). Compounded by the altitude and challenging climatic conditions, communities have argued that spills from the mine site could therefore quickly spread and contaminate larger areas well beyond the project's coverage.¹⁷⁹ The open pit area of the project, which is mainly in the Chile side, and the planned process of extraction (utilising cyanide mainly, as well as mercury and arsenic, considered the most effective and cost-efficient chemical for extracting ores) have been faced with opposition by communities. Even prior to the mine operating, Diaguita communities contend that exploration activities "have created severe deterioration of some wetlands and large-scale landscape deterioration" that are considered "critical as the landscape determines the drainage capacity of the rock formations and defines microcli-

¹⁷⁸ Interview, local activist, Vallenar, December 2013.

¹⁷⁹ Interview, local activist in Vallenar, December 2013.

matic conditions” (The Council of Canadians, 2012).¹⁸⁰ Regulatory agencies such as the Junta de Vigilancia del Rio Huasco negotiated with the company on the placement of the tailings dam in consideration of the area’s topology, altitude, and river basins, and the construction of a treatment plant and control for acid rock drainage to contain flows from the mine site to address the concerns of other stakeholders.¹⁸¹ As the President of the Junta de Vigilancia, Fernando González, stated in an interview:

“It is a valley that swings between drought and flood, so we have to be very careful with what we do at the level of the cordillera. Whatever we leave there will reach us quickly in a rainy year.”¹⁸²

With operations at extreme altitudes, the project is at the same level as glaciers that are critical sources of water in the summer months. Glaciers feed rivers and tributaries that help sustain water flows in the Atacama region. Since some parts of the identified deposits are situated underneath the glaciers Esperanza, Toro 1 and Toro 2, Barrick initially planned to break these up with explosives, as laid out in its 2001 addendum to its Environmental Impact Assessment, courting local opposition in Chile and Argentina, and subsequently to relocate the glaciers and fuse them with other glaciers in the area (CEDHA, 2013).¹⁸³ Barrick has been accused of “treating the glaciers like “piles of ice” rather than essential parts of a fragile desert ecosystem. You can’t just pick up a glacier, move it, and then tell the rain to fall somewhere else” (Ross cited in Todd and Webber, 2008: 75). Chilean authorities eventually approved the amended Pascua Lama project in 2006, but with more than 420 conditions (and in Argentina with over 500) – one of them being that the glaciers could not be relocated or destroyed (Barrick Beyond Borders, 2009; Estrada, 2006).

¹⁸⁰ Quote from a statement submitted to the Parliament of Canada in May 2009.

¹⁸¹ Interviews, Fernando González and Victor Gonzalez Aravena, President and Technical Manager of Junta de Vigilancia del Rio Huasco, December 2013.

¹⁸² Author’s translation and interview, December 2013.

¹⁸³ Interview, Lucio Cuenca, Observatorio Latinoamericano de Conflictos Ambientales, January 2014

Pascua Lama therefore had to be re-articulated amid competing claims on territory and resources that led to a project re-scaled. Barrick redrew its mine pit to address the regulatory requirements on glaciers (Halifax Initiative, 2012) thereby reducing its mineable territory and reserves. Capital also had to be allocated towards additional infrastructures for monitoring water quality to address community concerns (Barrick Latin America, 2014).

Of particular significance is Barrick's intervention towards labour as part of its strategy to secure social support for the project and to build its own workforce in consideration of the approximately 20 years of operations it forecasts before depleting its reserves. The scale of the project required no less than a 'small army of workers' (in Barrick's words) that it sourced mainly from nearby communities (Barrick Beyond Borders, 2013). Labour was employed in a manner that corresponds to the requisites of the project: workers were hired in droves during times of ramped up construction in the summer season (usually in the third quarter of the year in preparation); and where certain skill sets required cannot be met by the local labour force, it introduced training programmes and internships that were designed to match the future employment needs of Pascua Lama. Local employees had to be trained to operate the specific machineries that were tailored to the extreme pressure and temperature of the Andes (Barrick Beyond Borders, 2013). Workers also had to physically acclimatise to operating at such an environment, as "[A]ltitude sickness can make a job which takes a day at sea level take twice as long" (Matheson, 2010).¹⁸⁴ In 2011, Barrick reported that "Close to 10,000 people have participated in these courses to date, which will provide the Project with a suitable baseline of skilled tradespersons" (Barrick, 2011b: 38). While recognising that "a more skilled local labor force won't happen overnight", the company "tak[es] a long-term view...to build the industrial capacity" of local workers (Barrick Beyond Borders, 2013). Expectations of the employment opportunities in a region of high unemployment drew in applications that far exceeded the number of positions open. In September 2009, when Barrick re-started the

¹⁸⁴ While mining operations in Northern Chile have been operating at high altitudes, Pascua Lama is an 'extreme' case as it will be conducted in an environment considered hostile to even flora and fauna (interview, local activist, December 2013).

project, the company claims to have received 145,000 job applications for an expected 3-year construction phase that will hire about 5,500 jobs. But serial layoffs also became part of this strategy; the seasonality of its hiring ramp ups, combined with the necessary rotational/shift-system schedule of operating in extreme conditions, means labour is disposed off periodically, especially during the slower months of construction thereby creating a condition of precarity (Salinas, 2007).

6.5 FINANCING PASCUA LAMA

The ambition behind Pascua Lama is to turn it into the largest and lowest cost gold mine in South America, an ambition that requires significant capital to be realised. In the 1990s, the project initially benefited from Barrick's strong financial position as a result of its hedging activities. Despite significant price volatility at the time, with the gold price dropping to an 18 year low, the company had the strongest revenues of its competitors, which provided some cushion from the disruptions of the price cycle (see Chapter 5). Exploration capital allotted for the project helped it advance with permitting and initial studies, with a plan (announced in 1997) to reach production by 2001.

Subsequent acquisitions of smaller firms that hold control of the El Indio belt and Fontera district expanded the area further and changed the mine plans. With additional reserves and areas being added, expectations grew on its potential future value, but also the necessary capital investments. Following the Veladero acquisition, the Veladero mine was made the first segment of Pascua Lama's development, pitched as part of a large-scale district (Barrick Gold, 2004). The company claims that it was set to be one of the few gold projects globally where scale in operations was possible and with positive implications for capital and cost savings in the long term.

