

**RESOURCE EXTRACTION AND THE PLANETARY EXTENSION OF THE URBAN FORM:  
UNDERSTANDING SOCIOSPATIAL TRANSFORMATION IN THE HUASCO VALLEY, CHILE**

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### List of Acronyms

BCN	Biblioteca del Congreso Nacional (Chile's Library of Congress)
CAF	Corporación Andina de Fomento (Andean Development Corporation)
CINEP	Centro de Investigación y Educación Popular (Centre for Popular Education and Research)
COCHILCO	Corporación Chilena del Cobre (Chilean Copper Commission)
ECLAC	United Nations' Economic Commission for Latin America and the Caribbean
IADB	Inter-American Development Bank
IIRSA	Initiative for the Integration of the Regional Infrastructure of South America
ILO	International Labour Organisation
IMF	International Monetary Fund
INE	Instituto Nacional de Estadística (Chile's National Statistics Office)
OCMAL	Observatorio de Conflictos Mineros de América Latina (Observatory for Mining Conflicts in Latin America)
OECD	Organisation for Economic Cooperation and Development
OLCA	Observatorio Lationamericano de Conflictos Ambientales (Latin American Observatory for Environmental Conflicts)
PPP	Plan Puebla-Panama
SBIF	Superintendencia de Bancos e Instituciones Financieras (Chile's Superintendence of Banks and Financial Institutions)
SII	Servicio de Impuestos Internos (Chile's Internal Revenue Agency)
STS	Science and Technology Studies

**ABSTRACT**

**Martín Arboleda**

**A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy**

**RESOURCE EXTRACTION AND THE PLANETARY EXTENSION OF THE URBAN FORM: Understanding Sociospatial Transformation in the Huasco Valley, Chile**

**2015**

Through an engagement with an emerging strand of critical urban theory that reworks Henri Lefebvre's notion of 'planetary urbanisation', this dissertation explores the complex relation between contemporary forms of resource extraction and processes of capitalist urbanisation. It does so through the case of the Huasco Valley, an erstwhile agrarian region in northern Chile that was comprehensively redesigned and engineered into a mining, energy and agroindustrial hinterland strongly embedded in global networks of production and exchange. The thesis begins by offering a general exploration of the political economy of the 1993-2013 commodity boom, which set the foundations for new institutional, economic and corporate scenarios that led to an explosive rate of industrialisation and urbanisation across remote and rural geographies of Latin America. In the Huasco Valley, this context has translated into socioecological plunder, disruptions in public health, labour precariousness, intraurban displacement, and exponential growth of household debt. On this basis, I suggest that the production of urban space that underlies geographies of extraction is intrinsically uneven and in that sense, symptomatic of a world order dependent on the ongoing fabrication of invisibilised and fractured peripheries that are subservient to the consolidation of a seamless global space for the efficient circulation of commodities.

The dissertation then goes on to argue that the existing literature on planetary urbanisation has been insufficiently attentive to questions of labour and production, and this has precluded an analysis of the properly political underpinnings of the complete urbanisation of society. By advancing a materialist conception of history, I focus on labour transformations in the Huasco Valley to illustrate how, besides dispossession and socioecological degradation, the projection of material infrastructures for resource extraction has created the conditions of possibility for radical and emancipatory change. Processes of urbanisation taking place in this valley have not only transformed the built environment and the sphere of reproduction –via institutionalised forms of credit, cultural practices and consumer cultures-, but production itself. Automation, lean production, logistical networks, outsourcing and cybernetic systems, among others, have radically transformed instruments and relations of production, thereby replacing isolation and parochialism with vibrant forms of community, political organisation and metabolic interaction with extra-human natures.

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### **Note on Translations**

All translations from Spanish texts and interviews are by the author, and any errors in translation are solely his responsibility.

## INTRODUCTION

### 1. Introduction

Vast terraced bowls step down—and down and, impossibly, farther down—tracking dead faults and mineralization fronts on a scale only made clear when we notice sixteen-ton trucks like specks of dust on canyon walls. Discolored oceans of chemical runoff wash across vehicle tracks with acid tides... artificial hills, each uncannily and exactly like its neighbor, roll from one side of the frame to the other, shifting in tandem with commodities prices, their malleable geography thus forever resistant to mapping... These mines grow in great metastasizing voids, like storm fronts of negative space exploding with slow thunder into the planet. (Manaugh, in Maisel 2013, p. 205)

With photos of open-cast mines like the one described above, David Maisel's 2013 book *Black Maps* graphically documents some of the most radical alterations that the late modern, financially-driven and technologically rejuvenated mode of production has inflicted upon the surface of the earth. Following a sustained and global increase in commodity prices, such colossal landscapes of extraction are being relentlessly projected across vast stretches of the planetary domain in order to feed increasing demographic concentration in cities. By borrowing the metaphor of implosion/explosion from nuclear physics, the Marxist philosopher and sociologist Henri Lefebvre presciently described this phenomenon in his 1970 work *The Urban Revolution*. In this book, Lefebvre argued that agglomeration in cities (an implosion) is invariably coupled with the rendering of infrastructures for tourism, communications, logistics, waste disposal, and resource extraction (an explosion) across space (Lefebvre 2003 [1970], p. 14). In light of such considerations, this dissertation explores the complex relation between contemporary forms of resource extraction and processes of capitalist urbanisation. It does so through the case of the Huasco Valley, a region in northern Chile that has been comprehensively engineered into a mining and energy district aimed at supplying raw materials to international markets. This fragile valley constitutes a microcosm of a process that is taking place at the broader Latin American level, where 'pristine' and biogeographically crucial areas are being enclosed and redesigned on an ongoing basis in order to provide the oil, metals, timber, food and energy required to feed various layers of urbanisation unfolding in vast stretches of the world.

Throughout his major works on space, written from the early 1970s onwards, Lefebvre (2003 [1970]; 1973 [1972]; 1991 [1976]; 2009 [1978]; 2014 [1989]) described a simultaneously amplified and exploded urban reality, as the irruption of industry and its pursuit for labour markets and raw materials implied an immeasurable extension of the city beyond city limits. Therefore, he urged us to look beyond the word 'city', as it designates a clearly defined and self-contained sociological object, and focus instead on a theoretical critique of the city in terms of an ongoing process, which would be 'the urban' (Lefebvre 2003 [1970], p. 17). The change of outlook proposed by Lefebvre is tremendously important, because from once being absolute spaces in pre-capitalist societies, cities became relative spaces in an emerging context dictated by the imperatives of capital accumulation under a globalising world economy (see Merrifield 2013a).

The explosion of the historical city into the countryside had been observed by Guy Debord, who in the late 1960s noted how the mutual erosion of city and country was "reflected in the eclectic mixture of their decomposed fragments that blanket the most industrialised nations of the world" (2000 [1967], p. 97). Before Debord, Lewis Mumford also referred to this phenomenon as a "formless mass of thinly spread semi-urban tissue" (referenced in Debord 2000 [1967], p. 97). However, Lefebvre was the first to make a thorough theoretical exploration of the emergent urban fabric in the context of capitalist and market-driven forms of production. In his view, it is the massive concentration in urban areas as a result of the capitalist mode of production which ultimately produces the outburst of the urban fabric through otherwise non-urban geographies (Lefebvre 2003 [1970], p. 14). With this process of explosion, space as a whole inserts itself into the modernised mode of production, being utilised to produce surplus value and for that reason, the urban fabric, with its multiple networks of communication and exchange becomes a part of capital (Lefebvre 2009 [1979], p.187).

In this context, regions like the Amazon, Patagonia, the Andes, Antarctica, and the Caribbean - which for many would typify untouched and undefiled 'nature' -, have become recipients of massive systems of infrastructure, machineries and institutions aimed at extracting all sorts of raw materials. Because of the intensity and scale of these extractive operations, the types of territorial transformations taking place in geographies of extraction are sweeping in every possible way. Landscapes, cultural practices, institutions, customs, all are being radically transformed by an expanding urban fabric to serve the imperatives of capital accumulation. Such has been the case of the Huasco Valley, upon which this thesis focuses, which went from

being a traditionally agrarian region underpinned by self-sustaining local economies where herding and smallholding were predominant as late as the 1970s, to an industrialised hinterland interconnected to global flows of matter, energy and capital today.

**Figure 0.1**

**MAP OF THE HUASCO VALLEY**



**Source:** Provincial Government of Huasco<sup>1</sup>. Red dots represent each of the Huasco Valley's four villages (Alto del Carmen, Vallenar, Freirina and Huasco).

Despite the fact that the Huasco Valley is a rather unknown geographical region –even for most people in Chile–, it plays a fundamental role as a socioecological mediator between the northern and southern parts of the country. This valley is approximately 660 kilometres north of Santiago de Chile, running transversally to the Andes and covering an area of 19,066 square

<sup>1</sup> <http://www.gobernacionhuasco.gov.cl/geografia.html> (accessed 9 April, 2015).

kilometres.<sup>2</sup> To the extent that it has abundant water sources in the form of runoff from glaciers located high up in the Andes mountain range, it is a fertile strip of land that acts as the southernmost natural border of the Atacama Desert, the driest in the world. Thus, besides being important in its own right for local communities, ecosystems and livelihoods, the Huasco Valley is what actually prevents desertification from spreading further to the southern part of Chile. Yet, part of what makes it strategically important in biogeographical terms has also made it attractive for capital accumulation, because besides its abundant water sources – fundamental for large-scale mining and agribusiness-, the valley also hosts vast deposits of copper, titanium, gold, and silver, among other metals. Furthermore, the short distance between the mountain range –where most mineral deposits are located- and the ocean – where the metal ore is dispatched to manifold destinations-, reduces transaction costs and contributes to substantially diminishing turnover times of capital (see Figure 0.1).

Following the dramatic increase of prices across commodities from the early 1990s, the Huasco Valley has been witnessing the systematic irruption of massive mining and energy projects, agro-industrial estates, dams, and dense networks of material infrastructures oriented at facilitating the movement of raw materials across its terrain. Air, water and noise pollution, severe disruptions in public health, violence, displacement, impoverishment, and many forms of dispossession, are some of the consequences that this commodity boom has brought to bear upon territories of extraction. Accordingly, my aim with this dissertation is to mobilise the vibrant, scholarly discussion that has begun to emerge around Henri Lefebvre’s notion of ‘planetary urbanisation’ in order to make sense of the processes of urban and territorial reconfiguration taking place in Chile, and in the Huasco Valley more specifically.

## **2. Rationale for the Thesis**

The Huasco Valley has four villages (see Figure 0.1), all of them with small populations that had always been linked in different ways with artisanal herding, mining and agricultural activities. Neoliberal policy configurations enacted during the Pinochet dictatorship and refined by subsequent democratic governments, in addition to the commodity boom that began in the 1990s, led to massive inflows of foreign direct investment aimed at developing extractive projects of many sorts. As a result, this fertile valley was gradually transformed into an appendage of the urban fabric, as described by Lefebvre in *The Urban Revolution*. In the coast of the valley there are currently six thermoelectric plants, three industrial sea ports, an iron

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<sup>2</sup> See official website of the Huasco Province: <http://www.subdere.gov.cl/divisi%C3%B3n-administrativa-de-chile/gobierno-regional-de-atacama/provincia-de-huasco>.

refinery and several industrial tailings ponds –as well as their dense imbroglis of tension towers, railways, pipelines, cargo ships, antennas and so forth. Next to the coast is one of the largest pork-processing plants in the world –currently inactive after intense social mobilisation in 2012. In the slopes and mountainside there are currently nine projected mining undertakings, including El Morro and Pascua Lama, two of the largest gold deposits in Latin America, and whose expenditures on fixed capital to date amount to nearly USD 10 billion.

Besides skyrocketing commodity prices and neoliberal regulatory frameworks, it should be noted that the development of multimillion dollar investment projects in the Huasco Valley has also been driven by recent transformations in the financial and governance structures of the transnational mining industry. As economic activity gradually shifted its focus from production to finance after the 1970s, non-financial firms have been facing heightened pressure from institutional investors to yield financial results and reduce turnover times of capital. In the extractive industries, this has led to a relentless expansion of the intensity and scale of extractive operations on the ground. Barrick Gold and Goldcorp, two leading corporations in the mining industry with operations in the Huasco Valley, pioneered the implementation of a ‘disciplined investments’ framework that seeks to intensify material production but reducing operational costs at a minimum –with devastating socioecological effects in territories of extraction. Furthermore, both Barrick Gold and Goldcorp exemplify the general trend of mining corporations that are routinely turning to stock exchanges as a source of internal financing, and this has provided the liquidity required by ambitious and investment-intensive projects like the ones being developed in the Huasco Valley.

For these reasons, the case of the Huasco Valley is circumscribed within an intense, politically contested debate on the pervasiveness of contemporary forms of resource extraction that is taking place among multilateral organisations, decision makers, civil society organisations, local communities and the public at large across all of Latin America (see for example Gudynas 2009, 2010; Padilla 2012; Cancino 2012; Bebbington 2012, for an overview). Urbanists, however, have remained at the margins of this discussion as a result of a deeply rooted epistemological orientation that precludes viewing territories of extraction as internal to the urban world. Writing in the 1930s, Louis Wirth (1969 [1937]) –from the Chicago School of Urban Sociology- delineated the analytical contours of urbanism, framing them on the basis of a triad of sociological attributes –population size, density, and demographic heterogeneity (see Brenner 2013; Wachsmuth 2014). According to Brenner and Schmid (2013, 2015), such delineation led to an entrenched consensus among urbanists throughout the twentieth

century whereby the urban was equated with a spatial unit such as the city, the mega-city region, the conurbation, the megalopolis, and so forth. This metanarrative became particularly predominant when two United Nations' (UN) agencies declared in 2007 that it was estimated that half of the world's population was living in cities<sup>3</sup> (see Brenner and Schmid 2013).

For Angelo and Wachsmuth (2014), such urban epistemologies result in what they refer to as 'methodological cityism', which entails granting analytical prevalence to the city in studies of urban processes where the non-city can also play a significant role (p. 4). Such methodological cityism not only determines the rationale of multilateral agencies like the UN and the World Bank, but is also deeply engrained even among the conceptual repertoires of politically progressive strands of urban studies, such as for example the Marxist School of Urban Political Ecology (UPE) (Angelo and Wachsmuth 2014). Such epistemologies are also pervasive among academic studies on resource extraction and Political Ecology in Latin America. Possibly with the exception of Gastón Gordillo (2014), some of the most influential accounts of resource extraction in Latin America are underpinned either by a tacit or explicit assumption that geographies of extraction are the ontological 'other' of the urban (see Escobar 2008; Svampa and Antonelli 2009; De la Cadena 2010; Bebbington 2012; Perreault 2013; Gudynas 2014). On the other hand, when urbanists think about the socioecological effects of resource extraction or urban sustainability more generally, they do so by focussing either on zones of agglomeration or on peri-urban areas (see for example Auyero and Swistun 2009; Ordóñez et al 2012; Barton 2013).

This dissertation is underpinned by the aspiration to supersede the types of epistemologies that make places like the Huasco Valley invisible for the field of urban studies. With this, I consider the rationale of this thesis to be situated within the research agendas of the strand of critical urban thought that views planetary urbanisation as the theoretical and methodological springboard to rethink the urban beyond the city (see Brenner 2013, 2014; Brenner and Schmid 2013, 2014, 2015; Schmid 2014, 2014a; Angelo and Wachsmuth 2014; Merrifield 2013, 2014). Specifically, the research agenda of this nascent field of studies has consisted in reclaiming a rich and subterranean tradition within urban studies that for decades has been systematically questioning established understandings of the urban as a self-enclosed

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<sup>3</sup> UN Habitat framed this dramatically as follows: "Sometimes it takes just one human being to tip the scales and change the course of history. In the year 2007, that human being will either move to a city or be born in one. Demographers watching urban trends will mark it as the moment in which the world entered a new millennium, a period in which, for the first time in history, the majority of the world's people will live in cities" (cited in Brenner and Schmid 2013, p. 2).



sociospatial condition in favour of “territorially differentiated, morphologically variable, multiscalar and processual conceptualizations” (Brenner 2014, p. 15). Therefore, theorists of planetary urbanisation are adamant in claiming that the urban is not a bounded spatial unit, but instead a multi-scalar process of production and reproduction of the built environment (see Wachsmuth 2014; Brenner and Schmid 2015).

Also, and insofar as this dissertation is deeply concerned not only with problems of social dispossession but of socioecological degradation concomitant to resource extraction, it also aims at developing an engagement with ideas about urban political ecology and the urbanisation of nature (see Heynen and Swyngedouw 2003; Heynen et al 2006 for programmatic statements). In the context of the planetarisation of the urban, UPE has been recently criticised for not expanding its radical political-ecological imaginary beyond cities (Wachsmuth 2012; Angelo and Wachsmuth 2014; Ibañez and Katsikis 2014; Newell and Cousins 2014). Therefore, I also see this dissertation as an opportunity to extend UPE’s conceptual repertoire to the realm of the non-city. This analytical move is of uttermost political urgency because metabolic flows of matter, energy and capital required to feed a sprawling urban system have been relentlessly intensified under current world-historical conditions. Like the sewage and technological networks that feed the life of cities, places like the Huasco Valley –which are metabolic vehicles of planetary urbanisation- have also been hidden from view. Therefore, the fetishisation of urban infrastructural networks initially theorised by UPE (see Kaika and Swyngedouw 2000; Kaika 2004, 2005) has been ratcheted-up to the global level, and this means that there is a pressing need to identify and overcome the varieties of commodity fetishism that emerge under an exploding urban form.

Since the notion of planetary urbanisation was originally formulated by Lefebvre, it is worth stressing that all of the chapters in this thesis have different levels of engagement with his ideas. Such engagement is not limited to Lefebvre’s ideas on urbanisation, but also includes some of his writings on everyday life, totality, levels, state and aesthetics. However, in appropriating and reinterpreting some of his ideas, I also recur to other theoretical frameworks that, in my view, are instrumental for fully grasping the processes of urban and social change taking place in the Huasco Valley. I see such appropriation of the Lefebvrian worldview very much in line with Stanek et al’s (2014) invitation to view Lefebvre’s work as theory, not as method. As a heterodox Marxist, Lefebvre always developed unconventional interpretations of the historical materialist tradition, and even in the cases where he characterised his own work by means of a ‘method’, he never prescribed a systematic research

formula (Stanek et al 2014, p. 17). He constantly stressed the non-reductionist character of Marx's thought, and this allowed him to strive for an understanding of the social whole, but without losing sight of the radical heterogeneity underlying it (ibid). As a result, Lefebvre's concepts are not technical, well-defined and rigid tools ready to be implemented (Stanek et al 2014, p. 17), but analytical categories open to change, interpretation and reinterpretation. <sup>4</sup> In keeping in line with the openness and adventurousness that defined his life's work, it is therefore my intention to think with Lefebvre beyond Lefebvre in order to extend some of his thought to new horizons.

Most importantly, I should stress that the Lefebvorean worldview also runs like a thread through the various chapters of this thesis because I understand the urban as something fundamentally political, which despite its rampant unevenness can also constitute a sphere of playfulness and emancipatory change. As a result of the arrival of investment projects of all sorts to their territories, the communities living in the Huasco Valley have been developing vibrant forms of political organisation and community, and this has allowed them to obstruct the activities of large transnational corporations. Thermoelectric plants, a pork-processing plant with a capacity for 3 million animals, and open-cast mines of up to USD 7 billion have been suspended and even terminated after facing multi-scalar strategies of mobilisation that range from demonstrations to lawsuits before international courts. In that sense, I see this dissertation not only circumscribed to the Lefebvorean worldview, but more generally to the normative and ontological commitments of a historical-geographical materialism (see Harvey 1984, 2000 [1990]). <sup>5</sup> For Harvey (2000 [1990]), historical-geographical materialism is an open ended and dialectical mode of enquiry that recognises,

...that there are real geographies of social action, real as well as metaphorical territories and spaces of social power that become vital as organizing forces in the geopolitics of capitalism, at the same time as they are the sites of innumerable

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<sup>4</sup> According to Bertell Ollman (2015), the fact that Marx tended to ascribe different meanings to several of the concepts used in his critique of political economy, such as capital, labour and value, evinces his commitment to a philosophy of internal relations. For a philosophy of internal relations, Ollman (2015) argues, the 'things' that constitute reality are not considered distinct and static, but rather as moments in processes of flux and becoming. Although Stanek et al (2014, p. 17) do not make specific mention to the philosophy of internal relations, they nonetheless show how Lefebvre developed a similar approach, as he tended to introduce concepts by drawing complex networks of relations between them rather than by defining them in an isolated and essentialist manner.

<sup>5</sup> The notion of historical-geographical materialism was coined by David Harvey (1984).

differences and othernesses that have to be understood in their own right and within the overall logic of capitalist development (p. 355).

An emphasis on historical-geographical materialism is of much importance, because in order to understand the political ramifications of processes of urban change in the Huasco Valley, I aim at interrogating the transformations in instruments and relations of production, and with them, the broader socio-metabolic exchanges between self and environment. If the basic assumption of Marx's materialist conception of society is the fact that all human history is the outcome of class struggle (see Marx and Engels 2002 [1848]; Macey 2000; Swyngedouw 2009), then accounts of urban change necessarily have to reflect on issues of labour, human productive subjectivity and antagonism. I stress this particularity because despite the fact that Lefebvre viewed the urban as a profoundly politicised and contradictory process, he tended to overlook the role of the mode of production within the politically contested geographies of the urban fabric<sup>6</sup>. As is well-known, this garnered him substantial criticism in the 1970s and 1980s, especially from scholars such as David Harvey, Neil Smith and Manuel Castells (see Smith 2008 [1984]; Charnock 2014; Merrifield 2014).

According to Smith (2008 [1984], p. 123), Lefebvre's ideas were developed in a context where post-war capitalism had managed to attain a remarkable extension of commodity consumption, integrating the reproduction process more fully into the economic structure. This led Lefebvre to grant ontological priority to questions of reproduction and to consider labour organisation as subordinate, a move that Smith (2008 [1984], p. 125) and Castells (1977 [1972], p. 91) considered both reckless and analytically untenable, especially after the emergence of neoliberal capitalism in the 1980s. I consider important to stress this point precisely because much of the current work on planetary urbanisation retains to a considerable extent Lefebvre's methodological insistence on the sphere of reproduction. If labour is the 'ontological key' to understanding how urban environments are produced (see Loftus 2012; Ekers and Loftus 2013), then studies of planetary urbanisation necessarily have to explore the manifold relations between class, mode of production and technological change. In general terms, it has been argued that the field of political economy broadly considered has

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<sup>6</sup> One important and relatively unknown exception to this is perhaps his 1972 work *La Pensée Marxiste et la Ville*, which is due to be published in English for the first time in 2016. In this book, Lefebvre (1973 [1972]) elaborates at length about questions of labour and of production in the context of the planetary extension of the urban form (see Merrifield 2013b). Chapter Four will engage in depth with some of the ideas developed throughout this book.

systematically ignored questions of labour as well, and that such side-lining of class relations undermines comprehensive understandings of states and markets (Selwyn 2014).