The price tag for Pascua Lama's development was initially set at \$950 million in 2001, and later amended to \$1.2 billion dollars the following year, a higher cost that it planned to reduce by taking advantage of the nearby operations and infra-

structures of Veladero. As Alan Hill, Barrick's executive vice-president of development commented, "Veladero is a great opener for Pascua. The synergies that Veladero brings to it are administration, a mine camp and access road" (Robertson, 2002). With the gold price at \$270 dollars per ounce at the time, the project presented a significant investment to move forward with its development. Conservatism was apparent in the discourse of Barrick's executives towards the project: "We want to start with the simpler and less expensive project, get established in the district, build a team and make sure that we know how to operate in an optimal manner," explained Barrick's CEO Randall Oliphant (Robertson, 2002). Optimisation studies were carried out until 2004 (at a time when the project was officially declared in hiatus, but the company used this period instead to carry out additional scoping studies) with a target of reaching production by 2008. Initial expenses for Pascua Lama's development were partly absorbed by the company, while putting arrangements for third-party financing of up to half of the estimated costs.

Recognising the high cost of the project, Barrick sought a combination of internal financing, hedging, debt and streaming arrangements as Pascua Lama approached development stage. Export credit agencies, global financial institutions and commercial banks were some of its prospective lenders. In order to make the project more palatable to creditors, the company entered into a 6.5 million ounce gold sales (hedging) contract, which commits about 35% of Pascua Lama's gold reserves: "We expect the allocation of these contracts to eliminate any requirement by lenders to add any incremental gold sales contracts in the future to support the financing of Pascua-Lama." (Barrick Gold, 2005b: 61). In 2010, it applied for project financing from the US Export Import Bank and EDC in Canada. The company also arranged to forward-sell its expected silver production to a silver company, Silver Wheaton (owned by financier George Soros), the equivalent of 25 per cent of the mine life of Pascua-Lama's silver production and the entire silver production from its Lagunas Norte, Pierina and Veladero mines. This provided the company upfront cash (or forward payment) of \$625 million dollars to be paid back in mined silver.

Since the company promised shareholders in early 2000 that there will be no shareholder dilution in proceeding with Pascua Lama's development, Barrick steered clear of raising funds explicitly for its development. Of the \$5 billion that has so far been spent, majority came from internal funds and debt. Nevertheless, one cannot overlook the impact of Pascua Lama in the company's shares and its contribution to the success of its equity raising activities. As a publicly-traded corporation, Barrick's valuation is read off from its share price as indicative of its future earnings. As with other gold companies, the company engages with its shareholders and prospective investors to ensure that the contribution of every asset to cash flow and earnings translates to a share price increase¹⁸⁵. During the commodity boom, Barrick built up the potential value of Pascua Lama to investors by promising near-term production and highlighting the project's unique attributes as a high reserve, low-cost asset and its 'robust economics' that will translate to 'value added' for shareholders. From a modest, start-up project with incremental build outs as initially planned for in early 2000, it quickly snowballed into a mega project, with a large capital lay-out.

The company leveraged the project's future contribution to earnings to support its \$4-billion dollar equity raising in September 2009, the largest stock offering in Canada. While the proceeds were slated for the purpose of eliminating its hedged contracts, Pascua Lama was instrumental for getting investors on board. According to investors, the company marketed Pascua Lama as a "world-class project that will contribute low-cost ounces at double-digit returns", a key reason for their purchase of Barrick's shares (Raymond, 2016; see also Barrick Gold, 2009a). Investors referred to Barrick's announcement that the project is proceeding, prior to issuing \$4 billion dollars worth of new equities. As Barrick announced:

"We are building Pascua-Lama—one of the world's best undeveloped gold mining projects. Our focus over the last few months has been on resolving outstanding cross border permitting and tax matters, improving the capital and operating costs and

¹⁸⁵ Interview, VP of a gold mining firm, March 2014.

project economics and advancing discussions with global financial institutions to provide project financing. We have made considerable progress on all these fronts which has culminated in our go-ahead decision today. The combination of the project's attractive economics, significant production at low cash costs, and support by the governments of Chile and Argentina for this environmentally responsible project will generate enduring and substantial benefits for all concerned - including employment opportunities, economic and social development for the people of Atacama, Chile, and San Juan province in Argentina.” (Barrick Gold, 2009b)

Moreover, the rolling back of hedge contracts for which the equity financing was raised was reported to have been mainly for the purpose of developing the Pascua-Lama project (Nystrom, 2009). The gold contracts entered by Barrick to set a pre-determined price for Pascua Lama's reserves in 2005 have become a liability as higher gold prices meant it will be selling its expected production at a discounted price. By backtracking on its hedges, analysts projected that “overall profitability should increase as Barrick sells production at a much higher price than the original hedges”, a strategic move “from the certainty of having future production sold at locked-in rates to an environment in which their fortunes are fully leveraged to the price of gold” (ibid). This had the effect of not only liberating the price of its future production but also for setting the stage for increased speculation on its future value.

6.6 TOWARDS A HIGH CASH FLOW MODEL

The main attraction of Pascua Lama for institutional investors is the profit margin—the difference between the commodity price set by the market and the cost of production. Following more than a decade's worth of work to make the project economic through a series of material and socio-political interventions, the project stood out for what is possibly the lowest operating cost of gold projects. In 2009, the company reported that its cash cost (the original metric for expense of extracting an ounce of gold in the industry) was estimated at \$20

to \$50 per ounce, at a time when the gold price was nearly \$1000 per ounce. Pascua Lama in this sense represents a critical component of the company's future profit margins, of surplus value maximised.