Processes of urbanisation taking place in the Huasco Valley have not only transformed the built environment and the sphere of reproduction –via institutionalised forms of credit, cultural practices and consumer cultures-, but production itself. Automation, lean production, logistical networks, outsourcing and cybernetic systems, among others, have radically transformed social production in the valley and with it, the types of urban environments and political solidarities being enacted. For that reason, I also envisage this thesis as offering an alternative exploration of the political-ecological underpinnings of resource extraction in Latin America. Most accounts usually gravitate either around empiricist analyses of conflict and environmental justice (see Urkidi and Walter 2011; Bebbington 2012; Perreault and Valdivia 2010; Hinojosa 2011; Hinojosa and Hennermann 2011) or around Science and Technology Studies (STS) and the so-called ‘object-oriented ontologies’ (see Escobar 2008; De la Cadena 2010; Blaser 2010; Viveiros de Castro 2014; Tironi and Barandiarán 2014; Tironi 2015).

In summary, then, this thesis intends to mobilise the theoretical frameworks on the planetary extension of the urban form in order to make sense of the fractured, complex and contradictory processes of resource extraction taking place in the Huasco Valley. As an illustrative example of a process that is taking place across Latin America and beyond, this case study can serve as the starting point for future scholarship on the urban and territorial ramifications of contemporary forms of resource extraction. Throughout several of its chapters I intend not only to illustrate the types of urban transformations taking place in Chile and the Huasco Valley, but also to render visible the manifold layers of dispossession, impoverishment and socioecological plunder that underlie them. Towards the end of the thesis I also intend to reflect on the possibilities for radical change that lie beneath the expansion of the urban fabric. In general, through the development of this case study I wish to contribute to emerging scholarly debates on planetary urbanisation, urban political ecology and the political economy of the resource extraction boom in Latin America.

### **3. Research Questions and Original Contributions**

In broad terms, this thesis aims at answering the following research question: How can the notion of planetary urbanisation explain the broad socio-political context of resource extraction in Chile and Latin America? Conversely, how can an empirical study of resource extraction in Chile contribute to scholarly discussions on planetary urbanisation?

To the extent that the main research question is broadly framed and overarching, the thesis will address a set of specific sub-questions that explore and develop particular essential dimensions of the general analysis, namely:

1. What processes of urban restructuring have resulted from the current commodity boom in Latin America, and how can the notion of planetary urbanisation help us to understand this process?
2. How are technocratic rule and neoliberal policy toolkits linked to the socioecological reconfiguration of Chile in the context of resource extraction, and to what extent does this require a renewed engagement with UPE's conceptual framework?
3. What is the role of financialised capitalism in the expansion of the urban fabric across the Huasco Valley after the commodity boom?
4. How is social production in the Huasco Valley transformed with the arrival of transnational mining, and what can this tell us about the political underpinnings of planetary urbanisation?
5. To what extent are infrastructural networks for resource extraction banished from collective consciousness in Chile, and how does this challenge established understandings of urban metabolism?
6. What types of artistic practice emerge with the expansion of the urban fabric across the Huasco Valley, and how do they contribute to the production of more democratic, ecologically sustainable urban environments?

In answering these research questions, the thesis makes the following original contributions to scholarship:

1. In line with the historical-geographical materialist philosophy mentioned in the previous section, I use the case study of the Huasco Valley to theorise how the expansion of the urban fabric can create the conditions of possibility for radical and emancipatory change. The existing literature on planetary urbanisation –albeit with specific exceptions (see Merrifield 2012, 2014<sup>7</sup>)-, has to a considerable extent

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<sup>7</sup> Although the work of Merrifield has explored the emancipatory possibilities concomitant to the planetary extension of the urban form, his approach is decidedly city-centric, in both analytical and empirical terms, because the processes of social resistance that he analyses always take place within densely populated areas.

overlooked the political ramifications of global urban restructurings. According to Brenner (2009), critical urban theory emphasises the disjuncture between the actual and the possible, and this means that besides investigating the forms of domination associated with modern capitalism, there is also the need to excavate the emancipatory possibilities embedded within the system itself.

2. The case of the Huasco Valley, it was argued, constitutes a microcosm of a process that is taking place not only at the broader Latin American level, but rather worldwide as a result of a voracious demand for raw materials. Despite its radical territorial reconfiguration, this part of northern Chile has not been the subject of sustained enquiry, especially from urbanists. On the other hand, emerging accounts of planetary urbanisation have so far been theoretically-oriented and speculative, and this means that they still lack the dynamism, reflexivity and analytical traction that empirical case studies bring to theory-building. Developing a theoretically engaged but empirically grounded study of this valley is therefore something of much political and intellectual urgency, both for specific analyses of resource extraction in Chile, and for scholarly discussions on planetary urbanisation.
3. As was argued previously, the premises under which some of the scholarship on UPE has evolved need to be reconsidered. The intensity and scale of contemporary forms of resource extraction has utterly distorted and ratcheted-up the patterns of metabolic interaction associated with previous stages of capitalist development. Flows of matter, energy and capital are no longer bounded to closed-circuit geometries of cities and juxtaposed hinterlands, but have been relentlessly up-scaled and now transverse the whole globe. The case of the Huasco Valley can constitute an important, illustrative example that can offer theoretical and methodological elements to extend the scope of UPE beyond bounded and self-enclosed metropolitan spaces.

#### **4. Methodological Principles of a Planetary Urbanisation Approach**

As a dialectician, Lefebvre was always adamant about the need to grasp the complex and variegated dimensions of social life under capitalism not as isolated fragments, but as part of a dialectically intermingled, internally differentiated historical totality (see Goonewardena 2005; Shmueli 2008). Although Lefebvre pondered at length about the need to draw analytical connections between levels of social reality throughout the three volumes of his *Critique of Everyday Life* (2008 [1947, 1961, 1981]) and in *The Urban Revolution* (2003 [1970]), he never prescribed a specific research formula to achieve such undertaking. Despite the fact that research conducted for this dissertation was not ethnographic, I nonetheless drew much

inspiration from Michael Burawoy's (2000, 2009) reflexive methodological approaches, as well as from recent scholarship applying Lefebvre's critique of everyday life to empirically grounded research (Wilson 2009, 2011, 2014; Wilson et al 2015; Charnock and Ribera-Fumaz 2011; Loftus 2012).

In more general terms, Burawoy's (2009) work was instrumental for figuring out how to handle the complex, dialectical relation between reality and representation, thought and the things conceived and more importantly, lived experience and the global urban condition –a relation that constitutes the very core of critical urban theory (see Brenner 2009). For Burawoy (2009), social scientific research necessarily hinges upon empirical observation, and such process of observation does not start with data but with theory. Theory, he continues, is the necessary lens we bring to our relationship with the world, so by bringing theory to the field, the observer is able to identify relevant forces beyond the research site (ibid, p. 13). This approach, it should be noted, is very much in line with some of the methodological principles outlined by theorists of planetary urbanisation. According to Brenner and Schmid (see Brenner 2013; Brenner and Schmid 2015), to the extent that the urban is a theoretical construct, the process of abstraction that renders it as a knowable object implies a disconnection with the variability and situated specificity unfolding on the ground. In light of such considerations, and following Lefebvre's insistence on totality, these authors have stressed the need of developing methodological strategies to constantly interrogate everyday practices and networks of interaction at the local level (see Schmid 2014, 2014a; Brenner and Schmid 2015). Like Burawoy, Brenner and Schmid claim that theory needs to be continuously confronted with the ongoing variability unfolding on the ground.

According to Burawoy (2009, p. 20), reflexive science starts with a dialogue –virtual or real– between observers and participants, and then embeds such dialogue within a second layer of observation that links local context with extra local forces through a careful process of theoretical abstraction. Thus, empirical observation through the analysis of specific case studies is a necessary precondition for reflexively mapping, delineating and theorising the geographies of the planetary urban fabric. Throughout this dissertation, I have tried to implement such methodological principles in order to understand the planetary extension of the urban form as a process that is fundamentally lived and experienced, and that stretches from the molecular to the global. Through interviews, informal conversations, data collection from primary and secondary sources, and analysis of socioeconomic indicators at the local

level, I strived to systematically observe the experiential basis of territorial change in the Huasco Valley and its relation to the broader political and economic context.

## **5. Research Methods**

With the purpose of understanding the case of the Huasco Valley as embedded within global circuits of production and exchange, I devised a methodology of qualitative research that comprised data collection from primary and secondary sources, semi-structured interviews and attendance to seminars, demonstrations, documentary screenings and other events related to resource extraction. In progressing from the general to the particular, I developed three levels of observation, with the first and second of them being aimed at understanding the broader geopolitical context of resource extraction in both Chile and Latin America. This included a period of data collection and fieldwork with activists, experts and members of civil society organisations from the Global North, but actively campaigning in close associative links with communities and organisations in Latin America. In June of 2013, I was in London for a period of four days and was able to have meetings, interviews and informal conversations with activists and mining experts. I interviewed Richard Solly, the co-ordinator of the London Mining Network, an important transnational advocacy network campaigning against the negative effects of mining corporations listed on the London Stock Exchange. I was also able to meet with other experts from Amnesty International, ABColombia, as well as with activists from Tawantinsuyu Nation, a radical decolonial social movement campaigning against transnational mining in Latin America.

The first stage of fieldwork was very useful not only in terms of the data collected, but also because all of my interviewees had been working closely with communities and other civil society organisations in Latin America, and this allowed me to obtain crucial contacts for the second and third layers of observation. Besides the Huasco Valley, I had initially intended to include a case study of a mining conflict in Bucaramanga (Colombia) as well, so a considerable part of my fieldwork took place both in Bogotá and in Bucaramanga. Although those research sites had to be excluded from the dissertation because of the amount of data that was yielded, field research in Colombia was nonetheless very useful for grasping the wider context of resource extraction across the region. Colombia is one of the countries where the resource extraction boom has had the most devastating effects, and this means that there are wide-ranging discussions among diverse sectors of the public, with much information being produced as a result. I was in Bogotá during September and October 2013, and had the opportunity to speak to members of important civil society organisations opposing



transnational mining not only in Colombia, but at the broader Latin American level. I was able to interview members of CENSAT-Friends of the Earth Colombia, the Colombian Network against Transnational Mining –RECLAME in Spanish- (Red Colombiana contra la Minería Transnacional) and Terrae, some of which had recently co-edited important volumes about resource extraction in Colombia and Latin America.

Similarly to what happened in London, some of the people interviewed in Colombia not only provided me with valuable information about the political-economic context of resource extraction in the region, but also put me in touch with other contacts in Chile. I travelled to Santiago de Chile in early November 2013 in order to continue the second layer of observation. Many of the organisations campaigning nationwide against large-scale resource extraction are based in Santiago, so I was able to meet there with members of the Latin American Observatory for Mining Conflicts –OLCA in Spanish- (Observatorio Latinoamericano de Conflictos Ambientales), the Observatory for Mining Conflicts of Latin America –OCMAL in Spanish- (Observatorio de Conflictos Mineros de América Latina) and Semillas de Agua. I was also able to attend a seminar on the socio-environmental effects of transnational mining organised by the OLCA, which had Eduardo Gudynas –a renowned Latin American analyst on resource extraction- as a keynote speaker. Engaging with members of these organisations and attending the aforementioned seminar led to a ‘snowball effect’ which allowed me to establish further contacts with members of social movements and local communities of the Huasco Valley. These contacts were very important for conducting the final and ‘local’ level of observation.

From late November and throughout all of December 2013, I headed to northern Chile in order to conduct research in Vallenar, Huasco, Freirina and Alto del Carmen, the four villages of the Huasco Valley. Going to the Huasco Valley marked a complete turning point in my fieldwork, because up to that point I had only been able to obtain secondary information about the processes of territorial transformation taking place in my research site. In a sense, I was completely unprepared for the shift from representation to reality that travelling to the Huasco Valley implied. Although the various reports, interviews, documentaries and newspaper columns collected had given me an idea of what to expect, being able to perceive the inner workings of the planetary urban fabric constituted a revelatory experience for the way I approached my research. I rented a car in order to be able to travel between villages, and nearly 200 kilometres before arriving to the Huasco Valley, the infrastructural composition of intercontinental systems for resource extraction was already bursting into view. Ineffable

and gargantuan machineries, pipelines, transmission lines, as well as all sorts of materials were being moved by large trucks through the highway leading to my research site. These lorries, low-boy platforms, bulldozers, cranes, and other forms of industrial equipment contrasted starkly with the arid and desolate landscapes that surround the valley.

At this point, some of the methodological techniques that had been employed when doing fieldwork in London, Bogotá and Santiago had to undergo considerable reformulation. I approached the research sites in the Huasco Valley not only with the purpose of understanding the sociospatial and political aspects of the processes of transformation concomitant to the resource extraction boom, but also of grasping the experiential basis of such changes. In light with the methodological principles explained in the previous section, the Huasco Valley was the place where previous rounds of theoretical reflection and data collection on broader political-economic processes were to be dialectically confronted with situated specificity and experience. I therefore introduced new questions to my questionnaires in order to get the interviewees to reflect on their everyday, sensuous engagements with the rapidly shifting geographies of the world around them. I also engaged in extensive graphic documentation by taking photos of the built environment and landscapes.

With those things in mind, my first destination was Alto del Carmen, the village adjacent to the Pascua Lama and El Morro mining projects. In Alto del Carmen I was able to do interviews and have informal conversations with members of radical artist collective *Creando Valle*, as well as with leaders of the Association of Small-Scale Farmers. Both organisations have been actively opposing transnational capital in the Huasco Valley for years, and their members not only provided crucial information about the specificities of the conflict, but also gave me a tour through the village and its surrounding areas in order to show me the territorial effects produced by the arrival of transnational capital. I went to see the Huasco River, whose flow had been radically diminished during recent years, especially when Barrick Gold started to build Pascua Lama in 2006. My contacts also took me to the Santa Juana dam, built in 1995 and with a capacity for 163 million cubic metres, as well as to several agribusiness complexes producing grapefruit. According to my contacts, these agro-industrial undertakings had proletarianised considerable segments of the local peasantry and had radically diminished the fertility of the soil. Besides photo-documenting the areas surrounding Alto del Carmen, I also took many photos of the village itself, which is currently adorned with many murals, graffiti and other sorts of urban interventions allusive to the pervasive effects of large-scale mining and to the natural beauty of the place.

My second destination was Huasco, the village that is located in the coast of the valley and that serves as a powerhouse of sorts for all the industrial hinterlands located across the valley and beyond. I was able to interview two leaders of SOS Huasco (a local social movement opposing dirty power generation) and have informal conversations with members of the local community. Two members of SOS Huasco gave me a tour through the various power plants, industrial complexes, sea ports, high tension towers and tailings ponds, and also showed me the environmental effects of coal and petcoke-powered electricity generation on olive plantations, as well as the noise produced by cargo trucks and freight trains constantly passing through the village to load and unload materials. The days I spent in Huasco were very productive because besides being able to get to know the place very well and have several conversations with my contacts, I was also alerted of the existence of very relevant studies by biologists and physicians about the relationship between air and water pollution in Huasco and the cancer epidemic that is currently affecting the village. While in Huasco, I was also able to meet Juan Carlos Labrín, a local musician and social activist who has been denouncing the deeply conflictual situation of the Huasco Valley through music and other forms of artistic expression. Before moving to the last research site, I spent one day at Freirina –the village contiguous to Huasco-, where I met two leaders of Freirina Concierte, the social movement that successfully opposed the development of large-scale pork-processing activities in the valley.

The final research site was Vallenar, which is the valley's largest village and economic hub. Vallenar is where the power of agglomeration concomitant to urbanisation can be observed most directly because during the last ten years –and especially after 2006, when the Pascua Lama project began the construction phase-, it has been witnessing the arrival of several retail chains, banks, travel agencies, financial intermediaries, migrants, housing projects and a large quantity of motor vehicles. I had interviews with state officials from the local Planning Department (Secretaría de Planeación), as well as with the leaders of the Council for the Defence of the Huasco Valley (Consejo de Defensa del Valle del Huasco), and the Huasco Valley Socioenvironmental Movement (Movimiento Socioambiental del Valle del Huasco), two umbrella organisations that gather all the local movements and design joint strategies of mobilisation.

## **6. Structure of the Thesis**

Insofar as this is a theoretically-driven thesis that incorporates empirical research, the chapter structure reflects the intention to address each sub-research question, in turn, and therefore to explore different essential dimensions of planetary urbanisation in the context of the resource extraction boom in Chile and the Huasco Valley in particular. Therefore, and instead of the 'theoretical framework-methodology-case study' structure that tends to predominate in empirically-oriented research, this thesis targets a sequential progression of conceptual debates informed by different angles of empirical observation. In that sense, each chapter has a vantage point of its own which connects to the broader discussion on planetary urbanisation, and is underpinned by layers of empirical analysis that range from the Latin American level to the household. To provide a cohesive narrative arch that allows the thesis to flow logically and constitute a structured whole, I have devised the chapters to progress from the general to the particular. Therefore, it starts by surveying the geopolitical context of Latin America's commodity boom and ends with an analysis of artistic practice and everyday environmentalism in Alto del Carmen, the smallest village of the Huasco Valley. Also, and besides a logical progression in terms of scale, the thesis also progresses from the descriptive to the properly political dimensions of urbanisation.

To provide the broader geopolitical and geo-economic context of resource extraction in Latin America, Chapter One offers an exploration of the political economy of the current commodity boom and its institutional, macroeconomic and territorial ramifications at the regional level. Theoretically, the chapter also plays an important role because it develops an analysis of the commodity boom in terms of the analytical distinction between concentrated and extended forms of urbanisation. Such distinction is of much importance for the chapters that follow because despite the fact that the research sites do not have the morphological, demographic or biophysical characteristics of cities, they nonetheless need to be considered as spaces of urbanisation in their own right. The concentrated/extended urbanisation dialectic, it will be argued, constitutes an important alternative to urban/non-urban imaginaries whereby places like the Huasco Valley remain occluded and construed as external to the urban world.

Chapter Two moves from the regional to the national scale, reflecting on the role of the nation state as a fundamental mediating agent in processes of large-scale urban and socio-metabolic transformations. In this chapter, I trace Chile's recent history in order to understand how the genealogy of neoliberal technocracy under Pinochet's authoritarian regime set the foundations for the types of territorial transformations that have radically reconfigured the geographies of

the Huasco Valley and dramatically projected the urban fabric into new territories. In theoretical terms, I try to understand neoliberal policy toolkits as engines of extended urbanisation, and in so doing, I argue for the need to expand UPE's field of vision beyond large urban agglomerations. It is important to think about the notion of metabolic urbanisation as a process that is not circumscribed to cities, but that transverses settlement types and spatial scales.

Chapter Three constitutes the starting point for the analysis of the Huasco Valley, and explores the relation between finance capitals and processes of urbanisation taking place in Vallenar, the valley's main village and economic hub. Specifically, I trace some of the internal transformations that have taken place within the transnational mining industry in order to illustrate how financial practices, instruments and institutions at the global level become crucial determinants for the production of unjust urban environments and of shifting frameworks of interaction at the level of the household in Vallenar. I show how a set of strategies pursued by financiers and corporate managers thousands of kilometres away from extraction sites, resulted in sclerotic fabrics of urbanisation shaped by socioecological plunder, dispossession and geographically uneven financial landscapes. Theoretically, Lefebvre's ideas on totality and levels are utilised in order to view the international financial system as a differentiated unity whose reproduction is premised upon practices that span global, urban and private levels of social reality.

Chapter Four plays a pivotal role in the dissertation because it moves from a critique of the processes of dispossession and socioecological plunder underlying geographies of extraction, to a decidedly political register, seeking to interrogate the possibilities for radical change concomitant to planetary urbanisation. The chapter reflects on how the expansion of the resource extraction frontier across the geographies of the Huasco Valley has transformed labouring worlds and produced new labouring subjects. Information technologies, automation, just-in-time systems and land-use change are some of the factors that have made work precarious, temporary and low wage. However, and in line with the historical-geographical materialist framework previously outlined, the chapter argues that the reconfiguration of productive structures has at the same time set the foundations for vibrant forms of political organisation, communal life and urban environments. I use some of Marx's ideas on large-scale industry and the "real subsumption of labour to capital", as well as some of Michael Hardt and Antonio Negri's reflections on the informatisation of production to substantiate my

argument. Also, and quite crucially, I underpin these theoretical reflections by revisiting some of Lefebvre's works on the relationship between urbanisation and mode of production.

Chapter Five interrogates questions of energy production, and therefore offers a detailed analysis of Huasco, the village that has been overburdened with massive energy undertakings to power the operations of mines located in the valley and adjacent regions. In this chapter, I continue to reflect on notions of metabolism vis-à-vis planetary urbanisation, placing the emphasis on the problems of commodity fetishism that are immanent to an exploding urban form. Like the sewage and technological networks that feed the life of cities, the chapter argues that Huasco -as a metabolic vehicle of planetary urbanisation- has also been hidden from view. Just as the socio-material arrangements that facilitate the smooth functioning of the bourgeois city and household are riddled with glitches and exclusions, I suggest that globally up-scaled infrastructures reveal even larger contradictions that put into jeopardy the very premises upon which the on-going commodification of nature is grounded.

Finally, Chapter Six offers an analysis of Creando Valle, a local artist collective in Alto del Carmen, in order to illustrate how the transformations in structures and relations of production that result from the expansion of the urban fabric also lead to the reconfiguration of the art form. In this chapter, I draw much inspiration from some of Lefebvre's thoughts on the aesthetic, and especially on his hopeful reading of the city and the everyday as works of art in the process of becoming. The Lefebvrian idea of the city as artwork is confronted with materialist periodisations of the art form in a context of the real subsumption of labour to capital, basically to illustrate how different stages of industrial development are dialectically interwoven with particular forms of artistic practice. With this, my aim is not only to illustrate the concrete possibilities for emancipation that underlie the planetary extension of the urban form, but also to reflect on the aesthetic dimensions of sociospatial change under contemporary capitalism.