2009 was a watershed year that saw the alignment of strong financial valuation, high commodity price, and favourable social regulations that provided fertile conditions for bringing Pascua Lama in line. Whereas other companies were still in the early stages of building new mines or putting in place reserve replacements as the gold climbed to new heights in 2009, Pascua Lama was significantly advanced, built from a total of 7 million hours (in five years) of re-design and optimisations, the company claimed, since it has been re-started in 2004 (Barrick, 2009b: 25). The company negotiated the last hurdle on the tax issue after three years of deadlock between Argentina and Chile with a sense of urgency. The broader sentiment of gold mining companies at the time is to extract their reserves while the gold price is on an extended bull market; institutional investors on the other hand expected high cash flows from operations and rising dividends as the gold price climbed higher. A parallel de-hedging of its production in financial markets eliminated another hurdle, freeing Barrick from a contract to sell Pascua Lama's gold at about \$396 per ounce and allowing its price to be determined by the market [the gold price rose to \$996 dollars in September 2009 when Barrick announced its decision to de-hedge]. The result has been a surge in speculative capital: demand for its stocks rose as institutional investors speculated on the high income that can come from production and its valorisation. What was initially a \$3.5 billion dollar equity financing was raised to \$4 billion dollars (\$3.9 billion dollars in net proceeds), with Barrick citing unprecedented investor demand as a key reason for the increase (Hoffman, 2009; Barrick Gold, 2009c; Barrick Gold, 2009d; French, 2009).¹⁸⁶ Days after the success of its equity issue, a major hiring ramp up and construction were underway in Pascua Lama, with

¹⁸⁶ While large equity financings are considered highly dilutive of existing shareholders, companies are able to offset such losses if higher profits can be gained from such re-financing. As Blackmont Capital analyst Richard Gray commented on Barrick's decision to issue a \$4-billion offer: "While increasing the share count by 10.6 per cent was a steep cost, the elimination of the hedge improves the valuation of two of the company's major growth projects [Pascua Lama and Pueblo Viejo] and more importantly, the marketability and optics of the world's largest gold producer" (Hoffman, 2009).

Table 1. Barrick Gold's Capital Expenditures (per project)

	2012	2011	2010	2009	2008
Pascua Lama	1,817	1,191	724	202	112
Pueblo Viejo	367	521	592	433	157
Cerro Casale	32	83	50	-	-
Cortez Hills	-	-	19	-	-
Buzwagi	-	-	-	52	273

SOURCE: COMPANY ANNUAL REPORTS

production set for 2013. New investments and costs required by the project, supported by high gold prices, were committed to. While mining companies make their projections based on a long-term average gold price scenario for each project, which tends to be significantly more conservative than the spot price (and in certain cases, lock in this price through hedging), companies also adjust their reserves, capital cost and input cost assumptions in response to market prices. By the end of 2010, the intensity of capital devoted to its development is apparent: capital expenditures have gone up from \$112 million and \$202 million in 2008 and 2009, to \$724 million in 2010, progressively increasing year on year (see Table 1) and making it Barrick's largest capital commitment of its projects.

Pascua Lama was fitted right into Barrick's narrative of shareholder value maximisation. Pascua Lama's schedule and cost estimates have been amended since it has been restarted in 2004¹⁸⁷ to factor in the re-designs and the higher prices, turning it into one of the most profitable mines in the industry. The mine production schedule initially set at over 17 years of extraction plus 3 years for pro

¹⁸⁷ Pascua Lama did not officially commence with construction until 2009, but Barrick re-started work on the project as gold prices started to rise.

Table 2. Comparison of Pascua Lama's project economics, 2005–2011

	2005	2011
Payback years	3 years at 700,000 tonnes per year	3 years payback time at 800,000 to 850,000 tonnes per year, plus 2 additional years of 800,000 to 850,000 tonnes of production per year
Gold price assumption	\$375 dollars/ounce	\$1000 dollars/ounce
Life of mine	17 years plus 3 years of stockpiles	21 years plus 4 years of stockpiles
Cash costs	\$130 to \$140 per ounce	-\$225 to -\$275 per ounce
Pre-production cost	\$1.4 to \$1.5 billion	\$3 to \$3.5 billion dollars

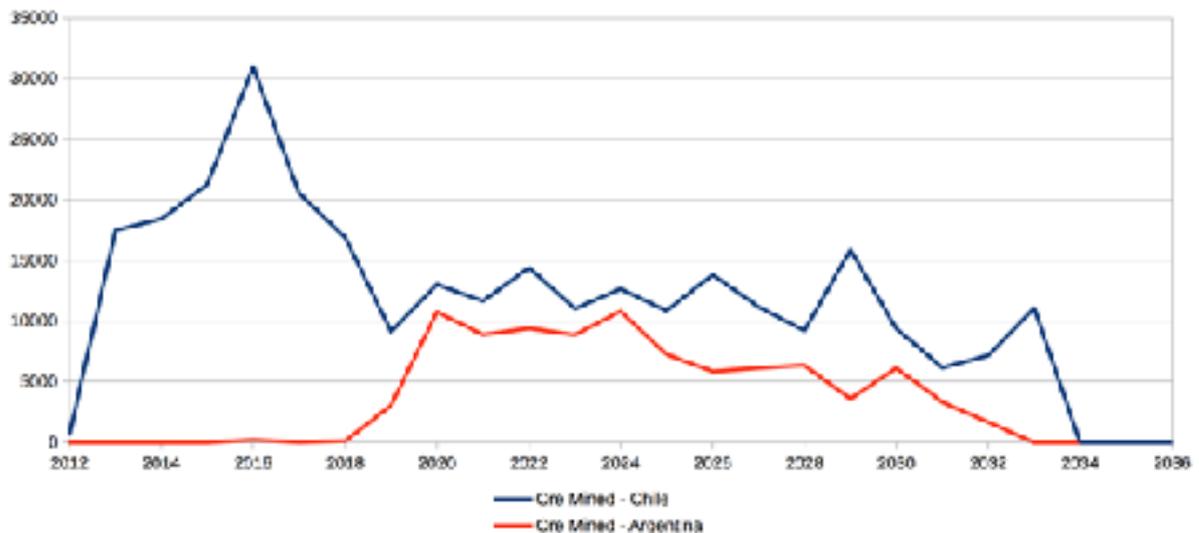
SOURCE: BARRICK GOLD'S 2005B AND 2011B TECHNICAL REPORTS.

cessing stockpiles¹⁸⁸ in its Technical Report in 2005, was later changed to 21 years plus 4 years of reclaiming stockpiles in its 2011 Technical Report as higher prices allowed for mine life extension in modelling reserves (see Table 2). This amendment was also captured in the gold price assumption made by the company in 2005 at \$375 per ounce versus the \$1000 per ounce it used in its 2011 report. Despite the amended pre-production cost, estimated to be at \$3 billion dollars in 2009, the changed parameters of the project was expected to more than compensate for sinking capital investment. The time value of money that favours returns on a shorter time frame accommodated the time frame required by Pascua Lama based on project economics that promised to deliver high investment returns. In 2011, the project was anticipated to produce between 800,000 to 850,000 ounces yearly on average for its first full five years of operation, at nega-