## CHAPTER ONE

### Planetary Urbanisation and the Commodity Boom in Latin America

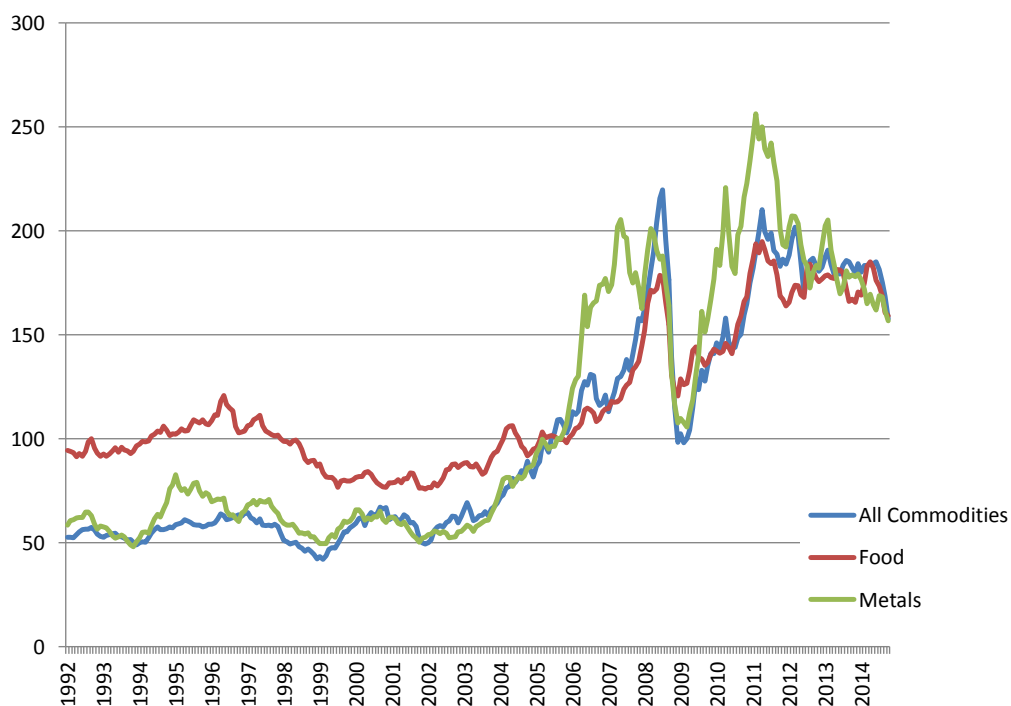
#### 1. Introduction

The recently published book *Implosions/Explosions: Towards a Study of Planetary Urbanization*, edited by Neil Brenner (2014), has as its cover an image of the desolate, colossal and gloomy tar sands of Alberta, Canada. These barren landscapes are the result of a historical turning point in the intensity and scale of resource extraction, and for Brenner and others have come to constitute the universal epitome for the massive socioecological plunder that underlies fossil fuel powered, modern urban life. Such aesthetic –which became popularised by the work of photographers like David Maisel, Garth Lenz and Edward Burtynsky-, conveys without ambiguities the philosophical and political urgency of expanding the field of vision of urbanisation beyond cities. With his visionary 1970 work *The Urban Revolution*, Lefebvre began to lead the way in such direction because for him, the concentration of population that economic growth and industrialisation demands, corroded the borders of a traditionally self-contained urban form, making of urbanisation a boundless phenomenon (Lefebvre 2003 [1970]). This led him to describe capitalist globalisation as a generalised ‘explosion of spaces’ that is fundamentally underpinned by contradictory, yet interwoven processes of homogenisation and fragmentation of territories (Lefebvre 2009 [1979, 1980], 1991 [1976], 2003 [1970]; see also Brenner 2000).

With their relentless drive to excavate ever more deeply and exhaust ever more thoroughly, the geographies of contemporary resource extraction are arguably one of the main driving forces of the explosion of (urban) spaces that Lefebvre so presciently described. The fluctuations of international commodity markets in recent years attest to the frantic pace at which resource extraction is changing the face of the planet. Within only ten years (from 1995 to 2005), worldwide production of aluminium increased by 64%, production of iron by 50% and production of copper by 42% (Toro 2012; Klare 2008), linked with the global growth in construction, infrastructure and manufacturing sectors. This commodity boom, the International Monetary Fund (IMF 2011) notes, “has been remarkable in historical perspective not only for its magnitude, but also because –unlike most previous booms- it has been broad based” (p. 46). This means that prices across all categories (food, minerals, hydrocarbons) have behaved similarly during the last decade due to the role of a voracious global demand for raw materials as the chief determinant of price variation (see ECLAC 2013; World Bank 2012; IMF 2014. See figure 1.1). After China’s economic slowdown in 2014, the aggregate price of

commodities plummeted, but individual price categories like that of oil and of certain specific metals are beginning to show a steady recovery (see IMF 2014; De los Reyes 2015; Russia Today 2015; see Section 3 of this chapter).

**Figure 1.1**  
**INTERNATIONAL PRICE INDEX FOR RAW MATERIALS, 1992-2014**  
*(Index: 2005=100)*



**Source:** Author, with data from the International Monetary Fund’s (IMF) Primary Commodity Prices<sup>8</sup>.

Since Latin American countries possess some of the world’s largest mineral and oil reserves, as well as investment-friendly regulatory frameworks, the region has become the main destination for capital allocations in world mineral prospecting, accounting for almost one third of total mining investment in 2010, with USD 180 billion (ECLAC 2013). The budget for exploration in the region has increased more than fivefold from USD 566 million in 2003 to USD 3 billion per year in 2010 (ibid), making several Latin American countries recipients of substantial flows of foreign direct investment (FDI) (see Cancino 2012). This has fuelled a massive wave of infrastructure, energy and mining undertakings across the whole regional

<sup>8</sup> Dataset available at <http://www.imf.org/external/np/res/commod/index.aspx> (accessed 15 August, 2014)



territory in order to facilitate resource extraction on a very large scale. Because of the interplay of regulatory frameworks, financial capital and technological developments such as sophisticated methods for land surveying, the mechanization of productive structures and the proliferation of open-cast mining, the speed and the scales of territorial transformation have expanded to unprecedented extents.

In light of such considerations, and on the basis of the analytical distinction between *concentrated* and *extended* forms of urbanisation developed by Brenner and Schmid (2013, 2014; see also Brenner 2014; Brenner and Katsikis 2014), this chapter interrogates the political economy of the commodity boom in order to propose viewing geographies of extraction as particular morphological expressions of contemporary processes of capitalist urbanisation. I then draw from Lefebvre to argue that such burgeoning urban morphologies are the result of a contradictory tension between spatial homogenisation –in the form of multiscale governance frameworks and infrastructural programs-, and territorial fragmentation –in the form of fixed capital allocations and state-led spatial segregation-. Finally, the chapter offers a brief reflection on the emancipatory promise underlying the planetary extension of the urban form, because besides the obliterating effects of this contradictory movement, the processes of technological modernisation concomitant to resource extraction have allowed local communities to shed their isolated state and emerge as political actors with the ability to challenge the *status quo*. With the final section, the purpose is to provide a general overview of processes of political organisation that will be analysed in further detail throughout Chapters Four, Five and Six.

The chapter begins by providing a brief theoretical discussion on Lefebvre's ideas of the production of space in a context of planetary urbanisation and of how such ideas have been recently reworked by critical urban theorists. I will argue that the process-oriented approach to the urban implicit in the Lefebvrian worldview, and especially the analytical distinction between extended and concentrated forms of urbanisation, allows recasting the spatialities of resource extraction as being immanent to the contemporary global urban condition. Such analytic will be fundamental for the rest of the chapters of this dissertation, because the morphological attributes of resource extraction sites differ from those of concentrated agglomerations, and therefore require an internally differentiated epistemology of the urban in order to connect them with broader sociospatial transformations unfolding across the globe. On that basis, the second section offers an analysis of the political economy of the boom. The final section concludes with a reflection on the emancipatory promise that underlies the

relentless urban explosion produced by an escalating demand for raw materials, and sets the foundations for more detailed explorations on the political dimensions of planetary urbanisation to be developed in Chapters Four, Five and Six.

## **2. The Implosions and Explosions of Capitalist Urbanisation**

The process through which the uneven spatialities of the urban fabric are produced is profoundly contradictory, as it falls within a schema that Lefebvre referred to as “homogeneity-fragmentation-hierarchization” (2009 [1980]; 2003 [1970]; 2014 [1989]). First of all, there is a tendency to homogenisation in which capitalism produces a space that is a “reflection of the world of business on the national and international level”<sup>9</sup> (Lefebvre 2009 [1979], p. 187). According to Harvey (2006 [1982], p. 375), spatial integration –understood as the linking of commodity production in different places through exchange- is a precondition for the accumulation and circulation of capital. This homogenising process is thus achieved by reducing physical barriers to the movement of commodities and capital (ibid, p. 375). Concomitant to the homogenising movement, there is also a tendency to fragmentation, as space is broken down into functionally specific, distinct spaces that would correspond to the spatial translation of the social division of labour (housing, leisure, transportation, production, etc) (see Lefebvre 2009 [1980]). For Neil Smith, the necessity for accumulation leads to a continuous investment in fixed capital in the form of facilities such as railways, factories, warehouses, power stations, and so forth (Smith 2008 [1984], p. 159). Since these facilities need to be geographically immobilized as a precondition for accumulation, there is a spatial (machineries and infrastructures) and social (labouring processes) concentration of capital, which would be the main determinant of the tendency to spatial fragmentation (ibid).

At the heart of this contradictory movement lies the metaphor of implosion/explosion, which Lefebvre used in order to illustrate how at the same time that it projects itself across the planetary domain, the capitalist urbanisation process is also constantly creating new, morphologically differentiated forms of urban centrality and peripheralisation (Brenner 2001). Recently, an emerging strand of critical urban thought has reclaimed this processual view of the urban to move beyond the entrenched epistemology of mainstream urban studies in which the urban is thought to be embodied only in cities, usually determined as such by population

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<sup>9</sup> Lefebvre (1991 [1976]) theorises this as ‘abstract space’, and corresponds to the space produced by capitalism, which includes the world of commodities, its logic and its worldwide strategies (p. 53). This abstract space becomes detached from lived reality and operates beyond individual and even collective control (see Wilson 2014). Within this abstract space, Lefebvre (1991 [1976], p. 53) argues, the space of the town –as the starting point of social and economic life- becomes disintegrated.

thresholds and densities (see Brenner 2013, 2014; Brenner and Schmid 2014). Transcending such epistemologies and ideological visions in studies of resource extraction is something of uttermost political and analytical urgency, because despite the fact that extraction sites may not have the densities and population thresholds of large urban areas, they nonetheless become the recipients of infrastructures, capital and migratory flows that transform them completely, superseding any clear distinction between city and country.

To breach the limitations of such worldview, Brenner and Schmid (2013, 2014, 2015; see also Brenner and Katsikis 2014; Brenner 2014) have proposed to consider the twenty-first century global urban condition in terms of *concentrated and extended* forms of urbanisation. The former describes forms of urbanisation that follow from processes of agglomeration whereby workers, firms and infrastructure cluster together in space during successive cycles of capitalist development (Brenner and Schmid 2015). According to Brenner (2013), while the scale and morphological attributes of such processes of concentration can shift dramatically over time (ranging for example from the suburban to the megalopolitan city-region), it is with reference to this particular sociospatial tendency that urbanisation has been traditionally defined. Yet, Brenner and Schmid (2014, 2015) are adamant in claiming that the historical and contemporary geographies of urban transformation encompass much broader -albeit massively uneven- territories, some of which may even contain small and dispersed populations. Despite being located in remote areas of the globe, these geographies become densely interwoven with forms of concentrated urbanisation via spatial divisions of labour, networks of production and trade, and so forth. Thus, within this worldwide field of urban development, Brenner (2013) notes how agglomerations expand, shrink and morph continuously, but always in relation to these places, typically considered as being outside the urban condition.

In light of such considerations, Brenner and Schmid (2015) suggest that a first moment of concentrated urbanisation is inextricably connected to a second moment of extended urbanisation (see also Brenner and Katsikis 2014). According to Brenner and Schmid (2015), extended urbanisation involves “the operationalization of places, territories and landscapes, often located far beyond the dense population centers, to support the everyday activities and socioeconomic dynamics of urban life” (p. 167). Crucially, the production of such ‘operational landscapes’ results from the socio-metabolic imperatives associated with urban growth, such as the provision of water, raw materials, energy, the management of wastes, communication infrastructures, leisure industries, etc. As such, operational landscapes of extended

urbanisation typically exist in the form of infrastructures for energy, tourism, telecommunications and transportation, as well as extraction sites and landfills, among many other places that both result from and facilitate the dynamics of urban agglomeration (see Brenner and Katsikis 2014).

The logics of extended urbanisation under neoliberalising capitalism, Brenner and Katsikis (2014) suggest, imply the continued enactment and reenactment of liminal places of this sort, that despite not being as densely populated as cities, nonetheless play strategic roles in supporting the latter, with their developmental rhythms being increasingly linked via worldwide spatial divisions of labour. Crucially, the ongoing development of these 'operational landscapes' entails the continuous construction and reorganisation of various sorts of material infrastructures, and this is what ultimately accounts for the expansion of the urban fabric across vast stretches of the planet (Brenner and Schmid 2015). Furthermore, the production and reproduction of an infrastructural basis to support urbanisation goes hand in hand with the enclosure of land from established social and communal uses in favour of privatised and profit-oriented forms of appropriation (ibid). This particular aspect is of much relevance for contemporary forms of resource extraction in Latin America. As subsequent sections will illustrate, the concession is the legal scheme<sup>10</sup> that underpins the violent forms of accumulation by dispossession concomitant to processes of extended urbanisation whereby communal lands are enclosed and operationalised as agro-industrial estates, mines, oilfields or tailings ponds.

It should also be noted that Brenner and Schmid (2015) have recently argued that concentrated and extended forms of urbanisation are dialectically intertwined with a third moment of *differential* urbanisation. Differential urbanisation, these authors note, implies the creative destruction of sociospatial configurations in relation to the broader dynamics and crisis-tendencies of modern capitalism (ibid). In line with the processual understanding of the urban that informs theories of planetary urbanisation, the differential moment is aimed at highlighting the "perpetual dynamism of capitalist forms of urbanization, in which sociospatial configurations are tendentially established, only to be rendered obsolete and superseded

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<sup>10</sup> Under the legal framework of the concession, the state gives the concession holder the right to explore and extract resources from the subsoil within the boundaries of the concession for a specific period of time –for example, mining concessions tend to be granted for an average period of 20 years (see Bridge 2009; Bebbington 2012).

through the relentless forward-motion of the accumulation process and industrial development” (ibid, p. 168).

Such a layered and internally differentiated epistemology of the urban, and especially the category of extended urbanisation, will be fundamental for the development of this dissertation, and will constitute the analytical framework that will orient the analysis of the different dimensions developed throughout each of the chapters. For the case of this chapter, and as the following sections will explore in detail, the notion of extended urbanisation will be fundamental for comprehensively grasping the massive sociospatial transformations that underlie the commodity boom in Latin America. The spatial transformations arising from these new cartographies of extraction, it should be noted, stretch beyond established zones of agglomeration like Santiago, Lima and Buenos Aires, and sometimes even extend to places as remote as the peaks of the Andes, the Atacama Desert, the Amazon, Patagonia and even Antarctica.

In light of such considerations, the conflictual and contradictory movement of homogenisation-fragmentation described by Lefebvre, needs to be understood as part of a wider process of concentrated and extended urbanisation, which is what ultimately produces the explosion of urban spaces across remote and variegated geographies. The following section develops an analysis of the political economy of the commodity boom in terms not only of its macrostructural impacts on domestic economies across the region, but also through a Lefebvrian examination of the legal and governance arrangements, as well as of the sociospatial ramifications it has produced on the ground.

### **3. The Political Geographies of the Commodity Boom**

According to the IMF (2011), the current commodity boom has been remarkable in historical perspective, not just because of its magnitude –as energy and metal prices have almost tripled since 2003-, but because unlike previous booms, it has included a wide array of raw materials (crude oil, metals, food). Also, the fact that most prices remained at record highs and showed rapid recoveries after the global recession that began in 2009, attests to the persistence of this boom (ECLAC 2013; World Bank 2009, 2012), which has been driven by accelerated growth in Asian economies as the core determinant of price variation. In fact, notwithstanding recent economic turbulence due to the aforementioned crises, the inertia of industrialisation rates in China and India has led the ECLAC (2013) to conclude that the boom is due to continue in the medium term. In its last quarterly report on commodity markets, the IMF (2014) has reported

that although aggregate commodity prices plummeted during 2014 as a result of China's economic slowdown, some commodities –like oil and specific metals- are beginning to show a steady recovery<sup>11</sup>. The gold market, which plays a pivotal role in Latin America's mining activity, has flourished in recent years as a result of China's burgeoning middle class on the one hand (see De los Reyes 2015), and of the Chinese government's expansive monetary policy on the other<sup>12</sup>.

The macroeconomic impacts of this phenomenon for Latin America have been massive. As of 2011, the region was the most popular destination for mineral prospecting, attracting 25% of global capital allocations, mainly in Mexico, Chile, Peru, Brazil, Colombia and Argentina (Deheza and Ribet 2012. See also Cancino 2012; Gudynas 2009a. See also Bebbington et al 2008a; Bebbington 2012). In general, and since 2003, the region has witnessed massive inflows of foreign direct investment, reaching an all-time record high of USD 174 billion in 2012 despite an overall slowdown in the global economy (ECLAC 2012), and this has profoundly affected productive structures, reinforcing an already rigid international division of labour in which certain countries of the Global South specialise in exports of primary products. As a result, and among all sub-regions of the continent, South America has become the most dependent on raw materials, with net commodity exports representing 10% of GDP, compared with 6% in 1970 (IMF 2011). Although countries like Argentina, Uruguay and Brazil have managed to diversify away from commodities, the latter still account for an average of 60% of total exports of goods and services (ibid, p. 49).

According to official figures, mining and energy exports have increased their participation in total exports in most South American countries, going for example from 39.7% in 2001 to 62.4% in 2010 in Chile; from 46% in 2000 to 65% in 2010 in Colombia; and from 46% in 2000 to 61% in 2010 in Peru (Cancino 2012, p.66). Insofar as this scale of accumulation requires continuous investment in the creation of a built environment fit for capital accumulation (Smith 2008 [1984], p. 159), and as it was noted in previous sections, the region has also seen

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<sup>11</sup> Mining experts in Latin America have argued that lower commodity prices could actually trigger an intensification of extractive operations because governments are likely to aim at extracting larger quantities of raw materials in order to cover fiscal deficits caused by low prices in the first place (see for example Luna Acevedo 2015).

<sup>12</sup> According to *Russia Today* (2015), gold prices will reach a new record during the next decade as a result of Asian demand. With the establishment of the Asian Infrastructure Investment Bank by the Chinese government -which is supposed to act as a geopolitical rival of the IMF-, China's sovereign demand for gold has skyrocketed in order to provide a higher degree of reliability and confidence to its monetary basis (see <http://actualidad.rt.com/economia/169722-precios-oro-record-demanda-asia>, accessed 17 April, 2015).

an increasing level of investment on material infrastructures oriented at reducing the transaction costs associated with the movement of goods through space (see ECLAC 2011). According to the World Bank (2010), much of the investment on infrastructure in the region has been mobilised through public-private partnerships, with 845 infrastructure projects being developed between 2000 and 2009, accounting for an overall USD 310 billion investment. With this, Latin America accounted for 30% of the investment on infrastructure in developing countries, with telecommunications, energy and transport being the most successful sectors, attracting 47%, 31% and 20% of regional investment respectively (World Bank 2010, p. 1).

The sociospatial translation of such data is hard to assess, but what is certain is that these massive undertakings are rapidly transforming landscapes, territories and settlements into extended forms of urbanisation all across the continent. A recent report by the Economic Commission for Latin America and the Caribbean (ECLAC) (2012a) argued that the geographies of Latin America are currently undergoing significant changes, because areas with historically low population density are assuming an “increasingly urban profile”, mainly due to “land-use change” (ibid, p. 25). The ECLAC points at resource extraction as the main cause of these changes in land-use, as many areas rich in biodiversity, endemic species and minerals have become operationalized into ‘hot spots’ for economic exploitation in the region (ibid). As Bebbington (2012) has outlined, and to illustrate the magnitude of this phenomenon, between 2002 and 2009 in Colombia, the area granted to mining licenses increased from 1.05 million ha to 4.77 million ha, and between 2004 and 2008 in Peru, the area under hydrocarbon concessions increased from 14% to 72%. These are only a few figures that illustrate how the frontier of resource extraction is dramatically being projected into brand new geographies, and these ‘hot spots’ (i.e. ‘operational landscapes’ in terms of the planetary urbanisation literature) –now part and parcel of an expanding urban fabric- are being linked ever more directly via infrastructures and built environments to global circuits of exchange. The following subsection addresses the tendency to homogenisation resulting from the boom, in terms of the international mechanisms, legal reforms, policy and governance frameworks that have been enacted to facilitate resource extraction.

### *3.1. The Tendency to Homogenisation*

As Smith (2008 [1984], p. 185; see also Harvey 2006 [1982], p. 397) noted, spatially integrated systems for accumulation not only require flows of capital, machineries and material infrastructures, but also the implementation of specific institutional and regulatory frameworks at local, national and international scales of governance. In other words, and as

Lefebvre suggested, the homogenisation of space is not only produced by relations of production, because insofar as it is a political product, it also implies a network of strategies, administrative and governance controls (Lefebvre 2009 [1980]). In Latin America, this process can be evidenced with startling clarity, because the commodity boom has also set into motion a process of institutional reconfiguration that can facilitate –and even accelerate–, large-scale extractive operations.

As such, since the late 1990's a wave of institutional reforms at all scales has been taking place, unsettling all sorts of governance, policy, legal and even constitutional arrangements. To begin with, international financial institutions (IFIs) have been officially endorsing the shift to resource-intensive economies in Latin America ever since the structural adjustment reforms of the 1980s and 1990s. The World Bank published in 1996 a watershed document titled *A Mining Strategy for Latin America and the Caribbean*, in which 'friendly' policy recommendations were made with the purpose of implementing reforms to attract transnational mining investment (Maya 2013). In the years that have followed the report, the World Bank has maintained its support to programs to reform mining codes, ease profit repatriation, reduce royalty rates and support geological surveying to create more incentives for companies to invest (Bebbington et al 2008; Rudas and Espitia 2013; Infante 2011; Padilla 2010). Besides the World Bank, other IFIs like the Inter-American Development Bank (IADB), the Multilateral Investment Guarantee Agency and the International Financial Corporation (member of the World Bank Group) have also been key supporters of this process (Bebbington et al 2008). As a result, many mining codes in the region were reformed under processes of structural adjustment, seeking to liberalise domestic market conditions and attract investment for resource extraction, as was the case of Bolivia and Uruguay in 1991, Brazil in 1996, Venezuela in 1999, Mexico in 1992, Cuba and Argentina in 1995, Honduras in 1998, Nicaragua in 2000 and Colombia in 2001 (Fuentes 2012; Toro 2012; Pardo 2013).

Although each regulatory framework has its own particularities depending on the local context and legal tradition of the country, Fuentes (2012) has identified three core characteristics that cut across all mining codes: First, the state is the sole owner of natural resources, and property rights are neither imprescriptible nor subject to any statutory limitations whatsoever, despite the fact that the general tendency in the region is for states to delegate extraction activities to privately-owned companies through concessions; second, the subsoil is owned by the state regardless of any property rights over the surface; and third, mining has been invariably



declared as a 'public interest activity', which means that the state is entitled to expropriate privately owned territories (ibid, p. 217).

These legal reforms have also coincided with a parallel tendency to negotiate and sign Free Trade Agreements (FTAs) that began shortly after the North American Free Trade Agreement was ratified by Canada, Mexico and the United States in 1994, when the latter put into motion a negotiation campaign with Latin American countries. From a total of 21 Latin American countries, almost half of them have become signatories of FTAs –not only with the US but with several other countries- since the turn of the century, when negotiation strategies became more aggressive as a result of commodity prices. Many of the dispositions of this new generation of FTAs relating to investments have a direct impact on resource extraction, as transnational companies are usually given benefits that tend to boost their activities in substantial ways. Some of them include compensations to companies for expected gains when they consider that host governments make decisions that breach their rights (CooperAcción 2012; Toro 2012).

This tendency to homogenisation has not been limited to legal formulations and trade agreements only, since it has also encompassed specific spatial manifestations via large-scale territorial planning and infrastructure programs. Since commodity exchange needs to reduce to a minimum the physical barriers to the movement of goods and money through space (Harvey 2006 [1982]; Smith 2008 [1984]), achieving region-wide spatial integration across national borders has become a key priority. In contexts like this, Harvey (2006 [1982]) has noted, the effect is the creation of a hierarchy of means –market, institutional and State-, for the production, modification and transformation of spatial configurations to the built environment (p. 397). The Initiative for the Integration of the Regional Infrastructure of South America (IIRSA in Spanish), which was launched at a South American presidential summit in 2000, is an ambitious endeavour to transform the subcontinent into a 'spatially integrated system' (see Smith 2008 [1984]) for an export-led regional economy (see Zibechi 2006; Martínez and Houghton 2008; Razeto et al 2009). According to Zibechi (2006), the IIRSA is a multi-sectoral process that is aimed at developing and integrating transport, energy and telecom infrastructures throughout the region, ordering geographical space in the form of terrestrial, fluvial and air transport networks; oil, gas and water pipelines; waterways, sea and

inland ports, and power lines among others. Funded by three multilateral banks<sup>13</sup> (Razeto et al 2009), it encompasses over 500 infrastructure projects distributed along ten “Integration and Development” axes, and has an estimated cost of USD 75 billion.

The scale and breadth of these undertakings is nothing short of astonishing. To cite an example, the Paraná-Paraguay waterway is a megaproject that seeks to link the Orinoco, Amazon and La Plata riverbeds by interconnecting 17 rivers in order to facilitate fluvial transport between La Plata River and the Caribbean (Zibechi 2006). From the ten axes, four involve the Amazonia and five of them are supposed to connect the Pacific and Atlantic oceans as a way to reduce transaction costs associated with the circulation of raw materials destined for international markets (ibid). According to Zibechi (2006), a view of nature either as a barrier to be overcome (i.e. the Andes mountain range) or as a source of wealth to be exploited constitutes the logic that drives all aspects of the IIRSA (see also Martínez and Houghton 2008). Due to social resistance from local communities and civil society organizations, the IIRSA has been evolving in secrecy, sometimes through complementary agreements or through infrastructure programs at the domestic level<sup>14</sup>, and for that reason it is almost impossible to estimate its true extent. For instance, the binational mining agreement signed between Chile and Argentina in 1997, by which border areas located in the Andes mountain range were declared as strategic for mining activity –with special fiscal regimes and benefits for transnational companies-, coincides to a large extent with the IIRSA’s Southern Andean Hub (Razeto et al 2009; Infante 2011).

The Plan Puebla Panama (PPP), launched in 2001 at a projected cost of USD 20 billion, and with the aim of integrating transportation, energy and telecom infrastructures from Mexico to Panama, was intended to be the Mesoamerican counterpart of the IIRSA. According to Wilson (2011), both projects are rooted in the New Economic Geography (NEG), an offshoot of neoclassical economics that incorporates questions of geography and location within the broader parameters of neoclassical theory so as to make sense of processes of uneven development. The NEG outlook -in which space is conceptually and methodologically reduced to transport costs-, has been implemented by multilateral agencies in order to incorporate remote regions of the world to transnational circuits of capital via large-scale infrastructure

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<sup>13</sup> The IADB, the Corporación Andina de Fomento (CAF), and the Fondo Financiero para el Desarrollo de la Cuenca de la Plata (FONPLATA).

<sup>14</sup> Interview with a member of the Latin American Observatory for Environmental Conflicts (OLCA in Spanish), 23 December 2013.

projects like IIRSA and PPP (ibid). The PPP, however, was officially terminated in 2008, after seven years of struggle from civil society organisations, especially peasant communities and Zapatista groups in Southern Mexico (see Wilson 2014). After its official abandonment, the PPP was replaced by the Mesoamerica Project for Integration and Development, a more modest infrastructural integration program (ibid).

At the domestic level, the role of the state has been crucial for the entrenchment of these homogenising institutional frameworks, because the tendency to design export-led economic architectures dependent on the extraction of raw materials is something that cuts across the majority of governments in the region, regardless of their political orientations. In fact, Gudynas (2009, 2010) has noted that the emergence of the so-called 'pink tide' (left-leaning governments in Venezuela, Ecuador, Bolivia, Argentina, and Nicaragua among others) has paradoxically led to an intensification of resource extraction schemes. For Gudynas (2009), these politically progressive regimes have implemented a 'neo-extractivist' model where exports of raw materials retain their strategic importance within the economy, but go hand in hand with increased state regulatory activity, further taxation and royalties for transnational corporations, nationalisations and the introduction of policy frameworks aimed at the redistribution of revenues. Unfortunately, the negative effects on natural resources, ecosystems and local communities have persisted, if not been aggravated.

Although the social geographies that have emerged from these institutional arrangements could be regarded as a reflection of the world of business at a regional scale and perhaps hint at the disruptive nature of the commodity boom, focusing on the national and international scales alone would yield an incomplete picture of the unevenness of the operational landscapes of extended urbanisation that ceaselessly proliferate throughout the region. It is precisely for that reason that Smith considered that dependency theory, centre-periphery theory, world systems theory and the various approaches to uneven development fail to capture the full extent of the geographies of capitalism (2008 [1984], p. 6) and one might add, of the geographies of capitalist urbanisation as well. Consequently, the following subsection constitutes a descent into the complex world of resource extraction on the ground, because it is only in conjunction with the local scale that one can visualize the way in which extractives tend to fragment, differentiate and operationalize further territories.

### *3.2. The Tendency to Fragmentation*

As previously argued, the basis of the tendency to fragmentation is the social and spatial concentration of capital that, according to Smith (2008 [1984], p. 135) is a precondition for accumulation. Resource extraction (especially minerals) could be among the most spatially immobile economic activities, because besides being eminently place-specific, it requires vast amounts of investment in fixed capital in the form of machinery and infrastructures. As Bebbington et al (2009) have argued, the extractive industries are by definition a “point source activity” (p. 8; See also Bridge 2009), in the sense that the geographic unevenness of geological formations results in the fact that some areas become territories of extraction while others do not. To the extent that extraction generates significant socio-environmental effects, geological unevenness invariably translates into territorial and social difference (Bebbington et al 2009).

Mining entails, as a first step, the removal of large quantities of soil by using explosives in order to access the minerals that are buried underground, profoundly affecting communities, ecosystems and water sources in the process (Padilla 2012). Also, large quantities of poisonous chemicals –most notably cyanide- are required for the process of lixiviation, which is central to mining and consists of separating minerals from rocks (Padilla 2012; Peña 2013). Since these processes are developed at colossal scales, the material footprint of large-scale mining is gigantic –and so are its environmental externalities-, as each mine requires between 460 and 1,060 litres of water per gram of mineral and produces between 50 and 140 million tons of solid waste per year, on average 40 times more than any Latin American megacity during the same time period (Cabrera and Fierro 2013; see also Ramírez and Ibagón 2012).<sup>15</sup>

Because of explosives, soil removal and use of chemicals among other processes, once a given territory has been used for open-cast mining (or monoculture agribusiness), other economic activities like agriculture, livestock or even real estate become unfeasible (Ramírez and Ibagón 2012). It has been argued that concessions grossly exaggerate the effects of extraction on the landscape, because only a small proportion of areas granted for extraction are converted into actual mines or wells (Bebbington 2012). Concession holders therefore exert absolute power over the territories handed over by the state, producing classic enclave economies that according to Bridge, are at once deeply integrated into the global economy yet fragmented from national space (2009, p. 5). Since concessions only give their holders the right to the subsoil, rights to the surface have to be acquired through market transactions, negotiation or

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<sup>15</sup> It should be noted that contemporary agribusiness works in similar ways as open-cast mining, both in terms of its material footprint and of its impact on local communities (see Gudynas 2010).

compulsory purchase (see Bebbington 2012), thus making possible the most brutal processes of accumulation by dispossession<sup>16</sup>, where corporations constitute ‘virtual republics’ within territories of extraction. Insofar as the concession is a legal scheme that cuts across most mining codes in the region (see Fuentes 2012; Bebbington 2012), the tendency to spatial fragmentation is oriented, engineered and ultimately controlled by the state.

Because of their manifold negative impacts, extraction projects elicit protest and revolt from communities and activists alike (Bebbington et al 2008), making armed private security, militarisation and violence integral to the production of these operational landscapes. Activists are typically subject to surveillance and intimidation, and in countries like Colombia and Brazil they often become victims of selective killings, sometimes at the hands of ‘death squads’ or paramilitary groups<sup>17</sup> (see Duque 2012; Colombia Solidarity Campaign 2013; Karmy and Salinas 2008; Bermúdez 2012 for the relationship between extractivism and low-intensity warfare). In a context of planetary urbanisation, Merrifield (2014) contends that war no longer comprises grandiose campaigns by troops, but as the Latin American case demonstrates, “is rather a micro-everydayness of peacetime intervention, a dogged affair in which the police and the paramilitary play interchangeable roles...” (p.41). Temporary migration flows are another factor that triggers violence and urban dereliction. Since investment projects usually require large amounts of temporary workers on an ongoing basis –either during construction or extraction periods, or both-, the arrival of floating populations of industrial labourers to areas adjacent to extraction sites is too often accompanied by a dramatic increase in insecurity, drug abuse and prostitution rates<sup>18</sup>.

Since resource extraction requires large amounts of fixed capital allocations, the microeconomic effects of the irruption of vast capital flows in mining districts form a breeding ground for inequality and dispossession. These flows of circulating money tend to create microeconomic distortions resulting in artificial price increases across most goods and services

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<sup>16</sup> This concept is David Harvey’s (2005) re-rendering of Marx’s (1976 [1867]) notion of ‘original’ or ‘primitive’ accumulation, where enclosures and the transformation of peasants into wage-labourers are constitutive moments in the production of capitalist social relations in specific contexts.

<sup>17</sup> Interview with a member of Colombia Solidarity Campaign, 3 May 2013 and interview with a member of Amnesty International, 20 June 2013.

<sup>18</sup> Interviews with a member of SOS Huasco, 4 December 2013, with a member of Consejo de Defensa del Valle del Huasco, 3 December 2013, with a member of Freirina Conciente, 5 December 2013, and with an official from the Planning Secretariat of Vallenar, Chile, 3 December 2013.

—especially housing rents, which have been said to increase over 300% in some mining areas<sup>19</sup> (see for example Colombia Solidarity Campaign 2013, p. 92). In sum, the processes of accumulation by dispossession<sup>20</sup> (Harvey 2005) that result from the extractive industries in Latin America are well documented (Padilla 2012; Soliz et al 2012; Idárraga 2012; Reyes and León 2012; Fierro 2012; Duque 2012; Bermúdez 2012; Vargas 2013; Cabrera and Fierro 2013; Bebbington 2012; Bebbington et al 2008, 2008a; Bebbington 2012; Hinojosa and Hennermann 2011; Hinojosa 2011; ECLAC 2013a), and include accounts of displacement, violence, disruptions in public health, socioecological degradation, political corruption, militarisation and systematic impoverishment of local communities, among others.

This tendency to fragment space, along with the tendency to homogenise it, are inextricably linked and constitute a differentiated unity, resulting in the continued production and reproduction of operational landscapes with ever increasing intensity. The notion of extended urbanisation is therefore central for grasping the complex logics of the contemporary urban form in the face of an increasingly voracious global demand for raw materials. As Merrifield has argued (2014a), planetary urbanisation needs to be conceived as the progressive production of overgrowth as well as of undergrowth. In this sense, the precariousness of the operational landscapes that are being continuously produced across the region contrast starkly with the indicators of economic performance that characterize booming Latin American metropolises such as Santiago de Chile, Rio de Janeiro and Panama City. This, however, does not mean that the former are rural and the latter urban. In this sense, Merrifield (2014a) warns about one-sided readings of sociospatial transformation because for him, the urban is not only “bricks and mortar, high-rise buildings and autoroutes” (p. 389). It is also a process that manifests itself as unpaved streets, back roads, by-waters and marginal zones that feel the wrath of the world market (p.389).

In Latin America, these processes of extended urbanisation —or of undergrowth, to use Merrifield’s terminology—, have produced dramatic impacts over hundreds of places, communities and ecosystems, rendering a splintered pattern of landscapes of extraction with their rhizomes of highways, railways, pipelines, satellite towns, power lines and heavy

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<sup>19</sup> Interview with a member of Consejo de Defensa Huasco, 28 November 2013, with an official from the Planning Secretariat of Vallenar, Chile, 3 December 2013, and 2013 report “La Colosa, Una Muerte Anunciada”, by Colombia Solidarity Campaign.

<sup>20</sup> This concept is David Harvey’s re-rendering of Marx’s (1976 [1867]) notion of ‘original’ or ‘primitive’ accumulation, where enclosures and the transformation of peasants into wage-labourers are constitutive moments in the production of capitalist social relations in specific contexts.

machineries. Perhaps what is most paradoxical about this emerging sociospatial condition, is that these operational landscapes for resource extraction have at the same time intensified the possibilities for encounter among previously isolated communities who have found in these new urban centralities a terrain for struggle. Therefore, the remainder of this chapter offers a summary reflection on the political potential that lies within this urban explosion, especially concerning its implications for social resistance and mobilisation.

#### **4. The Extended Urbanisation of Resistance**

In a 1989 essay written for *Le Monde Diplomatique*, Lefebvre (2014 [1989]) pondered on the ways in which the worldwide expansion of the urban form could ultimately result in a new matrix of social relations. In his view, the homogenisation-fragmentation dialectic he described in some of his previous works had become increasingly entrenched, and the quality of the environment had acquired an “urgent, politically central status” (ibid, p. 205). In such a context, which he saw as being dictated by rising class antagonisms and the precariousness of our relationships with nature, associative life and grassroots democracy would need to be reinstated as a key priority (ibid). Although he did not live to see the current commodity boom, Lefebvre’s prescient words reflect the current state of discontent, revolt and social mobilisation that underpins the operationalisation of territories and ecosystems in Latin America as a result of neoliberal reforms and rising commodity prices after the turn of the century. According to the Environmental Justice Atlas, nearly a third of all socio-environmental conflicts in the world are taking place in Latin America (414 of 1259 registered cases)<sup>21</sup>.

Insofar as urbanisation implies a multiscalar process of production and reproduction of the built environment in which the global and the private interconnect (see Wachsmuth 2014), these operational landscapes of resource extraction -besides fostering marginalisation and dispossession-, also provide new centralities and opportunities for encounter between previously isolated communities or individuals. Therefore, and as several studies have concluded (see Bebbington et al 2008a; Svampa and Antonelli 2009; De la Cadena 2010; Gudynas 2010; Bebbington 2012; CINEP 2012; Padilla 2012; ECLAC 2013a), there is a close relationship between extractivism and social mobilisation in Latin America, with increasing numbers of communities and social movements opposing mining, agribusiness, logging, energy and oil extraction projects. New forms of solidarity between local communities and international advocacy networks have emerged, linking operational landscapes and large

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<sup>21</sup> See <http://www.ejatlases.org>, accessed 27 November, 2014. See also the website of the Observatory for Mining Conflicts in Latin America (OCMAL in Spanish): [www.conflictosmineros.net](http://www.conflictosmineros.net), accessed 7 July 2014.

urban agglomerations in mutually transformative ways. Organisations such as Mining Watch Canada and London Mining Network in the Global North, as well as the Latin American Observatory for Environmental Conflicts (OLCA in Spanish) and the Observatory for Mining Conflicts in Latin America (OCMAL in Spanish) in the Global South, have developed strong and densely interwoven networks of cooperation and political solidarity with hundreds of communities opposing investment projects on the ground.

Thus, it is precisely in opening avenues for increased communication and interaction where the emancipatory promise of planetary urbanisation lies. Along with energy transmission lines and roads, contemporary techniques for resource extraction require sophisticated telecommunication infrastructures<sup>22</sup>, which means that extended urbanisation following the commodity boom has not only fostered physical mobility (via road infrastructures) but also communication among local communities, in themselves crucial preconditions for political action. Lefebvre's 1989 essay points in this direction by noting how the appearance of communication technologies and the 'becoming worldwide' (*'mondialisation'* –see Elden 2008) of knowledge would pave the way for what he viewed as a new concept of citizenship (2014 [1989]). Michael Hardt and Antonio Negri have developed a similar argument by noting how communication is the key to the political significance of the traditional division between city and country (2004, p. 124). For them, isolation and incommunicability –not ignorance and parochialism- is what defines rural life. To the extent that the peasantry becomes communicative and active, Hardt and Negri suggest, it ceases to exist as a separate political category, hence eroding the distinction between town and country (ibid, p. 124).

It is precisely for that reason that Lefebvre considered that under the 'planetaryization' of the urban, technologies of information and data processing would dictate new paradigms of encounter and association (see Schmid 2014). During my time doing fieldwork in the Huasco Valley, what struck me the most was the proficiency of community leaders with blogs, social media and several other internet tools. Throughout our conversations, most of them pointed out how the arrival of transnational corporations to their territories invariably goes hand in hand with the arrival of Internet connectivity, radio and mobile phone signals that are required for extractive and logistical activities. Accordingly, and at the general Latin American scale it

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<sup>22</sup> According to the World Bank (2010, p. 1), and in terms of investments on infrastructure, telecom was the most successful sector, attracting 47% of regional investment (USD 146 billion). Energy ranked second place with 31% of regional investment (USD 94.7 billion) and transport ranked third, with 20% of regional investment (USD 60 billion).



would seem that they have been able to draw an immense political impulse from the revolutionary changes introduced by the extractive industries. The fact that 50% of Peru's social conflicts are currently related to the extractive industries (Bebbington 2012, p. 1157), and that the number of struggles against oil, coal and gold megaprojects has increased almost eight-fold in Colombia during the 2001-2011 period (CINEP 2012, p. 10), is illustrative of the political underpinnings of extended urbanisation.

In a well-known passage of the *Communist Manifesto*, Marx and Engels highlight how with the advance of industry, the bourgeoisie inadvertently replaces the isolation of workers with their union through association and in so doing, lays the foundations for the revolutionary movement of the proletariat (2002 [1848]). In Volume 1 of *Capital*, Marx also stresses how it is precisely in agriculture –and in the countryside in general- where industry exerts the most revolutionary effects, because it transforms the peasant into a wage labourer and in so doing, creates the material conditions for a “new and higher synthesis” (1976 [1867], p.637). With the proliferation of extended forms of urbanisation –and their neo-industrial means of production-, the case of Latin America demonstrates how local communities have shed their isolated state and emerged as fully-fledged political actors. A 2008 constitutional reform in Ecuador where the *Pachamama* (“Mother Earth”) was granted rights in order to curb extractive projects<sup>23</sup>, as well as the suspension of multi-million dollar undertakings such as the Hidroaysén dams in the Chilean Patagonia, the Pascua Lama mine in the Chilean Andes and the Plan Puebla-Panama<sup>24</sup>, following multiscale political mobilisation, are but a few examples of the stirrings of the renewed citizen (*citoyen*) envisaged by Lefebvre in his 1989 essay (2014 [1989]). For him, the renewed urban dweller would thrive in the mobility that is nurtured by technological innovation, and the social relations she established would tend to stretch beyond villages, cities, countries and even continents (2014 [1989]).

As subsequent chapters of this dissertation will show, the case of the Huasco Valley constitutes a highly relevant and illustrative example of how processes of technological modernisation at the local level translate into vibrant forms of political organisation that cut across various spatial scales. Chapter Four will build upon some of these ideas, aiming to explore the ways in

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<sup>23</sup> The *Pachamama* is an Andean indigenous deity that represents ‘Mother Earth’. This reform was the result of a joint effort from local indigenous communities, environmentalists and left-wing members of parliament. Ecuador's president Rafael Correa –one of the main proponents of “neo-extractivism”- was clearly upset after the reform was passed by the country's Parliament (Gudynas 2009).

<sup>24</sup> For a Lefebvrian account of social resistance against the Plan Puebla-Panama, see Wilson (2014).

which the projection of machineries and material infrastructures for resource extraction not only transform landscapes and built environments, but also social production and everyday practice at the local level. Despite the fact that automation and 'lean' systems of production/extraction have made the labouring activity precarious and ill-remunerated, a sprawling service economy has begun to gravitate around mining activities, setting the foundations for dense networks of interaction between communities and new forms of political subjectivities. As such, Chapters Four and Six will also illustrate how road and telecommunication infrastructures introduced for extractive activities have allowed communities to become mobile, active and develop very successful strategies of social mobilisation that have put into jeopardy multimillion investment projects.

## **5. Conclusions**

This chapter has revisited Henri Lefebvre's notion of planetary urbanisation as well as some of its recent appropriations by critical urban theorists in order to make sense of the exploding urban morphologies that are rapidly changing the face of Latin America as a result of a voracious international demand for raw materials. Its foremost aim has therefore been to recur to a process-oriented understanding of the urban in order to illustrate the geopolitical and geo-economic context of resource extraction at the broader Latin American level, and thus intends to tackle the first of the research questions established in the introduction. In answering this research question, I have argued that Brenner and Schmid's (2013, 2014, 2015) analytical distinction between extended and concentrated forms of urbanisation allows recasting extraction sites –regardless of their densities and population thresholds-, as particular morphological expressions of the contemporary urban condition. This epistemological framework will be applied throughout the remaining chapters in order to understand the types of territorial transformations taking place in Chile and the Huasco Valley specifically.