¹⁸⁸ Stockpiles refer to additional mineral supply extracted but held in storage with the intention of processing it at a future time. Mining companies hold stockpiles typically of low grade material for a variety of reasons: in order to ensure continuity of operations in case of mine closure, to supplement the grades of ores being processed, or to wait for better prices that are supportive of processing low grade ores.

tive total cash costs¹⁸⁹ of -\$225 to -\$275 dollars per ounce¹⁹⁰ or \$1.65 billion dollars annually in earnings (before interest, taxes, depreciation and amortisation). The first three years of operations are the ‘payback’ years—when the return on capital are at its highest—plus two more years of high cash flow as set out in the mine design and allowed for by the occurrence of ores in the mine body. As evident in its mine schedule in 2011 (see Figure 22), the five years are exclusively drawn from the Pascua side, “sequence[d] following the highest revenue and lowest stripping ore,” the cheapest and most amenable to extract (Barrick Gold, 2011b: 123). Figure 23 compares Pascua Lama to Barrick’s other large mines in Dominican Republic (Pueblo Viejo) using cash cost measures, and to other major gold mining companies, illustrating its importance in Barrick’s strategy and shareholder expectations of high cash flow.¹⁹¹

Figure 22. Pascua Lama mine flow schedule 2012-2036, by country (tonnes)



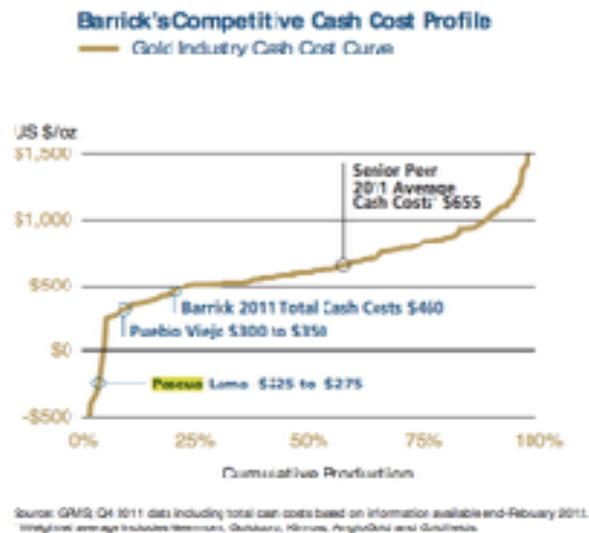
SOURCE: MINE SCHEDULE DATA FROM BARRICK GOLD’S TECHNICAL REPORT, 2011.

¹⁸⁹ This was prior to the company adopting an all-in sustaining cash cost (AISC) metric.

¹⁹⁰ It is industry practice to deduct the planned mining of by-products as credit to the main metal. In the case of Pascua Lama, this will be the expected revenue from silver.

¹⁹¹ In 2012, as competition among gold mining companies shifted towards delivering the lowest all-in sustaining costs as measure of profitability, Pascua Lama’s fully loaded cost ranged between \$50-200 per ounce. Placing this alongside Barrick’s gold production in 2012, which stood at 7.4 million ounces at all-in sustaining cash costs of \$945 per ounce, it is apparent how Pascua Lama forms the centrepiece of its commitment to shareholder value maximisation.

Figure 23. Pascua Lama's contribution to Barrick's cash cost profile



SOURCE: BARRICK GOLD ANNUAL REPORT, 2011

6.7 THE COST OF ADJUSTMENT

In the preceding section, it is evident that the conditions that secured Pascua Lama's place as a source of shareholder value rested on assumptions made on the gold price, the means of production and the affordances of nature. Gold companies have no influence over the price (as discussed in Chapter 3) but the economising of (unpaid) nature and labour are to an extent, within its control albeit far from absolute. As demonstrated previously, the company had to contend with the particular biophysical and social characteristics of its mineral operations that shaped the kind of processes, technologies, and the manpower it employed. This also dictated adjustments on invested capital requiring the periodic injection of larger sums to deliver on expected returns.

By mid 2012, Pascua Lama was suffering cost overruns with the project cost amended to \$8 billion dollars, more than double the estimated \$3 to \$3.5 billion in 2009, and a one-year delay to its production schedule. Barrick conceded that "the complexity of this project exceeded the capabilities of the in-house construction team" (Barrick Gold, 2012: 7). The construction of the campsite, processing plant and the ore transport tunnel have not progressed as initially scheduled due to the challenging physical environment (Minerandina International,

2012; Trefis, 2013). Rodrigo Jimenez, Barrick's vice-president of corporate affairs in South America cited the “complexity of the engineering ... and the enormous amount of work” involved as the cause for the delay (Solyom, 2012). Other unexpected setbacks have also suspended construction, such as when strong winds caused dust to settle in the open-pit suspending pre-stripping activities. Given the scale of the project, pre-stripping alone was expected to take 18 months of work (Barrick Gold, 2011). Delays do not only slow down the turnover time for invested capital (or ‘lost time’ from the viewpoint of capital) it was also costly at a stage of ramped up construction with about 12,500 (11,000 in Argentina and 1,500 in Chile) workers employed, drawing in more money to be placed in production.

Another set of delays followed as the project faced a constitutional rights challenge and a regulatory suspension. Five of the eighteen Diaguita communities that live near the project filed a case before a local court contending that Barrick's airstrip sits on indigenous land recognised in a 1997 domain title. Further investigation by Chile's Superintendencia de Medio Ambiente, a public environmental regulatory agency, also detected infractions, which eventually led to the company being fined and its construction activities suspended. The agency found that the company has not complied with the necessary infrastructure for water management, a key condition set out in its Resolución de Calificación Ambiental, the environmental license to operate. Under the terms of the environmental license, Barrick is required to ensure that proper waste water facilities are in place even before pre-stripping activities can be carried out. According to Chile's environmental regulator Juan Carlos Mockenberg, it appeared that the infrastructure has only been partially built prior to pre-stripping in an attempt to hasten the project's development (Benitez, 2013). Compliance with the requirements was expected to push the project back by another year or two (Ulmer and Cambero, 2014). Some have argued that this is a testament to how “Barrick underestimated the difficulties associated with undertaking a highly contaminating

economic activity on an international border, with all the associated administrative, social and environmental challenges”¹⁹² (Halifax Initiative, 2012).