In particular, the main argument of this chapter has been to show how the emerging layers of extended urbanisation concomitant to the commodity boom are ultimately driven by the dialectical movement between two contradictory yet complementary tendencies, namely: first, a tendency to homogenisation, consisting on a wide range of material and institutional arrangements aimed at producing a frictionless, homogeneous ('abstract') space for the movement of raw materials across borders; second, a tendency to fragmentation that results not only from the social and spatial concentration of capital that is a precondition for accumulation, but also from the geological unevenness intrinsic to mineral deposits, which

invariably translates into territorial and social difference. In Lefebvre's view, these conflicting tendencies ultimately yield a "disintegrating national space at the heart of a consolidating worldwide space" (2009 [1978], p. 255).

Yet, despite the obliterating effects of this contradictory movement, the explosion of urban fragments across rural places has nonetheless rendered a fertile ground for the production of new political subjectivities so for that reason, the last section offered a summary and general reflection on the revolutionary potential that is intrinsic to planetary urbanisation. Insofar as contemporary techniques for resource extraction require sophisticated infrastructures for telecommunications, local communities have been able to capitalise on such technological innovations and become communicative and mobile. In shedding their isolated state, local actors have been able not only to insert themselves but to give momentum to multiscale advocacy networks and in so doing, have achieved manifold political victories against states and transnational corporations. New forms of centrality based on information are transforming external (territory) and internal (consciousness) natures in equal measure, so the task for subsequent chapters will be to interrogate the particularities of the Huasco Valley and understand the political ramifications of extended urbanisation as they unfold in a local context. Chapter Two continues to reflect on questions of extended urbanisation, the state and resource extraction, but focussing on the particular case of Chile as a starting point for the analysis of the Huasco Valley.

## CHAPTER TWO

### State, Technocracy and the Rescaling of Urban Metabolism in Chile

*The difficulty with so-called high modernism and urbanization was not... its totalizing vision, but its persistent habit of privileging things and spatial forms over social processes, and so adopting a metaphysical approach that presumed that social engineering could be accomplished through the engineering of physical form (David Harvey 2014, p. 62).*

*It appears that the very process of development, even as it transforms a wasteland into a thriving physical and social space, recreates the wasteland inside the developer himself. That is how the tragedy of development works (Marshall Berman 1990 [1982], p. 64).*

#### 1. Introduction

The previous chapter offered an exploration of the political economy of the current commodity boom in Latin America on the basis of recent appropriations of Henri Lefebvre's notion of planetary urbanisation. The role of the nation state as a mediating agent of these transformations, however, was only given limited attention because the focus was placed on macro-structural processes unfolding at the Latin American level. For that reason, the purpose of this chapter is to focus on the case of Chile in order to offer a more specific account of how governance practices and dynamics at the national level can exert massive transformations in patterns of socio-metabolic interaction. In that sense, the chapter aims to answer the research question that asks about the relationship between technocratic rule and socioecological change. In particular, I will focus on how neoliberal ideologies –channelled in the form of neoclassical economic thought and technocratic rule- translate into the fabrics of extended urbanisation that are to be analysed across the rest of the dissertation, specifically through the case of the Huasco Valley.

To the extent that the rationale of this dissertation hinges upon the epistemological and ontological commitments of a geographical-historical materialist philosophy, and that economic phenomena will be the object of analysis of this particular chapter, I intend to argue for a view of 'the economy' as an engine of material transformation that shapes the ways in which the metabolism of nature and society is regulated (see Bridge 2009; Labban 2010; Christophers 2014; Moore 2014). Therefore, and more than as a realm of 'representation' or

'knowledge' that is intrinsically separated from the natural world, I will draw on recent interventions that have proposed viewing economies as "geographically constituted processes of resource and energy flows" (Bridge 2009, p. 1223; see also Moore 2014). Within this worldview, Jason Moore (2003, 2011, 2014) suggests, capitalism needs to be conceptualised as something more than merely an economic or even a social system, and instead be considered a way of 'organising nature'. The analytical challenge of explaining capitalism as a form of environmental history, Moore (2014) claims, springs from the very turbulence of the twenty first century world, where financialisation, global warming, the commodity boom and the new international division of labour, among other transformations, have disassembled any stable distinction between the social and the ecological, as well as between reality and representation.

In light of such considerations, the purpose of this chapter is to offer an account of the transformative power of economic ideas and institutions that besides being attentive to flows, process and performance, can also bring to the forefront their profound metabolic effects upon physical and social environments. To do so, I will focus on Chile's recent history because it is among the most –if not itself *the* most- paradigmatic examples of how state institutions at the national level can fully embrace neoclassical economics as a policy toolkit to comprehensively design and engineer a society in the image of capital. Stories of the Chicago Boys and of monetarist experiments during the Pinochet dictatorship have come to constitute not only part and parcel of the foundational myth of neoliberal globalisation, but have also been construed and exported as a template for underdeveloped countries eager to overcome 'backwardness' and successfully insert themselves in the global economy. Yet, these narratives and ideological visions tend to occlude the social and environmental costs that lie beneath the manifold layers of territorial transformation that have plundered and depleted much of the country's vast natural riches, and dispossessed hundreds of communities.

To the extent that this dissertation explores the specifically urban dimensions of sociospatial transformation under the commodity boom, my engagement with technocratic planning and expert rule in Chile's recent history will only consider policy and institutional arrangements related to processes of extended urbanisation concomitant to resource extraction. Comprehensive reforms in terms of water and land rights, electricity production, and mining implemented from the mid-1970s onwards and inspired by neoclassical economic principles, I will argue, created the material conditions for an explosion of spaces of extended urbanisation that has stretched even to the most remote confines of the country. Specifically, the case of

the Huasco Valley –a region in northern Chile that has been redesigned into a mining, agribusiness and energy district- will be used to illustrate how the worlds represented through rational calculation by economists in policymaking endeavours, became gradually actualised into full-blown metabolic engines for transforming materials in vast magnitudes. For that reason, a second objective of this chapter consists of illustrating how processes of metabolic urbanisation initially theorised by the school of Urban Political Ecology (UPE) (see Kaika and Swyngedouw 2000; Swyngedouw and Heynen 2003; Heynen et al 2006; Swyngedouw 2004, 2006; Kaika 2005), need to be urgently reconsidered as part of a process of socioecological mediations that unfolds at broader spatial scales. In a context of planetary urbanisation, notions of metabolism cannot remain tethered to geographically bounded exchanges between cities and their surrounding hinterlands, but need to be considered as being embedded within a global metabolic system of exchange that transcends all boundaries (see Angelo and Wachsmuth 2014; Ibañez and Katsikis 2014; Moore 2014).

Latin America's turbulent history with neoliberal experiments in the context of neo-colonialism, authoritarianism and structural adjustment programmes sponsored by multilateral organisations like the International Monetary Fund (IMF) and the World Bank has made technical expertise a fundamental aspect of governance structures, politics and policymaking across the board (see Escobar 1995; Silva 1991, 2008; Centeno and Silva 1998; Babb 2001; Ossandón 2011). Yet, far from being an anomalous case, Latin America is instead a microcosm of a global shift from politics, government and what Swyngedouw and others have referred to as 'dissensus' (see Swyngedouw and Wilson 2015 for an overview), towards governance, the rule of expertise and "value-free" policy formulation that has been taking place since the 1970s (see Mitchell 2002; Brenner 2004; Cammack 2003). Such shift is particularly relevant for explorations of contemporary global urban change; indeed, as Brenner (2013, 2014) has noted, the operational landscapes of extended urbanisation are being comprehensively engineered through large-scale territorial planning strategies and neoliberal governance frameworks in order to link their developmental rhythms to large zones of agglomeration. As Stuart Elden (2007, 2010) has noted, territory is above all a form of political technology, so it needs to be understood as a spatial category that is measured, demarcated, bordered and policed. For that reason, exploring the role that policy instruments, technical knowledge and technocrats play in the metabolic transformation of territories is foundational for making sense of the geographies of planetary urbanisation.

With those things in mind, the chapter begins by providing a theoretical discussion on the need to broaden the scope of existing notions of metabolism in order to reconceptualise economies as fundamentally socioecological processes that mediate the expansion of the urban fabric across the non-urban realm. This will entail reviewing some of Marx's key works on the notion of metabolism, as well as contributions from contemporary authors exploring not only the performativity of economics, but also materialist conceptions of the economy. To the extent that the discussions on economics and metabolism will gravitate around the role of the nation state as the political representative of global capital, a second section will offer a brief historical overview of the emergence of Chile's neoliberal technocracy. This will include a historical contextualisation of the role played by the Chicago Boys during the Pinochet dictatorship, as well as their lasting imprint among policymaking elites and organisational cultures in the country after the transition to democracy. Subsequently, the chapter will engage in a detailed analysis of how such 'politics of expertise' and neoliberal worldviews translated into specific policy apparatuses that have inserted –and continue to insert- vast swathes of the countryside into the planetary urban fabric.

## **2. The Material Economy in a Context of Planetary Urbanisation**

Very early in his work, Marx borrowed the notion of metabolism from biologists and soil chemists –most notably Justus Von Liebig and Edwin Chadwick- concerned about the ways in which modern agricultural production in England and the US tended to deplete the fertility of the soil and in so doing, failed to ensure the conditions for its reproduction in the long term (see Foster 2000; Swyngedouw 2004, 2006). Long distances between zones of agglomeration and agricultural regions, as well as inadequate management of wastes in urban areas exerted negative effects upon the soil nutrient cycle and failed to give back to the fields the conditions for their fertility (Liebig referenced in Foster 2000, p. 153-154). Accounts of agricultural chemistry of that sort left a lasting imprint on Marx's worldview, and profoundly informed his critique of political economy with ideas of the truncated metabolic relations between town and country -and between society and nature more generally- (see Foster 2000). On that basis, Foster (2000, p. 155) claims, Marx developed a systematic theory of capitalist exploitation in which modern industry and agriculture were viewed as active forces that dispossessed both the soil and the worker from the conditions required for their reproduction. In Volume 1 of *Capital*, Marx expresses this succinctly as follows,

... all progress in capitalist agriculture is a progress in the art, not only of robbing the worker, but of robbing the soil; all progress in increasing the fertility of the soil

for a given time is a progress towards ruining the more long-lasting sources of that fertility. The more a country proceeds from large-scale industry as the background of its development... the more rapid is this process of destruction. Capitalist production, therefore, only develops the techniques and the degree of combination of the social process of production by simultaneously undermining the original sources of all wealth –the soil and the worker. (Marx 1976 [1867], p. 638).

With this, Marx points at how processes of metabolic interaction are, above all, socially mediated. Indeed, he considers that labour -and its social forms of organisation- constitute the mechanism through which society regulates its relationship to nature (ibid, p. 283). Through labour, Marx claims, the individual “acts upon external nature and changes it, and in this way he simultaneously changes his own nature” (ibid, p. 283). Most importantly, Marx is adamant in claiming that under capitalist and market-driven social relations, the metabolism of nature and society tends to be governed in a thoroughly irrational manner (Marx 1981 [1894], p. 959). Ever since narratives of worldwide socioecological crisis and catastrophe acquired the status of seriously pressing concerns among politically progressive epistemic circles, the Marxian notion of metabolism has been experiencing a comeback. It has been mobilised in the research agendas of scholars working on contemporary urbanisation (see Heynen et al 2006; Swyngedouw 2006), land-use change and material flow analysis (Fischer-Kowalski 1998; Fischer-Kowalski and Haberl 2007; Ellis 2014), and even global capitalism and geopolitics (Bridge 2009; Labban 2010; Moore 2003, 2011, 2014; Newell and Cousins 2014).

As stated in the introduction, the purpose of this chapter is to investigate the ways in which technical expertise, economic ideas and processes of governance ultimately mediate large-scale metabolic transformations across physical environments. Accordingly, I draw from recent accounts of metabolism (see Bridge 2009; Moore 2014) that allow for a reconceptualisation of the economy –as well as its associated institutional apparatuses and technologies- as a material force that drives the relentless explosion of urban spaces described in the previous chapter. The view of the material economy as a differentiated unity where nature, space, ideas and capital become interwoven and form a structured whole, can be traced back to Marx’s critique of political economy. According to Mitchell (2002, p. 30), the Marxian worldview constitutes an important exception within philosophies of science that split social reality into objective world and subjective representation. For Marx, individual capitalists are not agents in



their own right but instead personifications of capital (see Marx 1976 [1867]; Mitchell 2002; Berman 1999, p. 42).

Therefore, what drives the movement of capitalist history is not only human intentionality but also the expansion of value through production and exchange of commodities. Viewing capitalism as a hybrid of human and nonhuman natures, Mitchell (2002, p. 30) contends, appears as a very definitive counterpoint to economic ideologies that too readily draw boundaries between rational calculation and nature. In light of such considerations, analyses of the specific regimes of governance and technologies of rule that shape the form this world-ecological framework takes, need to be directly integrated into studies of contemporary forms of urbanisation. After all, the explosion of the urban fabric through the non-urban world is an ecological process that is socially mediated (to a large degree but not exclusively) by economic theories that become embedded in technological platforms, policy arrangements, multilateral organisations and state institutions at national and subnational levels.

However, thinking of economies as “geographically constituted processes of resource and energy flows” (Bridge 2009, p. 1223), Bridge argues, has been in certain ways precluded by the intellectual shadow cast by the neoclassical economic orthodoxy. Indeed, Timothy Mitchell (2002; see also Mirowski 2002) has noted how contemporary economics has always been premised upon a sharp distinction between human intentions and purposes and the object world upon which the former work. Specifically, he notes how the rationalism of modern technocracy has sought to draw hard and fast boundaries between rational calculation and nature, between reality and representation, as if they were indeed distinct dimensions of a supposedly bifurcated world (Mitchell 2002). Within the mindset of the technocrat, Mitchell notes how life is resolved into a simplistic binary arrangement that renders a dualistic world of objects versus ideas, material reality versus human ingenuity and nature versus science (ibid)<sup>25</sup>.

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<sup>25</sup> It should be noted that the philosophy of science that underpins neoclassical economics also implies a departure from the assumptions of classical (bourgeois) political economy, because as Donna Haraway (1991, p. 7) has argued, notions of the body politic (organic images for human societies) were commonly employed in order to see the structure of human groups as a mirror of natural forms. In particular, Haraway (1991, p. 7-8) notes how Adam Smith’s theories of the market and of the division of labour, as well as Thomas Malthus’ law of the relation between population and resources, were in themselves powerful symbols of the junction of natural forces and economic progress.

Mitchell's study about the genesis of neoclassical economics demonstrates how the notion of "the economy" in its contemporary sense did not appear until the mid-twentieth century, when economists formulated the concept to mean "the totality of monetarized exchanges within a defined space" (ibid, p. 4). The economy thus came into being as a "self-contained, internally dynamic, and statistically measurable sphere of social action, scientific analysis and political regulation" (ibid, p. 4). Before this, the notion of "economy" carried the older meaning of "thrift", which referred particularly to the rational management and utilisation of resources, a notion that was expanded to the level of the political order by the classical political economists (Mitchell 2002). The possibility for "economics" to reinvent itself as the set of mathematised standards of representation for observing the "economy" –understood as object-, says Mitchell, belongs to the history of imperial rule and the collapse of the colonial order. In particular, Mitchell illustrates how the India Office in London served as a seedbed for a new breed of economists –including John Maynard Keynes-, who analysed Indian currency and finance at a distance, as detached observers and in so doing, set the blueprints for the ontological assumptions of contemporary economic science (ibid).

In Mitchell's view, colonialism thus opened a space of separation and a relationship of curiosity that made it possible for economists to construe a set of flows and relations as a "case", a "self-contained object whose 'problems' could be measured, analysed and addressed by a form of knowledge that appears to stand outside the object and grasp it in its entirety" (ibid, p. 100). As subsequent sections will demonstrate, monetarist experiments with the Chilean economy in the context of the Pinochet dictatorship resonate in manifold ways with the (neo) colonial basis that Mitchell attributes to neoclassical economics. For Milton Friedman and colleagues working at the University of Chicago during the 1970s, Chile offered an ideal opportunity to 'stress-test' ideas about incentives, rationality of market actors, price controls and monetary supply within the domain of a 'real-life' national economy. In other words, Chile offered the neo-colonial relation of separation required for detached analysis and subsequent formulation of policy mechanisms, not only in terms of cultural and geographical distance but because the leverage required to implement reforms was ensured by state violence – sponsored to a considerable extent by the United States.

The very notion of the material economy that this chapter develops starts from the assumption that drawing such arbitrary and well-defined lines between object and subject can be extremely problematic in accounts of social reality. Throughout several of his works, Lefebvre was highly critical of the over-systematising rationale of twentieth century

technocratic expertise. For him, the technocrat continuously strived to determine socially permissible boundaries, stipulate order and norms, conceive efficiency models and organise equilibrium (Lefebvre, referenced in Merrifield 2006, p. 90). He considered such abstract forms of producing knowledge to exert unrestrained violence upon the material world, because representations of nature as 'resources' facilitated its depletion and of social space as homogenous tended to erase all differences (Lefebvre, referenced in Wilson 2013). In general, Lefebvre (1991 [1976], p. 106) was very critical of the types of knowledge underlying such 'reduced models' of city, family, society and so forth, because in his view, they were veils for ideology that legitimised deeply problematic forms of state practice. By representing social space as homogenous, quantitative and geometrical, Lefebvre argued, technocratic models erase contradictions and function in the interests of power (referenced in Wilson 2013, p. 7). These forms of technical expertise, he contended, infiltrate science by means of science itself and their apparent neutrality becomes a façade for ideology (Lefebvre 1991 [1976], p. 106).

Despite Lefebvre's powerful critique of expert knowledge, his commentaries tended to be aimed at urban planners and not on economic models or forms of economic expertise as such. It is in this sense that the literature on the 'performativity of economics' has been particularly productive, because it has strived to demonstrate the intrinsic instability of the boundary between reality and representation, rational calculation and the material world, all within the development of economics as a social scientific apparatus. Indeed, Donald Mackenzie's (2006) often-cited claim that economics is "an active force transforming its environment, not a camera passively recording it" (p. 12) was precisely aimed at demystifying Milton Friedman's original formulation in which economics was construed as an "'engine' to analyze [the world], not a photographic representation of it" (Friedman, cited in Mackenzie 2006, p. 11). In this body of work, Michel Callon's (1998, 2007) ideas have been particularly influential among STS-oriented scholars because he was among the first to argue for a view of economic theory as 'performing' (i.e. creating) the reality that it describes.

Whenever a given economic model is gradually incorporated into society's decision-making fabric, it literally sets into motion the world described by the algebraic formulas, probabilistic and/or econometric devices it contains (Christophers 2014). Power therefore flows through these models, because according to Christophers (2014), such processes of actualisation imply that it is not possible to understand the world except in relation to such models and the work they have performed. This does not mean that models and other calculative practices are the only agencies shaping the political-economic context of a given social group. Mirowski and Nik-

Khan (2007) have argued that there are other crucial forces and agencies shaping the world in substantial ways, so this means that the performative materiality of economics needs to be considered alongside such agencies. For example, Mirowski (2002) illustrates how the emergence of computerisation in the midst of processes of technical innovation concomitant to the Cold War's military endeavours in the West, added further layers of complexity to the relationship of economics and rational calculation in general with the material world.

These interventions are quite productive in that they disassemble extremely problematic assumptions within the sort of philosophy of science that has –and continues to- informed economic theory and practice. However, there are important caveats to the performativity literature, especially if it is to shed light on accounts of the metabolic transformation of the Earth's life systems and of its concomitant fabrics of urbanisation. It has been argued that research under this rubric tends to overemphasise and naturalise the role of flows and performance while overlooking their spatial registration upon the formal organisation of geographies and physical environments (see Ibañez and Katsikis 2014; Christophers 2014; Hall 2010). More specifically, Christophers (2014) warns about unproblematic engagements with these theoretical frameworks, because unless the wider socio-political materiality of such performativity is explored and conceptualised by questioning its immanent power relations, the performativity of economics can simply end up being an empty truism (p. 83). For that reason, and as the following subsection explains, my purpose will be to foreground the sociospatial ramifications of such performativity, rendering visible the processes of socioecological degradation and human dispossession that are occluded by neoliberal forms of governing nature. This means relying more decidedly on notion of the material economy and of capitalism as 'world-ecology'.

### *2.1. Towards an Expanded Conception of Metabolic Urbanisation*

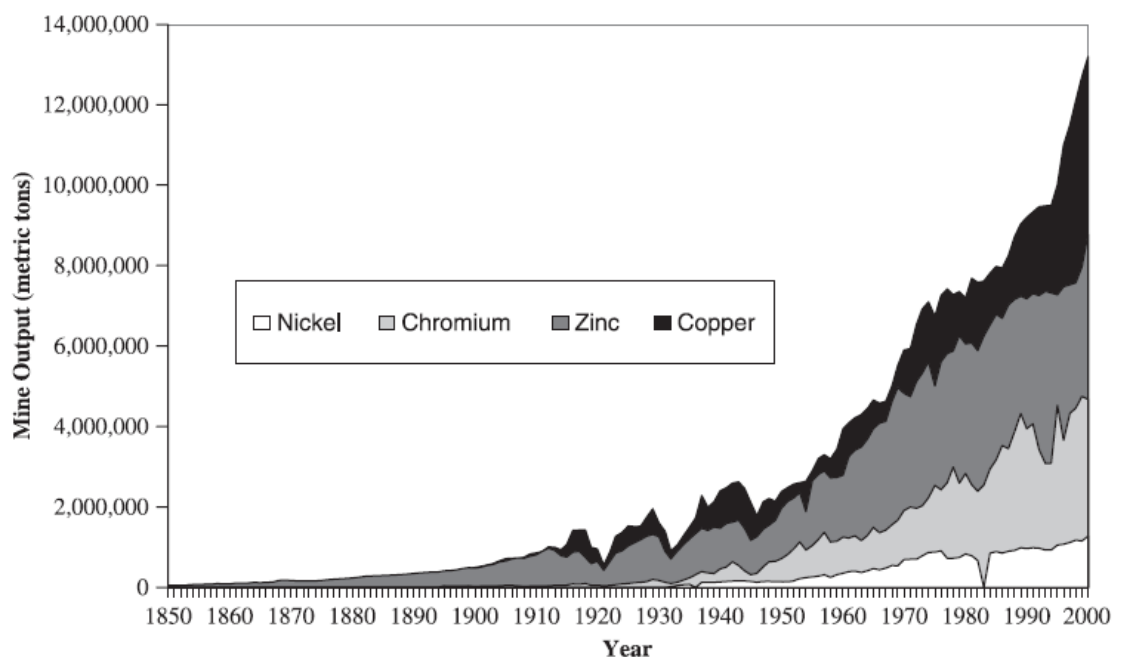
If economics is indeed performative, then how does that allow us to understand processes of socio-metabolic transformation unfolding at a planetary scale? The work of Jason Moore on capitalism as "world ecology" offers a productive analytic to grapple with the role played by economic ideas and institutions within the formal organisation of settlement space. Moore (2014, 2014a) refers to this as 'abstract social nature', and understands it as the production of 'real abstractions' of time, space, and nature, and whose historical expressions "are found in the family of processes through which capitalists and state-machineries map, identify, quantify, measure and code human and extra-human natures in service to capital accumulation" (2014a, p. 1). The historical conditions of accumulation, Moore (2014a)

continues, are therefore not only found in the labour-capital relation but also in the production of the epistemological frameworks necessary to appropriate and realise surplus value.

Thinking about capitalism and its subsidiary networks of personifications, institutions and ideas as material expressions of an environmental history is a necessary step for grappling analytically with a world in which anthropogenically-driven material flows now rival in scale those that take place regardless of human activity (see Bridge 2009). The twentieth century constitutes a turning point in patterns of metabolic exchange because as Bridge (2009) has noted, “the mobilisation of lithosphere to atmosphere via metals smelting and fossil fuel combustion... is equivalent in scale to mobilisation via rock weathering, volcanic emissions and other natural processes...” (p. 1224). Moreover, mining and human-induced soil erosion are estimated to move nearly 43 billion tons of rock and soil per year, a figure that is ten times as much as glaciers and roughly equivalent to oceanic volcanoes and water erosion on a planetary scale (ibid, p. 1224). A graphic representation of the amount of minerals that have been removed from the soil during the twentieth century is very illustrative of the metabolic footprint of the modern, material economy (see Figure 2.1).

**Figure 2.1**

**RESOURCE MOBILISATION FOR FOUR METALS, 1850-2000**



**Source:** Bridge 2009, p. 1225.

It is precisely for this reason that the notion of the 'Anthropocene', coined in 2002 by Paul Crutzen and Eugene Stoermer to point at how human activity had given rise to a new geological era that compromised the patterns of material flow taking place during the previous twelve millennia (see Crutzen and Stoermer 2002), is now a 'catchword' not only among academics, but in popular culture as well (see Castree 2014). According to Moore (2014, 2014a), the Anthropocene can be more adequately referred to as the 'Capitalocene', basically because any reflexive engagements with questions of geophysical change should ground capitalism in the Earth itself, and "show how modernity does not act upon nature, so much as develop through the web of life" (2014, p. 12). Capitalism, Moore contends, not only is the producer but is also produced by the web of life, and in that sense it should not be seen as a social system but as a way of organising nature (ibid).

Accounts of the sociospatial ramifications of political technology or 'abstract social nature' therefore need to be urgently incorporated to analyses of planetary urbanisation. For Elden (2010), modern notions of territory are thoroughly dependent on a number of apparatuses or *dispositifs* of calculation and juridical mechanisms. Techniques for cartography and land-surveying, measurement and maritime navigation, Elden claims, were what actually allowed modern boundaries to be asserted and reasserted (ibid). Strategies applied to territories by states are eminently calculative, and techniques for measuring, mapping, and demarcating – among others-, are operationalised through legal frameworks (Elden 2007). This leads Elden (2007, 2010) to conclude that, more than merely being considered as 'land', territory needs to be conceptualised as a political category that is owned, distributed, calculated and controlled by state and non-state actors. Swyngedouw (1992) has likewise argued that the production and arrangement of territorial configurations are active moments in the organisation and circulation process of capital. This means that social engineering of the sort analysed in this chapter, becomes a driving force of processes of capital accumulation and patterns of metabolic exchange that transverse the planetary landscape.

Recent studies have already explored certain dimensions of this phenomenon in interesting ways (see for example Christophers 2014), but they invariably place the focus on densely populated agglomerations. To the extent that this chapter is concerned with planetary urbanisation in the context of the commodity boom, the analysis of such reduced forms of technical knowledge will extend beyond cities to encompass the geographies of extended urbanisation that have resulted from four decades of neoliberal rule in Chile. By revisiting Chile's recent history I illustrate the particular geographical embeddedness of neoliberal

experiments developed in the context of global capitalism under the banner of ‘value-free’ scientific planning. Although Chile is usually portrayed as having successfully inserted itself in the global economy, very little is known about the underlying costs –social as well as environmental- of this process.

With those things in mind, I propose a different reading of the notion of metabolic urbanisation initially theorised by UPE (Kaika and Swyngedouw 2000; Swyngedouw and Heynen 2003; Heynen et al 2006; Swyngedouw 2004, 2006; Kaika 2005). Recent critiques of this body of work have argued that despite its contributions to contemporary understandings of the socio-natural underpinnings of urbanisation, it has been reluctant to supersede inherited territorial categories, especially that of the city –understood as concentrated urban agglomerations (see Wachsmuth 2012; Angelo and Wachsmuth 2014; Ibañez and Katsikis 2014). For Angelo and Wachsmuth (2014), the bulk of empirical research in UPE has been tethered exclusively to the city, in both site selection and analytical framework (p. 5), which means that the global socionatural dimensions of urbanisation that span city and countryside have remained largely unexplored (ibid).

As such, the sections that follow are aimed at advancing such reading of metabolic urbanisation, especially in the context of the processes of neoliberal restructuring experienced by Chile after the coup staged by the military in September of 1973. I should also hasten to add that this dissertation will continue to engage at different levels with ideas about up-scaled processes of metabolic urbanisation. Especially, Chapter Five will return to this specific discussion and offer a reconsideration of UPE’s notion of the fetishisation of urban infrastructural networks (see Kaika and Swyngedouw 2000; Kaika 2005; Swyngedouw 2006), when looking at the ways in which energy production has been organised in the Huasco Valley. With those things in mind, the following section elaborates on the history of neoliberal technocracy in Chile and its role within the decision-making fabric of the country. Such introductory discussion is crucial for understanding the extent and pervasiveness of the reforms designed and implemented by political and epistemic elites, even after the country’s transition to democracy.

### **3. The Rise of Neoliberal Technocratic Rule in Chile**

If we consider technocratic experts as personnel who use their claim to privileged knowledge – as opposed to electoral or authoritarian legitimacy- to exert and legitimate their rule (Centeno and Silva 1999), then the first remark to make when discussing the origins of technocracy in

Chile and in Latin America in general, is that the influence of technical expertise among decision-making circles is far from being a new phenomenon. The national developmentalist model implemented after World War II, centred around a strategy of 'import substitution industrialisation' (ISI), was a result of concerted efforts not only by politicians but also by economists working at the newly created Economic Commission for Latin America and the Caribbean (CEPAL) (see Taylor 2006; Silva 2008; Ossandón 2011). The sort of economics that was practised by ISI-oriented economists was, however, quite different from the current paradigm of neoclassical economic theory that this chapter is concerned with. Indeed, the CEPAL school of "structuralist economics" was underpinned by forms of statistical knowledge that despite being 'scientific' in their own right, were nonetheless oriented towards specific trajectories of empirical observation (Ossandón 2011).

In the case of Chile, Patricio Silva (2008) shows how technical expertise has been a fundamental component of processes of policymaking since the 1920's, when the governments of Arturo Alessandri and Carlos Ibáñez embarked on processes of state modernisation at all levels. Agencies such as the Corporación de Fomento (Corfo), the Land Reform Corporation (CORA), and the National Planning Agency (ODEPLAN) were created during the mid-twentieth century and the post-war period as institutional centres for the development of technical knowledge that could be applied to processes of state-building and economic regulation (Silva 2008). Even during the short-lived socialist government of Salvador Allende, which according to commentators like Eduardo Silva (1991) was 'hyper-ideological' and opposed to 'technocratisation', expert knowledge played a fundamental role. In fact, Eden Medina (2006, 2014) has illustrated how, with the aid of a trans-disciplinary and international group of experts, the Allende government designed a complex cybernetic system (known as 'Project Cybersyn') for regulating the national economy in real time during the country's transition to socialism.

It is in that sense historically inaccurate to view monetarist experiments in Chile during the Pinochet dictatorship as the first stirrings of technocratic rule in the country. Understanding such processes of state-building as something that precedes the emergence of neoliberalism is important because it reveals the ways in which certain organisational cultures were to some extent already characterised by an "anti-partisan" bent which favoured the role of technical knowledge as a fundamental component of institutional design and decision-making. This is in part one of the reasons that explain the overwhelming leverage that has been enjoyed by economic experts since the Pinochet regime onwards when implementing aggressive multi-



scalar economic reforms aimed at advancing neoliberal policy agendas, even after the transition to democracy.

The emergence of neoliberalism, however, did constitute a turning point in the role played by technical experts in Chilean politics. Augusto Pinochet's regime arrived at the precise moment when the post-war edifice of ISI and state developmentalism was starting to collapse, and a strong anti-interventionist and anti-inflationary policy consensus among ruling elites in the Global North was emerging. In terms of economic theory, this period also corresponded to a shift from empirical and statistical observation of specific case studies to more abstract, mathematised forms of economic theory based on models aimed at universal validity. This was the background that allowed the Chicago Boys, a group of young economists trained by Milton Friedman and colleagues at the University of Chicago, to be appointed as the architects of the institutional framework of the military regime in ways that went beyond the purely economic (Foxley 1983; Fontaine 1988; Silva 1991; Huneus 2000). After a 1975 conference held in Santiago de Chile, where Friedman made impassionate claims about the urgency of implementing severe austerity programmes to mitigate and amend Chile's ruined economy, Pinochet appointed Sergio de Castro –a leading figure of the Chicago Boys- as the Minister of Finance (Silva 1991; Taylor 2006; Budds 2013). Furthermore, many of these young economists were also appointed at the ODEPLAN and by 1975, were already top advisors to the military in economic matters (Budds 2013).

The succession of events that followed is very well-known and as it was argued in the previous section, it has acquired the status of a totemic narrative of sorts in the annals of the history of neoliberal globalisation. My aim here is not to dwell on a detailed account of the Chicago Boys and revisit what is already a well-trodden path, but rather to point at the ways in which these experts influenced not only decision-making, but electoral and parliamentary politics in general. According to Ossandón (2011), after the Chicago Boys the role of economists transcended issues of development and macroeconomic policy and has spilled over into broader political debates. The notion of technocracy, he notes, has been broadened and the role of economists has superseded that of technical consultants in order to include properly political positions such as ministries and even presidencies (*ibid*). This leads Huneus (2000) to argue that neoliberalism emerged in Chile not just as a technical prescription for integral solutions, but also as a large, close-knit group of professionals who worked effectively to promote the success of the government.

This should be viewed in a broader context of political transformation at the Latin American level where political and economic characteristics, according to Centeno and Silva (1998), became blended in new ways. For them, Latin America's new technocratic democracies still have elected representatives that exert nominal control over decision-making, but the framing of policy alternatives is largely in the hands of technical experts (Centeno and Silva 1998). Although the Washington Consensus has been recently challenged by a wave of left wing ideologies embodied in the so-called 'pink tide' or 'turn to the left', a considerable part of the laws and regulations that still mediate the metabolic transformation of ecosystems and territories were designed and implemented during the 1990s, when the influence of neoliberal ideological visions was at its peak. In fact, the case of Chile is particularly illustrative of how much influence can neoliberal ideologies exert within decision-making apparatuses, even under politically progressive governments.

Quite paradoxically, as Silva (1991) argues, the opposition to authoritarian rule in Chile also adopted an increasingly technocratic character. Left wing intellectuals, social scientists and politicians were involved in various sorts of think tanks and research centres whose purpose was to undertake critical studies of government policies and formulate alternative programmes to be implemented after the transition to democracy (Silva 1991). The CIEPLAN (Corporation of Economic Research for Latin America), was a research centre associated to the Faculty of Economics of the Universidad Católica de Chile and was created in 1970 as an alternative to the Chicago Boys, at a time when they began to acquire a predominant position within the university (Silva 1991). This centre split from the University, was reopened in 1976 and concentrated in monitoring the economic policies of the Chicago Boys. After a few years, Silva (1991, 2008) notes how the CIEPLAN became a fully-fledged think tank of the Chilean Christian Democratic Party under the leadership of Alejandro Foxley. Think tanks like these, Ossandón (2011) notes, have become a structuring element of the cultural circuits of capitalism as they allow the circulation not only of ideas but also of specific cases and examples for the rest of the world -for example, Chile's pension system or Peru's regulation of property rights. Within a world-ecological reading of capitalism, these think tanks would be nodes in a globally dispersed network of metabolic flows of ideas and expertise (i.e. abstract social nature<sup>26</sup>).

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<sup>26</sup> As it was argued previously, Moore (2014) considers that environment-making is not limited to earth-moving but also to the realm of ideas and social knowledge. It encompasses revolutions in cartography, quantification, botany, agronomy and many other extra-economic procedures of mapping and quantifying reality (p. 13).

Economists associated to the CIEPLAN –most of which had doctorates in economics from top schools in the US and were immersed in transnational networks of expertise- became advisors to the government of Patricio Aylwin, the first civilian government after the Pinochet dictatorship. Aylwin’s government, according to Silva (1991), had a marked technocratic orientation, despite claiming to be politically progressive and left wing. Indeed, Silva (1991, 2008) illustrates how several of the economic postulates of the Chicago Boys continued to exert a strong imprint among policymakers in subsequent governments. The need to relegate the state to a subsidiary role in economic matters; the primacy of foreign investment and of the private sector as key drivers of development; the use of market mechanisms and efficiency criteria to allocate economic activities; and the need to keep public finances healthy, were the key economic principles introduced by the Chicago Boys and remained untouched by the governments of the Concertación, the coalition that ruled the country for the twenty years that followed the end of the Pinochet regime (see Silva 2008). The reasons for the acceptance of neoliberal economic principles among the left, according to Silva (1991, 2008) were, first of all, the fact that the implementation of a socialist economic model by the Allende government proved to be a failure. Second, the fact that despite some of its negative effects, many within the left considered that neoliberalism had made the economy perform more efficiently during the last three decades.

This brief historical discussion on the history of neoliberal technocracy in Chile illustrates how patterns of political and social restructuring taking place within intellectual elites and decision-making circles at the national level were symptomatic of broader epistemic shifts at the heart of global capitalism. Within this epistemic paradigm, Haraway (1991) notes, human nature – and one should add, nonhuman natures as well- becomes the raw material rather than the product of history, and hence engineering asserts itself as the guiding logic for science in the twentieth century. Engineering therefore means “rational placement and modification of human raw material –in the common interest of organism, family, culture, society, industry” (ibid, p.48). This worldview is clearly reflected in Chilean politics after neoliberalism because as Centeno and Silva (1998) have noted, political opponents no longer argue about contending visions and ideals of society, but “compete over their qualifications and capacity to play the global market game” (p.12). The effects of these processes of social engineering upon ecosystems and communities, as we shall see in the next section –as well as throughout the rest of this dissertation-, have been devastating the country’s resources, communities and ecosystems.

#### **4. Neoliberalism and Metabolic Urbanisation in Chile**

After Pinochet seized power and appointed several of the Chicago Boys in key decision-making positions within the Ministry of Finance and the ODEPLAN, an ambitious agenda of radical policy restructurings was implemented in order to reconfigure the institutional architecture of the Chilean state in almost every respect. According to Huneus (2000), such a radical neoliberal agenda was implemented so thoroughly because of the authoritarian context in which it was formulated, as the economic team could act with much more freedom in the absence of any parliamentary or union opposition. These reforms, usually referred to as the “seven modernisations”, involved the following: introduction of new labour policies and legislation; transformation of the social security system (especially pensions); the municipalisation of education; privatisation of the health system; the internationalisation of agriculture; the transformation of the judiciary, and the decentralisation of government administration (Silva 1998; Taylor 2006). Despite the different aspects they addressed, these reforms were philosophically underpinned by the legacy of the Marginalist Revolution in Economics and its subsequent revisions by the schools of Austria and Chicago. Under this worldview, economics is set upon a rigorous scientific basis and provides a theory of price determination and resource allocation that is directly concomitant to the actions of a rational, utility-maximising individual (Taylor 2006). Such ‘methodological individualism’ implies viewing private exchanges and market transactions as universal and therefore transhistorical, and to the extent that each of them is aimed at improving the conditions of the parties in agreement, in aggregate terms the ‘rational’ and self-regulating market is viewed as a mechanism that serves the common good (Taylor 2006, p. 34).

Although much has been said about the various reforms, programmes and ‘shock therapies’ implemented by the Chicago Boys following free market ideologies, only until very recently there has been an interest towards the socioecological and territorial implications of the neoliberal/neoclassical policy toolkit. As a country whose main source of revenue is the export of raw materials (mainly copper), it is to be expected that the effect of neoliberal reforms upon the metabolic relation between the urban and non-urban, and ultimately between the social and the natural, has been relentless. If the economy, as it was argued in previous sections, is a powerful engine for transforming and mobilising materials, and if the metabolism of nature and society is a socially mediated process, then the role of neoliberal policy agendas is of crucial importance for understanding how the explosion of the hypertrophic urban form is summoned into being. For example, it has been argued that the Water Code enacted in 1981

not only was fundamental for reconfiguring society's relationship with water, but also for consolidating the wider neoliberal programme and the ambitions of its core supporters –i.e. business conglomerates, the military regime and technocrats (see Bauer 1997; Budds 2009, 2013). Besides water, important reforms regarding energy production, landed property, agriculture and mining not only allowed Chile to insert itself in the global economy but completely rescaled the patterns of metabolic exchange that existed prior to neoliberalism.

First of all, the 1981 Water Code introduced a system of private water rights that were freely tradable, and was underpinned by a logic of rational allocation whereby the market would redistribute scarce water to high value uses, because users would be supposedly incentivised to sell water if they did not need it (Budds 2013). Such reform emerged from a process of 'technical' revision of the existing water laws and regulations in 1979, which led economic experts to conclude that water rights needed to be converted into private property in order to transfer it from the state to users. This implied separating water from land, and converting the former into a fully-fledged commodity that could be freely traded in all sorts of markets (spot, financial, stock exchanges and so forth) (ibid, p. 306). Despite widespread opposition to these reforms, as Budds (2013, p. 306) notes, technocrats justified them on the basis of a convincing narrative framed around neoclassic economic principles that illustrated the benefits of treating water rights independently from land, namely: first, secure property rights would create incentives for investment in water-related industries and water infrastructures; second, water management would be transferred from the state to the users, creating more efficient allocation of resources, especially in arid regions of the country (where the Huasco Valley is located).

During the second most important round of privatisations, which took place between 1985 and 1989, nearly thirty state companies were transferred to private hands. Crucially, most of the privatised companies were from the natural resource industries, and therefore were highly reliant on water for their activities, which means that the water rights that were transferred constituted valuable capital assets that were transferred to capitalists (Budds 2013). It is worth mentioning that although the reforms that allowed these market developments to take place were portrayed as 'value-free', based on technical knowledge and oriented towards the common good, in the long run they consolidated the positions of the technocrats that formulated them after the transition to democracy, as many of them ended up holding executive positions in the privatised companies (see Huneus 2000; Budds 2009, 2013). What is perhaps most problematic, Budds (2013, p. 310) argues, is that after the transition to

democracy, these economic principles regarding water provision and the regulations they underline, have remained completely unmodified. There were attempts at introducing amendments, but they were always very controversial and reflected to a large extent the power relations embedded in Chile's elitist and polarised society. Within these debates, 'technical experts' -which in fact had strong connections to neoliberal-oriented think tanks and strong business conglomerates- delegitimised any attempts at reforming the water provision system by framing them as 'ideological' and juxtaposing them to the optimal effects of the supposedly neutral and value-free market (Budds 2013).

Under these regulations, the extractive industries are able to accumulate water rights and secure free and permanent water provision (Prieto and Bauer 2012; Budds 2013). Also, application processes for new water rights are complex and entail considerable legal knowledge, something that often imposes insurmountable entry barriers to small-scale, disadvantaged market actors. Budds illustrates this through the example of ENDESA, a Spanish hydroelectric power company that acquired almost all of the non-consumptive water rights in southern Chile, and in so doing, prevented the entrance of competitors (ibid). According to Prieto and Bauer (2012, p. 136-137), ENDESA owns 55% of all non-consumptive water rights granted in all of Chile, and 98% of those granted within Region IX, which is the region of southern Chile with the highest hydroelectric potential. Something similar happens in northern Chile, where mining corporations have acquired water rights for potential future mining projects and by hoarding them, impeding smallholders to have any access to water for their activities (see Budds 2004, 2009, 2013). With this, Budds (2010, 2013) concludes, the water provision system has translated into a legal mechanism for dispossession among lower income groups on the one hand, and on the other into a catalyst for the untrammelled expansion of mining, export agriculture and hydroelectric power generation through the accumulation and hoarding of water rights.

Simplistic representations and descriptions of this model of water provision, says Bauer (2004; Prieto and Bauer 2012, p. 134), have made technical experts and economists from the World Bank and the IADB endorse the principles by which it is underpinned, presenting it as a successful model for international water reforms. In other words, it has become a blueprint for market-driven allocation of water resources in Chile and beyond, something that has profoundly favoured the expansion of resource extraction across the continent, and reconfigured the geographical embeddedness of social metabolism across vast territories. In aspects such as these, we are able to visualise in full scale the performativity of economics,

especially considering how methods and instruments for rational calculation become increasingly imbricated upon landscapes and geographies. Yet, as Ibañez and Katsikis (2014) have shown, techno-scientific approaches have been limited to a performative interpretation of flows, while largely ignoring their spatial register and socioecological impacts (see also Christophers 2014). As Heynen et al (2006) argued in a programmatic statement, UPE needs to be attentive to the political processes and power relations through which particular socio-environmental urban conditions are made and remade. If there is something that defines Chile's socially engineered socioecological dystopia is the fact that it has yielded a small cluster of winners surrounded by vast swarms of losers.