It was in this context that Pascua Lama became a source of conflict between company managers and shareholders that were faced with the challenge of coordinating the preservation of value under changed circumstances. The challenge coming from Chile was especially damaging as it rendered tenuous the economic feasibility of the project. Claims of a 5-year high cash flow target fully rested on the extraction of reserves on the Chilean side. In publicised debates between institutional shareholders and the company, differences in investment outlook was evident. For Barrick it was a key growth project that would secure a long-term supply of reserve ounces—critical to replace its yearly production. With more than 50 per cent of the necessary capital sunk, Barrick insisted it should remain a priority in capital allocation. On the part of shareholders, Pascua Lama was increasingly viewed as emblematic of the “grow at all cost” model that gold companies have erroneously followed. Shareholders pushed for conserving cash in the short term, rather than pursuing growth in consideration of the remaining uncertainties in its operations in Chile. The company tried to address this initially by increasing labour productivity: by contracting out the rest of the construction work to Fluor, an engineering, procurement and construction company that claims specialisation on ‘large, remote, complex projects’ (Fluor, 2013); increased labour hours and the addition of almost 2,000 new hires to the 12,500 employees working on both sides of the border with a view to expediting construction to limit the delays, satisfy regulatory requirements, and maintain the 800,000 to 850,000-ounce target for the first five years (Trefis, 2013; Barrick Beyond Borders, 2013).

However, as the commodity boom in early 2013 came to an end and Barrick faced a precarious financial position, the company decided to suspend the project. The effect of the suspension combined with the fall in the gold price was the destruction of value. The project took a \$5.5 billion asset write-down, Barrick’s stock

¹⁹² The quote was taken from a joint statement by three civil society organisations in Canada and Chile: OLCA, Halifax Initiative and Mining Watch Canada.

price plunged reversing not only the gains of 2011, its most profitable year, but retreating “to levels seen 20 years ago” (Younglai, 2013). Shareholders launched a US-class action lawsuit against Barrick, arguing that the real status of the project had not been sufficiently divulged to investors. Shareholders that have purchased the stocks of the company from 7 May 2009 (when Pascua Lama’s construction was finally confirmed) until 1 November 2013 (the project’s suspension date) were behind the lawsuit. A similar suit was pursued in Canada. As of 2016, the project remains shelved, with shareholders demanding compensation and an internal rate of return of 15 per cent before the project is allowed to re-start (Ibarra, 2016).

Pascua Lama has been described as “one of the biggest debacles in the mining industry’s recent history” (Koven, 2013) and the crisis that unfolded bore the outlines of capital’s inherent contradictions writ large: the devaluation of value that must take place to bring into equilibrium circulating capital and its underlying value in production; and in the antagonism between the capitalist class that manifested in in-fighting over the losses.¹⁹³ So too has the antagonism between labour and capital come to the fore. The reverberations of crisis were immediately felt in Pascua Lama and nearby communities as workers were disposed as “variable capital” in the context of maintaining company liquidity. Only about a hundred personnel remain employed and sufficient sustaining capital dedicated to the project to comply with the environmental and regulatory measures demanded by Chilean authorities.

¹⁹³ As Marx wrote in *Capital* vol. 3, “So long as things go well, competition effects an operating fraternity of the capitalist class... so that each shares in the common loot in proportion to the size of his respective investment. But as soon as it no longer is a question of sharing profits, but of sharing losses, everyone tries to reduce his own share to a minimum and to shove it off upon another....How much the individual capitalist must bear of the loss, i.e., to what extent he must share in it at all, is decided by strength and cunning, and competition then becomes a fight among hostile brothers. The antagonism between each individual capitalist’s interests and those of the capitalist class as a whole, then comes to the surface...” (Marx, 1894: 173)

6.8 CONCLUSION

In this chapter, I used the Pascua Lama case to draw out the interlinkages between the stock markets of Toronto and New York and the biophysical, social and political landscape of Barrick's operations in Chile. By focusing on this encounter, I highlight how projects like Pascua Lama are on the one hand, made, rather than just discovered, and in a manner that fit profitability metrics and financial specifications of maximising cash flow and shareholder value. Pascua Lama captures finance and industrial capitals' attempts to acquire and create a new extractive space in the Andes. Initiated through an acquisition in the stock markets, Barrick was able to first gain hold of the project as part of its expansion into the most prospective gold districts of Latin America. In Toronto and New York, Barrick built up expectations that can come from a mega project like Pascua Lama which helped prop up its stock valuations and contributed to the success of the company's fundraising activities. Giving credibility to these claims was matched by a commitment to expedite its development and to pursue scale, which relied on capital and labour intensive processes. With increasing ounces uncovered through multiple attempts to expand, identify and re-design Pascua Lama, Barrick has mobilised capital dedicated to the project, justified in anticipation of its future value when it enters production. With strong state backing coming into play, the company was able to turn the Andean gold belt into a new extractive territory that transcend the social and physical limits it posed to capital and labour mobility. It was to an extent a 'successful' conquest, where under conditions of strong financing, higher gold prices, innovative technologies, labour expertise and state support, the project has been enclosed and reworked to turn it into a large multi-million deposit.

As a project geared towards the physical transformation of material resources and the expansion of value, Pascua-Lama also demonstrates how capitalism, finance capitalism, and nature are intimately conjoined in mineral extraction. Places are central to capitalist strategies of expansion, particularly pronounced in mineral extraction, but their socio-material make-up can disrupt such attempts. Mineral projects are not easily aligned to the compulsions of stock markets and

institutional investors' expectations, requiring sustained capitalisation and a perpetual process of social and material change. The sinking of large capital in mining projects also renders it vulnerable to contestations and shifts in social regulations that can challenge the viability of the project. Stock exchanges, on the other hand, tend to surpass what can be materially delivered in the long run under price conditions that must eventually change. Strong speculative investment in these exchanges amplified this tendency, inflating asset values and justifying high extraction costs in the short term. As Pascua-Lama shows clearly, fictitious capital and the production process diverged and influenced each other in contradictory ways, tending to crisis.