The regulatory framework for power generation that has been enacted throughout decades of neoliberal rule in Chile also reflects the intrinsically political and ideological nature of a supposedly neutral policy apparatus. Through an analysis of the 1981 Water Code in conjunction with the General Law of Electricity Services (LGSE in Spanish) of 1982, Prieto and Bauer (2012) conclude that in Chile, fresh water is not allocated naturally by apolitical markets. Rather, it is channelled to extractive uses and privileged hydropower generation by an institutional framework that prioritises industrial activities at the expense of other property rights (Prieto and Bauer 2012). They show how almost none of the non-consumptive water rights that are currently in use for hydropower generation were acquired through markets, and instead were acquired through privatisations of state companies or through the system of 'original acquisition' implemented by the legal frameworks analysed (Prieto and Bauer 2012). Furthermore, a reform to the 1981 Water Code implemented during the Ricardo Lagos presidency in 2005 created further incentives for resource extraction and hydropower production. With this reform, non-used or underused water rights were taxed, basically in order to incentive further hydroelectric power production and reassert the condition of water as a factor of production, with specific relevance for the extractive industries (Prieto and Bauer 2012).

Prieto and Bauer (2012) note how, as a result of the prohibitive cost of large-scale storage of electricity, the LGSE created a sophisticated system to match power supply with contingent demand. Under this framework, the first generator whose electricity is loaded into the grid is the one that is able to offer the lower operating cost at that particular moment. In theory, this model was designed to avoid subjective political judgments that translated into preferences for specific power plants, companies or technologies that could alter equilibria in an already complex and competitive market (ibid). However, such institutional arrangements are

fundamentally biased, as they embody preferences that make hydropower cheaper than other sources as they do not consider the downstream externalities created by hydroelectric power generation (ibid). According to a member of the OLCA, since price is the only criterion that entitles providers to supply energy, market actors specialised on clean power production (wind, solar, etc.) are automatically excluded because of the higher costs of their energy<sup>27</sup>. As a result, 'dirty' forms of energy (i.e. from non-renewable sources) have become increasingly predominant in Chile's energy matrix since the turn to neoliberalism (see Figure 2.2).

Besides hydroelectricity, further regulations have been implemented to intensify the generation of thermoelectric power as a means to cope with a growing demand from the mining sector. This will be explored in more detail in Chapter Five when looking at the case of Huasco, one of the villages of the Huasco Valley that has been transformed into the powerhouse for the surrounding mining and agro-industrial complexes. For the moment, it should suffice to say that thermoelectric power generation has also been systematically propelled through various layers of state policies designed through methods of rational calculation aimed at an 'efficient' allocation of scarce resources. These policies, however, have resulted in devastating effects for ecosystems, territories and public health.

At the heart of these transformations, it should be noted, lies the relentless explosion of spaces that was described in the previous chapter and that has profoundly transfigured the biophysical composition of Chile's social geographies. Power plants, dams, and oil extraction sites -along with their dense imbroglis of infrastructures-, have been aggressively projected all across the national territory, usually next to poor and remote rural areas, where they can be easily occluded. Chapter Five reflects on the problem of commodity fetishism that arises in a context of planetary urbanisation and world-ecology by illustrating how these poor and remote areas have been silently plundered and depleted of their natural riches. For the moment, I would only illustrate the territorial extent of these transformations at the national level. Figure 2.2 contains a graphic representation of the growth of the energy matrix in Chile during the three decades that followed the transition from Allende's socialist political project to neoliberalism. The graphic evinces how energy production remained relatively stable from 1970 to 1982, and then increased steadily until the early 1990s, when commodity prices skyrocketed and the curve shifted once again to meet the demands of incoming extractive projects.

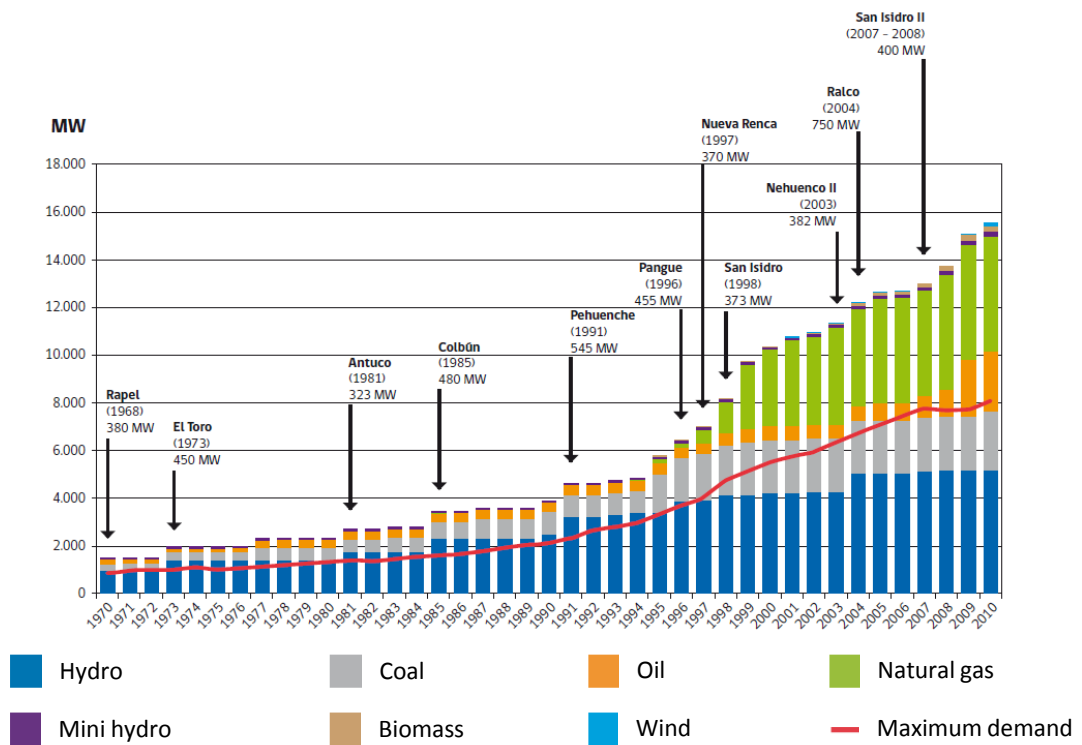
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<sup>27</sup> Interview with Lucio Cuenca, Director of the OLCA, 23 December 2013.



Figure 2.2

ENERGY MATRIX IN CHILE, 1970-2010



Source: National Energy Commission (Ministry of Energy 2011, p. 5).

Mining activity has also constituted a crucial transformative force in Chile’s material economy, provided that we understand the latter in terms of a geographically established process of resource and energy flows (see Bridge 2009). Because of its geological composition, the Andes mountain range is an immense source of mineral wealth that has shaped the identities and histories of South American societies over the centuries. To the extent that Chile’s national territory contains possibly the largest portion of the Andes, mining activity since the turn of the twentieth century has flourished. With 13% of GDP, 60% of total exports and 25% of fiscal income, mining is one of the foremost sources of revenue in Chile (COCHILCO 2013, p.5). In the context of the commodity boom that began in the 1990’s, Chile went from supplying 30.1% of the world’s copper in 1995, to 47.5% in 2004 (Urkidi 2008, p. 67). During the last decade, the country has been implementing a set of strategies aimed at attracting further investment in mineral extraction, which means that mining has intensified substantially. Besides copper, the country has diversified its mining matrix and is beginning to supply gold, silver and titanium among other metals to international markets.

Most importantly, it should be noted, the growth of the mining sector in Chile is also directly related to a set of reforms designed and implemented by economic experts during the Pinochet dictatorship. Through the National Law of Mining Concessions (LOCCM in Spanish) and the Mining Code, policymakers created a comprehensive set of incentives for transnational capital to develop mining projects in the country, with one of the most important of them being the mining concession (Padilla 2012; Cancino 2012). As the previous chapter argued, concessions grant their holders the legal right to exert absolute power over the territories conceded, resulting not only in enclave economies but also in various processes of accumulation by dispossession. Under the aforementioned mining regulations –which are still in force-, mining corporations can acquire vast territories for an unlimited period of time in order to develop extractive activities. Under the scheme of “full concession”, implemented through Law 18.097 of 1981, once a given territory has been handed over to a mining company, the state has no legal right to demand its restitution unless it pays the concession holder the price for all the minerals contained in the deposits (Padilla 2012).

Cancino (2012) illustrates how under the LOCCM enacted in 1983, Chile unilaterally waived its rights to perceive revenues in the form of mining royalties from transnational corporations extracting copper for a period of more than 20 years. With this, the country managed to attract significant flows of foreign direct investment aimed at developing mining projects, and this resulted in massive urban and sociospatial transformations all across the northern part of the country, especially in cities such as Antofagasta, Arica and Copiapó. Currently, the once abundant runoff from glaciers that used to supply Copiapó with fresh water, have been depleted as a result of intensive mining operations and the city is struggling to find solutions to a deepening environmental crisis. According to a recent study, the water imbalance in Copiapó is so dramatic that the recharge of its aquifer system is estimated to be between 4,000 and 4,400 litres/second, while granted water rights –the vast majority of them for mining activities- demand between 21,000 to 25,000 litres/second<sup>28</sup>. As the following chapters will reveal, the Huasco Valley is on the brink of losing its water sources as well, basically as a result of the relentless, unflinching consumption of water demanded by large-scale mining and agribusiness. The mining royalty system that underpinned such large-scale resource depletion across the country ended in 2005, when after an intense parliamentary debate, the payment

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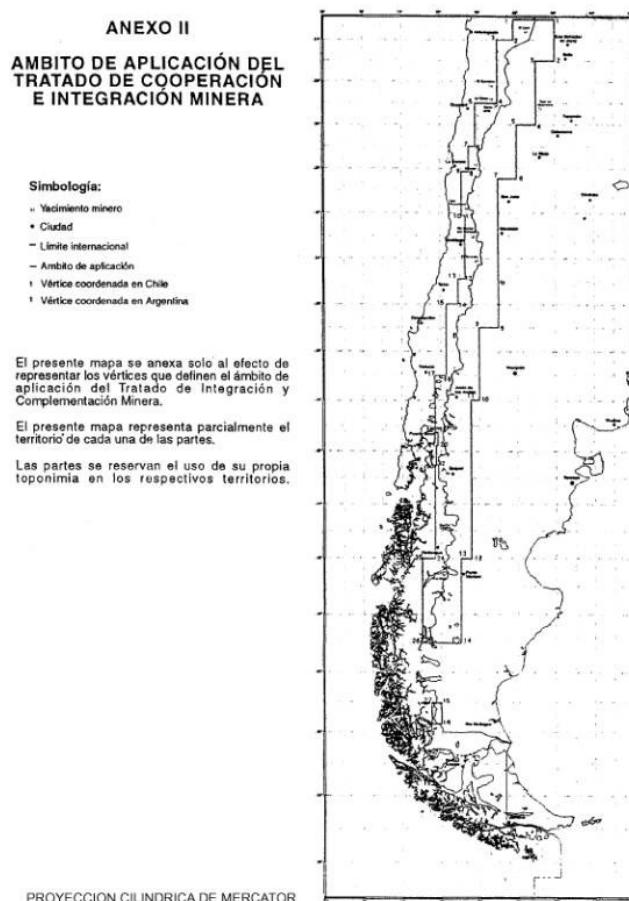
<sup>28</sup> See <http://www.redagricola.com/reportajes/agua/la-batalla-del-agua-de-copiapo>, accessed on 14 January, 2015.

of royalties was re-established as a legal obligation on behalf of concession holders (see Cancino 2012).

Chile's neoliberal policy toolkits for mediating the metabolic relation between nature and society with respect to mineral extraction have become increasingly ambitious over the years, and to some extent have even surpassed in scope and breadth those designed by the Chicago Boys themselves. The binational mining agreement signed by Chile and Argentina –the first of its kind in the world-, constitutes a clear example of how supposedly 'progressive' Concertación governments have taken neoliberal sociospatial engineering to a higher stage (Figure 2.3 depicts the territorial extent of the agreement).

Figure 2.3

### TERRITORIAL EXTENT OF THE BINATIONAL MINING AGREEMENT



**Source:** Argentina's official website on legal information (Información Legislativa). This map is one of the appendices included in the original agreement<sup>29</sup>.

<sup>29</sup> Available online at <http://www.infoleg.gov.ar/infolegInternet/anexos/60000-64999/62611/norma.htm> (accessed 20 December, 2014).

In 1997, the governments of Eduardo Frei in Chile and of Carlos Menem in Argentina, signed an agreement on “mining integration and complementation”, in order to facilitate resource extraction across the whole of the Andean territory located between the two countries (see figure 2.3). The aim of this agreement, Razeto et al (2009) suggest, is to do away with geopolitical limits in order to establish a new geo-economic order that allows transnational mining and energy corporations to operate under conditions of low taxes, low royalties, fast-track bureaucratic procedures and logistical benefits across 4,500 kilometres of border territory. According to Salinas (2007, p. 48), far from being a standalone legal instrument, this agreement is instead the result of previous instalments and efforts by both countries (but especially by Chile) to lower regulatory standards and create further incentives to attract foreign direct investment for resource extraction (see also Luna et al 2004; D’Anna 2007).

In that sense Salinas (2007, p. 49), for example, notes how only after a few months of reaching office, the newly elected government of Patricio Aylwin passed a tax reform under Law 18.985 of 1990, which granted tax and other benefits to mining corporations. Most notably, this law established an effective income tax by which companies were no longer required to pay an assessed income tax of 4% on their overall mineral sales, but were only taxed on the basis of their *actual* revenues (Luna et al 2004; Salinas 2007). This has been particularly problematic for public finances, because in practice, corporations have been repeatedly recurring to sophisticated accountancy and financial manoeuvres in order to declare themselves as generating very few, if any revenues at all (Salinas 2007). A further legal instrument that underpins the binational mining agreement is Law 19.137 of 1991, by which untapped mineral deposits owned by CODELCO (Chile’s state owned mining company) were transferred to transnational corporations (ibid, p. 50). According to Luna et al (2004, p. 12), following the enactment of this law, more than 300,000 hectares of mining concessions were transferred to transnational capital over the course of a four-year period without the state receiving a single US dollar in return.

Furthermore, and as the previous chapter pointed out, the binational mining agreement has been said to be circumscribed within broader, transcontinental attempts to create spatially integrated systems to intensify resource extraction and facilitate the movement of raw materials across borders. Actually, it has been argued that the territorial extent of the binational mining agreement corresponds with the Southern Andean hub of the IIRSA to a

large extent (see Chapter One). For example, and according to a member of the OLCA<sup>30</sup>, these agreements are mutually complemented by the IIRSA's aspiration to create an integrated infrastructural framework to move raw materials between the Atlantic and Pacific oceans and dramatically reduce transaction costs and turnover times. Overcoming the geographical limits imposed by the sheer magnitude of the Andes mountain range, according to members of civil society organisations, constitutes one of the most cherished dreams of economists and entrepreneurs to create an interoceanic corridor for enhancing transnational networks of trade with Asian markets<sup>31</sup>. Within the framework of the IIRSA and the binational mining agreement, Chile has been developing local infrastructural programmes specifically tailored to facilitate mobility across mining regions located in Andean territory<sup>32</sup>.

Because of its hefty mineral deposits, relatively abundant water sources and proximity to the sea (where minerals can be shipped off to manifold destinations of the globe), the Huasco Valley constitutes a highly strategic region within the binational mining agreement. Pascua Lama, one of the largest untapped gold deposits in the world (and which will be analysed in detail throughout Chapters Three and Six), is one of the main assets encompassed by the binational endeavour to extract mineral wealth from the Andes. In 2004, an additional protocol to the mining agreement was signed by Chile and Argentina in order to establish cooperation arrangements so as to facilitate the development of the Pascua Lama project by the Canadian transnational Barrick Gold –currently the largest gold mining company in the world. With this protocol, both countries reinforced their commitments to grant benefits of various sorts to the companies operating in Pascua Lama –especially Barrick Gold- (see Luna et al 2004; Salinas 2007; D'Anna 2007). Furthermore, and to the extent that a considerable portion of the deposits are scattered across border territory, the protocol even granted Barrick Gold the legal capacity to move machineries and materials freely between both countries, and even to establish a customs checkpoint that is operated privately by the company itself<sup>33</sup>. For several interviewees, this is by all means an aberration, one that in their view has led to the constitution of a virtual republic that is completely severed from state sovereignty. In fact,

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<sup>30</sup> Interview with Lucio Cuenca, Director of the OLCA, 23 December 2013.

<sup>31</sup> This was expressed in interviews conducted with members of Semillas de Agua, OLCA, and Consejo de Defensa del Valle del Huasco, in November/December 2013.

<sup>32</sup> Interview with Lucio Cuenca, Director of the OLCA, 23 December 2013.

<sup>33</sup> Interview with a member of Semillas de Agua, 27 November 2013; see also Barrick Gold's website for South America: <http://www.somosbarrick.com/pascua-lama/2012/12/el-area-de-protocolo-de-pascua-lama/>.

whenever there have been judicial proceedings as a result of Barrick Gold's several lawsuits and legal disputes, state officials have required entry permits issued by the company.<sup>34</sup>

Crucially, and to the extent that landed property –either in the form of concessions, leases or acquisitions- is at the core of the various layers of sociospatial engineering described in previous paragraphs, the issue of ground-rent is fundamental for understanding the processes of extended urbanisation that have followed such state mediations. Since the land is monopolisable and alienable, Harvey (2006 [1982], p. 367) contends, it can be rented or sold as a commodity<sup>35</sup>. A title to land, which can serve as a claim upon anticipated future revenues, according to Harvey, becomes a form of fictitious capital (see Charnock et al 2014; Merrifield 2014). With this, Harvey notes how the land market begins to function as a particular branch – with some special characteristics, of course-, of the circulation of interest-bearing capital (Harvey 2006 [1982], p. 367). This is clearly evidenced in Chile in the case of water rights, for example, as in some cases they have become mere financial instruments that are traded in several sorts of markets regardless of actual demand or use (see Prieto and Bauer 2012). When the land begins to be treated as a purely financial asset, Harvey (2006 [1982]) argues, is when land ownership assumes a properly capitalist form, and underpins the processes of accumulation by dispossession that ensure the reproduction of capitalism as a political-economic system.

In a context of planetary urbanisation, Merrifield (2014) has discussed how several of the processes of dispossession unfolding across the urban domain ultimately hinge upon the fact that land has assumed a purely fictitious character. Land in the form of interest-bearing capital, according to Merrifield, “circulates through the property market, enhancing the value of land, redeveloping and up-scaling that land for ‘higher’ and ‘better’ capitalistic uses...” (2014, p. 23). However, Merrifield's analysis here comprises processes of dispossession taking place across concentrated forms of urbanisation, an issue that has been recently gaining attention from scholars in the field (see for example Charnock et al 2014; Merrifield 2014; Christophers 2014). Issues of ground-rent under a scenario of extended urbanisation have lacked further theoretical and empirical attention, and the case of Chile offers an interesting vantage point to see how land markets can exert dramatic transformations upon vast tracts of

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<sup>34</sup> Interview with a member of Semillas de Agua, 27 November 2013.

<sup>35</sup> According to Charnock et al (2014), Harvey's notion of monopoly rent is crucial for making sense of processes of urban change under contemporary capitalism. For Harvey, it is the locational uniqueness of the site or the scarcity of buildings, natural resources, etc, which allows landlords and developers to engage in monopoly pricing and several forms of speculative investments.

land. Discussing the extent to which land destined for extractive activities has become financialised in Chile goes beyond the scope of this dissertation, but nonetheless the reforms previously analysed allow visualising how land markets can shape the geographical configurations of extended urbanisation.

For Harvey, the land market determines the allocation of capital to land, and in so doing, “shapes the geographical structure of production, exchange and consumption, the technical division of labour in space, the socioeconomic spaces of reproduction and so forth” (2006 [1982], p. 373). Subsequent chapters will offer many examples of how the configurations of landed property that emerge from the institutional frameworks previously described, have translated into variegated forms of dispossession, displacement and proletarianisation of the peasantry in the Huasco Valley. At the national level, Taylor (2006, p. 126) has illustrated how all the main extractive sectors such as mining, forestry, fisheries and agro-industry exist in the form of oligopolistic markets where a few large firms tend to dominate. These market-dominating firms, he adds, exercise considerable price-setting capabilities and enjoy generous benefits granted by the state (*ibid*). Although Taylor does not mention the role of land tenure as a structuring element of such oligopolistic markets, it is clear that concession schemes, water rights and electricity production frameworks are factors that strongly determine the concentration in the ownership of the factors of production.

What is particularly important for the purpose of this chapter, however, is to illustrate how the neoliberal/neoclassic mindset that has determined four decades of policy apparatuses has led to a problematic explosion of the urban fabric across non-urban geographies, as well as to a radical reconfiguration of socio-metabolic relations. Because of the favourable conditions created by wide-ranging economic reforms and of its stable political climate, Taylor (2006) notes that Chile managed to attract huge inflows of foreign direct investment after the early 1990s, setting into motion various sorts of productive and technological upgrading in the extractive industries. To the extent that Chile’s export sector was the one that attracted the bulk of foreign direct investment (Taylor 2006), remote and traditionally agrarian regions of the country have been undergoing relentless sociospatial transformations and have become increasingly imbricated with transnational circuits of exchange. As Harvey (2014) notes, such processes of technological upgrading and large-scale investment drive the frontier of urban growth to new possibilities, as the development of an interrelated network of cities starts to draw upon and squander an increasing number of hinterlands.

In light of such considerations, the sorts of operational landscapes that now blanket vast expanses of Chile's national territory imply an urgent reconsideration of the notions of metabolic urbanisation that underpin contemporary thinking on urban political ecology. Such operational landscapes not only feed processes of urbanisation unfolding in distant places of the world by providing raw materials of all sorts, but also produce urban space by becoming recipients of infrastructures, machineries, migratory flows, cultural practices and institutions. The sprawling growth of Chile's export sector is particularly illustrative of the fact that the expansion of the metabolic reach of the urban system underlies the production of a series of distinctive and sclerotic fabrics of urbanisation (see Ibañez and Katsikis 2014), such as the ones to be analysed throughout the remainder of this dissertation.

## **5. Conclusions**

In line with recent discussions of world-ecology and material economies, this chapter has sought to offer a different reading of Chile's history with neoliberalising capitalism in which the role of ideas and regimes of calculation are foregrounded as powerful forces that mediate and reconfigure metabolic exchanges at broad spatial scales. Thinking about the role of technocratic experts within the decision-making fabric of the country and their causal relationship with the relentless growth of the export sector following various layers of social and economic engineering, allows viewing Chile's recent trajectories with neoliberalism as a form of socio-environmental history. In order to do this, I have reflected on the cultural and political significance of technical expertise –or of “abstract social nature”, to use Moore's terminology- within the Chilean institutional context. The influence exerted by the Chicago Boys, I have argued, was not circumscribed to the years of military rule only, but instead set the foundations for the policymaking blueprint that to this day still dictates the rationale and practices of key politicians and planners in elite governing bodies. Crucially, I have also attempted to show how such neoliberal/neoclassical ideological visions have been instrumental in designing and implementing comprehensive reforms concerning land tenure, water provision, electric power generation, and mining.