In Marx's account, the contradictions of capital are continually displaced and never fully resolved, with spatial reconfiguration potentially serving as a 'fix' (Harvey, 2007). Pascua Lama was constitutive of these dynamics, a space through which capital's contradictions sought (temporary) resolution. It also demonstrated the vulnerabilities of capital in these endeavours and the possibilities to disrupt and frustrate its incessant attempts to accumulate. The challenges posed by indigenous groups, communities, and regulatory agencies have at certain moments successfully impeded and scaled back the project through suspensions, legal challenges, or by setting new terms for mineral extraction. This said, Pascua Lama's fate is still open-ended. Chilean courts have not revoked the company's license; Barrick and its institutional shareholders have not ruled out that it can be turned into a source of cash flow in the future. It is hopefully in understanding how the struggles over Pascua Lama "are never only local" (Bebbington and Scurrah, 2013: 194) given their entanglements in processes of financial accumulation in key centres of finance, that we can fully grasp their value as the enabling and disruptive forces that they are to capital's sustenance.

CHAPTER 7

Conclusion

A key objective of the thesis is to illustrate how shareholder value maximisation has impacted the extractive activities of gold mining firms. I conclude the thesis by first revisiting the key findings and arguments across the different empirical chapters. I highlight the conditions that facilitated an alignment between institutional shareholders and gold mining companies, the financial and operational requisites by shareholder value maximisation, and its implementation throughout the mining cycle. The spatial and socio-ecological transformations that it engendered are also discussed. The final section reflects on its theoretical contributions to the financialisation literature, and to economic geography and political ecology.

7.1 KEY FINDINGS

7.1.1 Financial and operational re-alignments

The influence of institutional investors on mining firms manifested in key re-alignments in financial and extractive practices. In chapter 3 and chapter 5, I first established this by showing how prior to the commodity boom, some of the largest gold mining firms adopted strategies that were antithetical to price volatility and the price exposure favoured by institutional investors. Firms were then heavily dependent on hedging to guard against price fluctuations (as dis-

cussed more fully in Chapter 5) and depended on bullion loans. This limited their exposure to movements in the gold price and made for a predictable income. In chapter 3, I illustrated how a roll back of this practice was executed during the commodity boom given institutional investors' preference for firms that provided full leverage to gold price movements. This move was embraced especially as it opened up financing opportunities for mining companies and as companies themselves reconsidered their assumptions on the future gold price. The spectacular rise in the gold price especially following the 2007 crisis, in addition to steadily rising demand set in motion the drive to expand mining operations. The (re-)channeling of institutional investments in stock exchanges accelerated this. To cater to institutional investors short-term interests and their requisite for a predominantly 'gold play', companies re-aligned their operations by ensuring that current and future production maintains a single-metal profile. The findings in chapter 3 show how institutional investors enabled the pursuit of production growth while also disciplining this growth to cater to investors' investment criteria. This alignment of finance and industry fuelled the expansion and intensification of mining activities, mainly through mergers and acquisitions. A sharp reversal of this was witnessed in the bust cycle, where stricter monitoring of capital allocation and the adoption of new metrics, such as the all-in sustaining costs, restricted growth parameters. Mine closure, asset sales, and cost-cutting were but some of the immediate measures taken.

I illustrated how these decisions were not simply responses to the price cycle or the commodity cycle (although, as capitalist entities that compete in the sphere of exchange, companies and investors adjust their strategies to price movements) but that the considerations behind cost-cutting and asset sales were shaped by shareholder value considerations. Mine closures, cost cutting and asset sales were executed following a thorough review of each mineral project and operating mine using the all-in sustaining cost metric, a discipling tool to ensure that company activities were aligned with stricter conditions on returns to invested capital. On the part of companies, this measure also signalled to investors their commitment to shareholder value throughout the price cycle.

7.1.2 Production of space, production of nature

In unpacking the AISC in chapters 3 and 4, I argued that the AISC captures clearly the spatial and material requisites of shareholder value. The AISC quantifies the difference that social regulations, mineral endowments, and the attributes found in place could make to differential profits (relative surplus value) and therefore to margin growth. Categories like core or non-core captured these differences as internalised by capital, categories that signified their ability to generate free cash flow across the commodity cycle. These informed decisions on spatial reordering and carried implications on the production process. In chapter 4, I elucidated the kind of material re-alignments adopted by firms to account for the costs of extracting an ounce of gold. Materially, companies shifted their operations into extracting only the most valuable ores that were aligned with cost cut-offs alongside other re-designs and enhancements. The new limit imposed by capital through the AISC led to a re-classification of previously profitable reserves as ‘recalcitrant’, demonstrating the fluidity by which capital values nature. The strategy was also shown to be contradictory since the pursuit of higher grade ores also comes at the expense of making some parts of the ore body unprofitable to mine, eroding the basis of production growth in the future. It is this approach to production as but a middle-term that has led Marx to quip that “the limit to capital is capital itself,” to capture the contradictory process inherent in the capitalist mode of production. With firms and shareholders locking their views on the revenues (set at a much higher threshold) that a given level of production will fetch at a prevailing gold price (or the M') and against which they adjust their strategies, rather than fully committing to the process of actually getting x amount of gold (C), that contradictions emerge. For Marx, the law of value to which capitalists submit themselves pushes them to act in ways counter-productive to value expansion.

In chapters 3, 4 and 6, I moreover pointed to how this contradiction was heightened as gold production came to be mediated by short-term return objectives. Institutional investors short-term investment horizon makes their commitment to the firm, and to the production process, highly variable. Their higher return

requirements also meant that the condition for capital to circulate was not merely a given investment's potential for value expansion, but its ability to deliver higher than normal rates of return compared to other forms of investments, including those of other industries. As significant holders of money capital, and whose options for investments have expanded as financial markets evolved, institutional investors allocate financing to productive industries that are expected to meet their target returns. The highly speculative nature of their investments and their higher threshold for risks can drive industries to reflect the same kind of speculative fervour, as the case of the gold mining industry demonstrates. Firms internalised this same motive of high and fast growth, sharp stock appreciations and high dividend payments that overtook values in production. Firms were incentivised to grow quickly through (and in spite of high cost) mergers and acquisitions, by recapitalising operating mines and chasing after lower grade ores that led to high cost commitments. From such speculative highs, the adjustment that followed was just as disruptive, with the sudden withdrawal of capital, the unravelling of some of the capital commitments made previously, and sharp devaluations that threatened to bring down the same large companies.

Chapter 6 develops further some of the arguments made in chapter 3 through a case study of the Pascua Lama gold project. I contextualised the project's development alongside developments in North American stock exchanges (chapters 3 and 5), and in particular, in reference to shifts in company strategies since it was first acquired in 1994 by Barrick Gold. I highlighted the significance of mergers and acquisitions for expanding value claims over territories and the transformations that such shifts in ownership can bring about. Through the concentration and centralisation of capital that made Barrick, the company was able to go much farther than any other firms at developing the project given the challenges of operating at high altitudes. With states stepping in to fulfil capital's requirements in the Andean region, Barrick was able to side-step geopolitical boundaries, secure the license to operate and pursue the scale required to make the project profitable. Under Barrick's management and through strong state backing, Pascua Lama's 'natural' endowments were 'made' into low-cost, high-reserve assets.

Pascua Lama emerged as a world-class mine with double digit returns during the commodity boom, which made it a centrepiece of Barrick's claim to shareholder value maximisation. Pascua Lama was instrumental for drawing in equity financing as investors speculated on the margin growth that can come from its future production. I traced the material processes that these mobilised to reconfigure the project to cash flows expectations. While claims to future surplus value diverged, this divergence was also shown to be necessary to get finance capital to commit to Pascua Lama's production even as these same dynamics also set the stage for crisis. I illustrated the large capital commitments that were made in developing the project and the interventions of the company to stabilise its hold on socio-material arrangements that can deliver, or undermine, the promised investment returns. Pascua Lama powerfully demonstrates how maximising shareholder value does not only imply socio-ecological transformations, but that it is at its heart a socio-ecological project. It is as much about expanding value claims, as it is about the physical re-configuration of territories and livelihoods as its precondition.

7.1.3 Industry and finance relations

In chapter 5, shareholder value maximisation was also shown to be a historical product, the latest manifestation of the strengthening hold of institutional investors over industries. The neoliberal era facilitated their rise by providing the legal and institutional framework that secured their dominance in stock exchanges. Barrick Gold's history demonstrates how the terrain to pursue growth and competition has progressively shifted to stock markets, which institutional investors came to dominate. This has allowed companies to expand and 'grow' by acquisitions rather than organically searching for gold.

Through a historical look at the evolving relations between industry and finance, gold mining firms were shown to have relied on institutional investment to fund their growth. In the case of emerging gold companies like Barrick, this dates back to the 1980s when institutional investors started to hold gold as part of their portfolio. However, other sources of financing in the 1980s and 1990s

helped them from being fully dependent on institutional investment. Access to bullion banks, the permissive rates for borrowing bullion, and hedging programmes helped the industry maintain profitability and deliver production growth even in low gold prices. Institutional investment flitted in and out of firms' stock registers, alongside changing sentiments on the need to hold gold stocks in their portfolio as proxy to the gold bullion, without fully damaging firms' financing or growth prospects.

Institutional investors themselves have evolved as the pursuit of value brought about more aggressive investment strategies to ensure maximum return on investment. Hedge funds emerged as some of the most highly successful investment vehicles by delivering higher returns due to the wider investment latitude allowed them. As the competition in financial markets themselves have intensified, the constant search for new sources of profitability required greater mobility and a constant reshuffling of investments. For firms that were the target of hedge fund investments, shareholder value was not only to be created, it was to be maximised. This requisite was expected of the companies that they invested in, which included the largest gold producers in the industry. In chapter 5, I contextualised this new alignment as necessary, from the viewpoint of firms and investors alike, to respond to the new opportunities presented by the commodity boom. But as chapter 3 argued up front, this alignment was tenuous and proved to be contradictory to value expansion in the long run.

7.2 THEORETICAL CONTRIBUTIONS

Studying the 'mining of shareholder value' brings some important nuances on key debates on the 'geographies of finance', the relation between finance and industry capital, and the (supposed) trade-off between production and financialisation. Firstly, the empirical findings illustrate the linkages of finance and the production process, how their dynamics can exert an influence on material and financial processes of expanding value claims and how their tendency to diverge (and in this sense, they are also 'separate') can serve to undermine or enable value creation. In unbundling shareholder value maximisation, I bring attention to the

financial and productive components of the strategy. Stock appreciations and rising dividends allowed for financial gains that were only loosely based on claims to maximum surplus value. But these, I argued, also required investments in production, given the nature of the mining business, to support these claims. Companies had to sustain reserve replacement and demonstrate their ability to meet production targets as these were important indicators of future cash flow. As the life of the company was itself correlated to that of its mines, and its claim to surplus value tied to its established reserves, re-investment also proceeded alongside ‘financial’ commitments to shareholder value. Indeed, the aggressive pursuit for production growth—and the view of institutional shareholders of this strategy as ‘value maximising’ during the boom—shows that production and financialisation were simultaneously pursued as complementary strategies in the short-term. It is in the boom’s bust that capital recycling was implemented viciously, to free up cash even from mines that were profitable (but did not meet return thresholds), with impact on future production. Thus, the findings show that under certain conditions, shareholder value can enable growth pursuits rather than undermine production. The temporality of these strategies and their articulation in different contexts (i.e. within firms, and across a given of portfolio mines and projects) underscore the need for a more situated analysis of how shareholder value or financialisation in general is defined and understood.

In addition, with regard to the view that financialisation entailed the distancing of financial assets from their basis in production, shareholder value maximisation exemplified this tendency on the surface. Through corporate interviews, however, the research was able to shed light on how this was paralleled by a drive to propel firms and their activities to cater to shareholder value objectives. Thus, on the contrary, shareholder value signified stronger control over the production process to ensure that maximum value is upheld through the highs and lows in the commodity cycle, across firms and mineral projects, and for every ounce produced. This was explored in detail in chapters 4 and 6 by focusing on the spatial and material conditions of shareholder value and ‘disciplined growth.’ The findings then imply that characterising financialisation as taking place in the

sphere of circulation and separate from production overlooks its expansion into other areas of the productive economy (Fine, 2014).

The research also brings to light how finance draws from outside the considered financial hegemons, i.e. the US and the UK, and is not circumscribed at the national scale. While the sources of financing were clearly concentrated in key financial centres, frontier expansion or intensification embarked on by mining firms entailed the capture of value from mineral operations that were geographically dispersed. This points to the need for a more nuanced analysis of financialisation's scalar dynamics. The research takes a similar view to Christophers (2015) that a focus on national-level analyses in the US and UK can give a partial (if not misleading) view of its sources of profit.

A more historical account of the evolution of financial markets and industries, rooted in the transformations of the 1970s, also raises important nuances on how we might view the relations between banks, stock markets and productive industries. While it is certainly the case that gold companies were uniquely positioned due to their access to bullion loans, an option not available to other industries, the shift between debt financing and stock market financing proceeded unevenly and did not eliminate the role that banks play. In the 1980s and 1990s, the shift to bullion loans saw banks take on the function of middle-men, securing companies' access to central bank reserves. During the commodity boom, banks served both as underwriters of stock issuances as well as sources of financing. Alongside the growing importance of institutional investment in company stockholdings during the boom period was growing access to debt as rising stock valuations created the conditions for securing favourable bank loans. The relations between banks, stock markets and industries during these periods were constantly being re-ordered, such that there is no clear cut 'alliance' and certainly no permanent 'amalgamation' of interest. The value of a process approach to understanding such organisational shifts (as emphasised by Harvey, 2007) is on display here. The relations of accumulation were guided by the pursuit of value, around which they congealed or fall apart. For Harvey (2007), this is an incessant process that determines the movement of capital. The organisational form it takes, be it an

alignment of bank and industry, or industry and institutional investment, reflects the changing conditions by which value can be preserved, expanded or, in this case, maximised.

Considering strategies of shareholder value maximisation and financialisation in general as highly variable across time and space help contextualise the heterogeneity of the financialisation literature. As shown across these chapters, financialisation manifested differently as changing economic conditions or socio-material arrangements implied different prospects for value expansion. Indeed, understanding the particular form that financialisation took in extractive industries required grappling with its unevenness and its refusal to be pinned down and diluted to a single strategy. It was dynamic and its articulation was far from universal, which made a consistent definition elusive. There was no one commitment to a single strategy, only to the extent that it can be a source of (maximum) value.

The research also carries important implications for geography and political ecology research on mineral extraction. In chapters 3 and 4, I contextualised nature's place and critical role in a financialised regime and the relation between nature and capital as dialectical and co-evolving. With its emphasis on margin growth, shareholder value maximisation relies on the affordances of nature; it actively remakes and internalises it in this strategy, i.e. to increase cash flows and to accelerate payback time. The empirical findings provide insight into how nature, with all the opportunities, unpredictabilities and intransigence it embodies, was quantified and inscribed in the logic of finance capital. This emphasises anew Moore's point that the question of how nature is internalised, and turned into value in motion, is central to understanding how capitalism (in nature) has survived (Moore, 2011a; 2015).

Finally, the findings are salient for understanding the ebbs and flows of mining investment and the socio-ecological nature of shareholder value. I argued that shareholder value, or financialisation more broadly, go beyond adjustments in company balance sheets and are of relevance to places where 'value' is extracted. The struggle to generate financial value in sites identified as 'core assets'—the

priorities for capital allocation and investment—and those considered ‘peripheral’ are often at once a struggle over livelihoods, development, and the environment. The specific strategies employed, such as production intensification, divestments or mine closures that were bundled as ‘shareholder value creating’ measures, carried important ramifications for labour, resource use (i.e. land use/access, water consumption) and rent capture, which have been sources of tensions in sites of extraction (Bury, 2005; Perreault, 2013; Bebbington, et. al., 2008; Bebbington, 2009; Emel and Huber, 2008; Labban, 2013). These strategies manifested as place-specific events but were inextricably linked to considerations of production and growth within firms that were in turn influenced by changes in their accumulation strategies—in this case, by a turn to a financialised mode of resource extraction. Academic inquiry then should move toward a greater engagement with the financial geographies that shape the mining industry in particular ways: in its practices, access to capital and growth possibilities.

APPENDIX 1

Guidance note on non-GAAP metrics all-in sustaining costs and all-in costs

		US \$ / gold ounces sold
On-Site Mining Costs (on a sales basis)	Income Statement	(a)
On-Site General & Administrative costs	Income Statement	(b)
Royalties & Production Taxes	Income Statement	(c)
Realised Gains/Losses on Hedges due to operating costs	Income Statement	(d)
Community Costs related to current operations	Income Statement	(e)
Permitting Costs related to current operations	Income Statement	(f)
3 rd party smelting, refining and transport costs	Income Statement	(g)
Non-Cash Remuneration (Site-Based)	Income Statement	(h)
Stock-piles / product inventory write down	Income Statement	(i)
Operational Stripping Costs	Income Statement	(j)
By-Product Credits	Income Statement	(k) <i>Note: this will be a credit</i>
<i>Sub-Total (Adjusted Operating Costs)</i>		(l) = (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) + (i) + (j) + (k)
Corporate General & Administrative costs (including share-based remuneration)	Income Statement	(m)
Reclamation & remediation – accretion & amortisation (operating sites)	Income Statement	(n)
Exploration and study costs (sustaining)	Income Statement	(o)
Capital exploration (sustaining)	Cash Flow	(p)
Capitalised stripping & underground mine development (sustaining)	Cash Flow	(q)
Capital expenditure (sustaining)	Cash Flow	(r)
All-in Sustaining Costs		(s) = (l) + (m) + (n) + (o) + (p) + (q) + (r)
Community Costs <u>not</u> related to current operations	Income Statement	(t)
Permitting Costs <u>not</u> related to current operations	Income Statement	(u)
Reclamation and remediation costs <u>not</u> related to current operations	Income Statement	(v)
Exploration and study costs (non-sustaining)	Income Statement	(w)
Capital exploration (non-sustaining)	Cash Flow	(x)
Capitalised stripping & underground mine development (non-sustaining)	Cash Flow	(y)
Capital expenditure (non-sustaining)	Cash Flow	(z)
All-in Costs		= (s) + (t) + (u) + (v) + (w) + (x) + (y) + (z)

Source: Publication of the World Gold Council's Guidance Note on Non-GAAP Metrics – All-In Sustaining Costs and All-In Costs. London, 27 June 2013.

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