Most importantly, in illustrating the institutional underpinnings of these processes of socioecological transformation, my intention has been to introduce questions of governance, economic thought and sociospatial engineering directly into contemporary debates on planetary urbanisation. Ideas of methodological individualism, incentives, price signals and efficient allocation of resources, among others, became gradually actualised in the form of policy instruments into powerful engines of territorial change that have rendered an



aggressive irruption of machineries, dams, roads, technologies, migratory flows, and so forth, across traditionally non-urban regions of the country. The case of Chile is therefore clearly illustrative of how the expansion of the urban fabric –like the process of metabolic interaction theorised by Marx-, is profoundly mediated by epistemological frameworks embedded in the social institutions of capitalism.

Also, the processes of social and ecological change described in this chapter have been aimed at challenging established imaginaries of metabolic urbanisation developed by UPE, where the analytical lens usually remains tethered to zones of agglomeration. In that sense, I see this chapter as offering a potential contribution to the theorisation of a much needed “political ecology of urbanisation”, as opposed to a political ecology of cities (see Angelo and Wachsmuth 2014 for an outline). Chapter Five will continue to elaborate on potential avenues of research for a political ecology of (planetary) urbanisation through the analysis of energy systems in Huasco, one of the villages of the Huasco Valley. Finally, it is also very important to stress that this chapter plays an important part of the dissertation because it provides an account of the historical and institutional context that has made the state a key mediating agent in the patterns of urban and socioecological transformation taking place in the Huasco Valley. The four chapters that follow address different aspects of processes of extended urbanisation unfolding throughout this fragile valley, so it is important to understand the role of the state in shaping its politically contested and variegated geographies.

## CHAPTER THREE

### Financialisation and Extended Urbanisation in Vallenar

#### 1. Introduction

The previous chapter offered an analysis of how planetary urbanisation needs to be conceptualised in the context of expanding, global metabolic flows of matter, capital and energy and how the density and breadth of such flows is necessarily mediated by capitalist and market-driven social and political institutions. In that sense, it was argued that the turn to neoliberalism under the Pinochet dictatorship set the institutional foundations for specific forms of extended urbanisation that have exerted radical sociospatial and socioecological transformations across all of Chile, with a particular focus on the Huasco Valley. Yet the patterns of territorial reconfiguration described are also shaped by other sorts of economic forces, perhaps even more pervasive and global in scope than those circumscribed to the nation state. Finance capital and financial practices are among the most pervasive ways of organising nature and of commanding space and as such, also need to be considered. Although the financialisation of capitalism is an issue that has been garnering increasing interest across the social sciences, its particular sociospatial effects in a context of extended urbanisation have not been explored yet. Therefore, this chapter aims at illustrating how the financialisation of the mining industry translates into specific morphologies and fabrics of urbanisation in remote areas like the Huasco Valley.

With the slowdown of the overall rate of growth that followed the 1974 recession across the majority of industrialised capitalist countries, the instability of exchange rates as a result of the collapse of the Bretton Woods agreement, and the advantages provided by the emergence of information technologies, the focus of economic activity began to gradually shift from production to finance from the 1970's onwards (Sweezy 1997; Foster 2007, 2010; Lapavitsas 2013). Four decades later, the 'financialisation' of capitalism, understood as the increasing predominance of financial instruments, practices and mechanisms over the actual production of goods or services in order to yield profits, is considered a landmark in the history of the capitalist mode of production (Foster 2007, 2010; Christophers 2010, 2012; Krippner 2011; Hall 2010, 2011; Lapavitsas 2013, 2013a; Loftus and March 2015). Although there are many understandings of the term 'financialisation', what is important to stress is that in broad terms, the phenomenon entails an alteration of trading, investment and consumption practices in crucial agents of capitalist accumulation such as non-financial firms, banks, workers and households (Labban 2010; Hall 2011; Kaltenbrunner et al 2012; Lapavitsas 2013).

In a context of planetary urbanisation, where vast territories are being increasingly operationalised, redesigned, enclosed and integrated by an expanding urban fabric into the international division of labour, studies of the sociospatial ramifications of financialisation need to be reinstated as a key priority. Notwithstanding the fact that the field of urban studies has been turning its gaze towards the financialisation of land as a fundamental determinant of how urban space is produced and reproduced, most accounts usually place the analytical focus exclusively on cities –understood as densely populated urban agglomerations (Wyly et al 2004, 2008; Christophers 2010, 2014; Charnock et al 2014; Merrifield 2014). Explorations of how processes of financialisation result in the material (built environments) and representational (subjectivities) production of urban space beyond already established urban centres, on the other hand, have not yet been developed. As the previous chapters have outlined, the extractive industries are arguably the main driving force behind the planetary extension of the urban form, and for that reason also constitute a key site of financial speculation and appropriation.

Because of their massive sociospatial ramifications and investment-intensive character, the extractive industries are perhaps where the existing tensions and relations between abstraction and material reality, as well as between different geographies and levels of social life can be most problematic. To the extent that much capital investment in the built environment would be impossible to achieve without access to credit (see Harvey 2006 [1982], p. 265), the unfettered, self-breeding and self-reproducing drive of finance capital is necessarily imbricated with massive transformations upon landscapes and geographies of extraction –most of which are thousands of kilometres away from financial centres. Although the existing literature on the financialisation of natural resources provides crucial insights for understanding the complex geographies of resource extraction (see for example Tsing 2005; Labban 2010, 2014; Kaltenbrunner et al 2012; Loftus and March 2015), its particular implications in terms of processes of urbanisation have remained unexplored. On the other hand, and as it was previously argued, the literature on the financialisation of the urban does not usually venture beyond already consolidated urban agglomerations or consider the particular socioecological implications of financial dynamics.

The purpose of this chapter is therefore to mobilise Henri Lefebvre’s notions of ‘levels’ and of ‘totality’ in order to offer an account of the financialisation of natural resources that explores the dense interconnections between the international financial system, the geographies of

resource extraction –and its concomitant processes of extended urbanisation-, and the production of financialised subjects and financialised cultures in the Huasco Valley, a region in northern Chile that is being transformed into a mining district. For Lefebvre (2003 [1970]; 2008 [1961]), multiple realities coexist on each individual level (global, urban, and local), and the notion of totality needs to be mobilised in order to grasp the true extent of such relations of coexistence and transposition between levels. He therefore proposes considering the totality as an ‘epistemological sensibility’ that permits us to grasp the complexity and interrelatedness of social life under capitalist modernity (see Goonewardena 2005; Shmueli 2008) and therefore eschew any fragmentary views of reality. The case of the Huasco Valley constitutes a clear example of the intricate coexistence between levels, because with the arrival of Pascua Lama –one of the largest gold mining projects in the world-, the international financial system and the local geographies of extraction in the valley became intermingled in relations of mutual transformation.

Specifically, the chapter will analyse how an increasing international demand for gold, coupled with projected future scarcity for the metal and the proliferation of retail financial instruments led to internal transformations in the gold mining industry that allowed massive investment projects such as Pascua Lama, a USD 7 billion open-cast gold mine to be developed by Barrick Gold, a major player in the mining industry. The sheer magnitude of Pascua Lama not only resulted in massive sociospatial transformations in the Huasco Valley, but also in microeconomic distortions as a result of capital flows entering the area, which in turn led to the arrival of various types of financial intermediaries –such as banks and retail stores- offering crude forms of geographically uneven and predatory forms of debt to local communities. Thus, urban space in the Huasco Valley has not only been produced through spatial configurations to the built environment via capital allocations on material infrastructures, but also through processes of financial subjectification arising from shifting frames of interaction at the level of the household and of the everyday. Then, as French et al (2011) have noted, there is an interesting circularity between process of securitisation and retail finance in the sense that the flows of capital that render these geographies of extraction in the Huasco Valley, are mediated to a considerable extent by households and everyday practices of individuals that are apparently external to the gold mining industry.

Reconceptualising the international financial system as a differentiated unity whose reproduction relies on a complex set of practices and arrangements that span everyday, urban and global levels of social reality is at the core of this chapter. This, I will argue, also provides

strong grounds on which to make sense of not only of the political-economic, but also of the experiential basis that underpins the complete urbanisation of society, and is therefore aimed at contributing to the lively, scholarly discussion on the subject. The first section will engage with some of Lefebvre's thoughts on levels, dimensions and totality, with the purpose of providing the analytical foundations to make sense of the interrelatedness between the private, the urban and the global in the context of the financialisation of capitalism. The second section goes on to offer an exploration of the financialisation of natural resources, with a specific focus on the gold mining industry. Understanding the internal dynamics of the extractive industries, I will argue, is crucial for disentangling the geographies of contemporary processes of extended urbanisation. Subsequently, a third section will focus on the corporate and financial strategies behind Barrick Gold and its multimillion dollar project Pascua Lama. With those things in mind, the fourth section explores not only the production of urban space, but also the transformation of everyday life that has followed the irruption of transnational finance capitals advanced for resource extraction in the Huasco Valley, with a specific focus on Vallenar, the valley's main town.

## **2. Levels, Totality, Urbanisation of Finance**

The notion of totality, which underpins much of Western Marxism's epistemology of society, regards the social whole as a structure or system constituted by parts to which they belong and that interrelate with the system (see Jameson 1971; Lukács 1971 [1923]; Freire 2000 [1970]; Jay 1986; Shmueli 2008). For Paulo Freire (2000 [1970]), the notion of totality aims at overcoming the pitfalls of bourgeois epistemologies that purport partial, fragmented and focalised views of reality –with the types of economic thinking described in the previous chapter being a case in point-, and therefore strives for the comprehension of total reality as an interrelated whole. Animals, says Freire, do not consider the world because they are immersed in it. Humans, on the other hand, *emerge* from the world and objectify it, something that consequently allows them to understand it and transform it through labour (ibid, p. 125). The dialectical method, Lukács (1971 [1923], p. 169-170) suggests, is fundamental for achieving the knowledge of the historical totality, because the relationships between parts and whole have become fundamentally different from what appears in thought in the form of categories of reflection. Mediation is for that reason necessary to unsettle the artificial isolation of objects that appear unmediated, and recast them as integrated within a system of relations (ibid). In other words, transcending immediacy is a precondition for surpassing the purely factual aspect of historical facts and grasping the social whole (Lukács 1971 [1923]; see also Jameson 1971; Loftus 2012).

Although the notion of totality has been widely used, Goonewardena (2005, 2008) notes how most of the approaches usually underscore it in some variations of the terms minted by a crude 'base-superstructure' model. Lefebvre's contribution for contemporary understandings of totality is therefore fundamental, because his conception of mediation with special attention to space is more nuanced, as it relies on a more flexible configuration of levels – beyond base and superstructure- that he proposes in the context of late capitalism's historical totality (Goonewardena 2005, 2008). In *The Urban Revolution*, Lefebvre views the social totality as the result of the myriad interactions and flows between Global (G), Mixed (M), and Private (P) levels of social practice (Lefebvre 2003 [1970]). With this, his intention is to clarify the mediated and thoroughly interconnected relations between everyday life (P-level), the urban (M-level), and global neoliberalism (G-level) (Goonewardena 2008), a relation that can also be mobilised productively to make sense of the complex geographies of finance. In fact, French et al (2011) have argued that the spatially differentiated effects of financialisation constitute one of the most important gaps in the burgeoning literature on the subject. For these authors, there is an urgent need for financialisation studies to focus on the myriad ways in which subjects are produced, especially when such processes of subjectification are fundamentally determined by the ebbs and flows of international financial markets.

Although Lefebvre never addressed the issue of finance specifically, he was nonetheless aware of the multi-layered and multidimensional ramifications of political-economic structures and for that reason deployed the notion of totality as an 'epistemological sensibility' that grasps the sheer complexity and interrelatedness of social life under capitalism (Shmueli 2008). However, he was well aware that overly systemic thinking abounded with pitfalls and thus urged the analyst not only to relativise the concept, but also to strive for continuous reflexivity and empirical observation (Lefebvre 2003 [1970]; 2008 [1961]; Shmueli 2008). In general, he was adamant in stressing that if there is no insistence upon totality, theory and practice accepts the real as it is: fragmentary, divided and disconnected (2008 [1961], p. 181). Activities and therefore individuals, he continues, "become reified like things, and just like things, are separated from the other" (ibid, p. 181). In sum, the notion of totality has as many advantages as it has disadvantages, because without it theorisation would be simply impossible (ibid). On the other hand, he cautions that relying unreflexively on it can lead to blunt dogmatism (Lefebvre 2008 [1961]). In general, such notion foregrounds the importance of unveiling the totalising nature of the political-economic system, while at the same time grasping its geographical, morphological and social variability on the ground.

In that sense, the notion of totality has enormous potential to make substantial contributions to the literature on financialisation because it aims at being sensitive to the multiple interconnections, conduits and relations that unfold within the financial system while keeping in mind the structuring context in which they are embedded. Lefebvre's insistence on totality offers an important alternative to approaches that have been inspired by Actor-Network Theory (ANT) and Science and Technology Studies (STS), and which have shaped the research agenda of financialisation to a considerable extent (see for example Callon 1998, 2007; Mackenzie 2006; Preda 2006; Zaloom 2006). Such strands of work explore in micro-sociological terms how market and economic actors are made up of the intertwinement of a range of human and nonhuman components such as institutions, technologies, beliefs and theories (Hall 2010). As such, the emphasis is placed on the 'performativity' of finance and economics, but the problem is that their lack of attentiveness to context has left them open to criticism from various fronts (see Hall 2010; Christophers 2014). By moving beyond political economy-inspired concerns, Hall (2010) argues, these authors have overlooked the geographically uneven nature of finance, failing to view financial markets as eminently political phenomena.

In that sense, STS approaches to financialisation lack the analytical traction required to capture the immensely variegated cartographies of power that constitute the international financial system. By placing the emphasis exclusively upon immediacy and situated practices at the expense of neglecting problems of exclusion, inequality, impoverishment and dispossession, they render an incomplete picture of the historical whole. For that very reason, and despite his lifelong interest in the study of microprocesses that constitute everyday life, Lefebvre (2008 [1961]) nonetheless warned about the dangers implicit in remaining attached to immediacy. When isolated from the social whole, he argued, the 'hyperconcrete' can be as abstract as any other reified generality (ibid, p. 181) and as a result becomes stripped of any explanatory potential. A similar debate has taken place in the field of urban studies regarding the "ontological turn" that some STS oriented scholars have intended to introduce to the analysis of urban phenomena. For Brenner et al (2011), such STS approaches purport an 'ontology of naïve objectivism' that fails to grasp how urbanisation is ultimately shaped and contested through the contradictory and hierarchical social relations that are immanent to capitalism.

In order to grasp the variegated sociospatial effects of a totalising system, Lefebvre proposes thinking in terms of levels instead of deploying a scalar approach, basically because he considered scalar schematics to be more static, whereas levels can interact and become

“telescoped” and interpenetrated amongst them (see Goonewardena 2008; Smith in the foreword to Lefebvre 2003 [1970]). This very fluidity and relationality of levels as sociospatial analytical categories is fundamental for understanding the geographies of the global financial system vis-à-vis extended urbanisation. Like Lefebvre, it should be noted that French et al (2011) have considered that the scalar sociospatial imaginary is much too static, especially considering that the complex geographies of financial processes require more nuanced approaches that are able to follow their flows “wherever they may lead” (ibid, p. 809). As the following sections will intend to reveal, even the most banal micro-financial practices in a small village concentrate dense imbroglios of mediations that interpenetrate with global financial dynamics. For example, Lefebvre argues that the global level, in accommodating the most general and the most abstract, is able to project itself into part of the built domain –buildings, monuments, large urban projects-, and of the unbuilt domain –highways, the organisation of traffic, the urban fabric and ‘nature preserves’- (2003 [1970], p. 79). On the other hand, Lefebvre warns that the private level should not be understood by opposing the microsocial with the macrosocial, because lived experience should not be considered a residue or trace of superior levels just because it is ‘minimal’ (ibid). By contrast, it should be considered a source or foundation of all social practice (ibid).

On that basis, the M-level (mixed) plays a crucial role as a mediator or intermediating level between society, the state, global power, institutions and ideologies on the one hand, and the private dimension of social life on the other (Lefebvre 2003 [1970]). The mixed level usually overlaps with the urban –although it is not limited to the space of the city only-, and is precisely where all levels tend to blur “as the city explodes and the urban arrives” (ibid, p. 89; see also Goonewardena 2005). Urban space should therefore be understood as the crucible, the melting pot where the workings of finance achieve full actuality and in so doing, perform a relentless transformation of materials, practices and subjectivities. The urban is the metabolic vehicle through which both land and natural resources circulate as financial assets, as it is also where financiers trade, hedge, buy and sell, and where workers deposit their savings, consume with credit cards, buy company stocks, pay their mortgages and so forth. In a context of planetary urbanisation, it should be noted, the urban not only needs to be understood in terms of cities but also of operational landscapes, which as Brenner (2014) has noted, are places that not only result from, but also support the growth of large urban agglomerations – and clearly include resource extraction sites such as agro-industrial complexes, mining and energy districts, among others.



In sum, it is in the level of the urban where the most divergent and disparate of financial practices and institutions overlap and coexist, and for that reason the notion of totality is fundamental in order to grasp the extent to which each of them is intimately related to the other. Perhaps the notion of 'financial ecology' developed by Leyshon et al (2004) and by Seabrooke and Tsingou (2009) aims at harmonising the apparently disparate nature of financial practices under contemporary capitalism, and in certain ways resonates with the notion of totality described above. Put briefly, the purpose of the financial ecology concept is to encapsulate the role that apparently everyday and private spaces –such as middle class suburbs, the workplace and so forth-, play in the production and reproduction of the global financial system (French et al 2011; see also Hall 2011). French et al (2011) contend that it is a politically productive analytic because it fragments systems to the level of the ecologies that constitute them, unfolding across space and in accordance with geographical difference. As such, it hints at the sociospatial unevenness that is immanent to contemporary finance and has therefore been mobilised by several studies in order to document how marginalised individuals and households usually assume the burden of the most predatory forms of debt and financial intermediation (see Langley 2006; Wyly et al 2004, 2008; Soederberg 2014).

In a context of extended urbanisation, where vast and variegated territories are being subjected to the insurmountable force of global finance and being completely reconfigured, the notion of financial ecology could provide important elements to understand how the architecture of the apparently global and seamless financial system is by and large nothing but a problematic interpenetration of levels –in the Lefebvrian sense. In other words, the gravitational field of finance in the context of resource extraction also results in the homogenisation-fragmentation dialectic that was described in Chapter One when referring to the political economy of the commodity boom in general terms. For that reason, the financial ecologies that result from the expansion of the urban fabric are also intrinsically differentiated and discontinuous, tending to create and reinforce divisions between and among social groups. In line with Lefebvre's aspiration to bridge micro processes with macro forces, the case study to be developed in this chapter will render visible the interconnections between levels that are immanent to the financial arrangements of mining corporations, and of the extractive industries in general, as they encompass a vast range of economic activities, geographies and actors.

Lefebvre's vision allowed him to foresee in the early 1970's how the spatialities of neoliberal capitalism would tend to be so disparate -especially under an exploding urban form which

seemed to aim at dissolving all boundaries-, and that is why he proposed thinking of the global condition in terms of levels whose myriad interactions formed the historical totality of late capitalism. The need to theorise those systems, he argued, was precisely because the division between city and country was becoming increasingly blurred, and the urban phenomenon was achieving a truly planetary extent (2003 [1970]). As Chapter One outlined, the commodity boom and its swarming flows of capital aimed at extracting all sorts of resources from the soil, account to a considerable extent for the urban explosion foreseen by Lefebvre, which has been recently theorised as extended urbanisation by Brenner and Schmid (2013, 2014; see Brenner 2013, 2014; see Chapter Two). The financial underpinnings of the commodity boom, as we shall see in the following section, are fundamental for understanding the sociospatial ramifications of extended urbanisation. Without the elaborate and dense networks of metabolic flows that constitute the financial system at the global (G) level, the patterns of large-scale territorial transformation that we are currently witnessing throughout rapidly urbanising regions of the world (mixed and private levels) would simply be impossible to realise. For that reason, the following section goes on to interrogate such financial and organisational dynamics in the extractive industries.

### **3. The Financialisation of Natural Resources**

Because of the technological sophistication of their material infrastructures and systems of machinery, the territorial scales in which they operate, and their complex organisational and logistical networks, resource extraction undertakings rely heavily on interest-bearing capital, either in the form of corporate debt, bank loans, and several other types of increasingly differentiated and intricate financial instruments. As Harvey (2006 [1982], p. 265) suggests, investments in the built environment are impossible to achieve without access to credit, so this is what makes interest-bearing capital (i.e. credit in all of its forms) an essential, mediating link between the flows of circulating and fixed capital. The financialisation of natural resources is therefore a notion usually deployed to signal how the delicate balance between financial arrangements and resource extraction tips towards the former, with physical producers - mining, oil and energy firms-, orienting their corporate behaviour and strategies towards increasingly financial and/or speculative operations (see for example Kaltenbrunner et al 2012; Labban 2010, 2014; Loftus and March 2015). Besides firms engaged in the physical extraction of raw materials, Kaltenbrunner et al (2012) note how specifically financial actors such as banks, institutional investors and hedge funds, progressively participate in the industry, dragging revenues from productive capital via different financial and institutional mechanisms.

It is also important to add that the expected future scarcity of raw materials that has ensued from a heightened demand through capital accumulation and economies of scale, and a reduced supply through its negative side effects, is a crucial determinant for the financialisation of natural resources (see Kaltenbrunner et al 2012). Such projected scarcity – which more than often is artificially fabricated or dramatised by financial actors-, is what underpins the speculative frenzies that have driven price increases across most raw materials during the last two decades (see Chapter One on the commodity boom). For example, Labban (2010) notes how in the oil industry, prices tend to fluctuate independently from the physical availability of oil in the market or in the ground. Since the introduction of oil futures at the New York Mercantile Exchange (Nymex) in 1983, Labban argues that oil has come to circulate simultaneously through exchange markets of the main financial centres, as much as through the massive physical infrastructures across the world. This leads him to conclude that the relations between price, investment and production have been transformed by the financialisation of the oil industry, because “more oil is traded in financial markets than in spot markets, while major oil companies have increasingly turned towards financial markets for shorter returns on their investments” (Labban 2010, p. 542).

Publicly traded oil companies then tend to exaggerate the size of their reserves because in so doing, they also manage to inflate and distort the price of their shares in stock markets (Labban 2010). Far from being exclusive to the oil industry, this phenomenon cuts across all extractive activities, because as Tsing (2005) has noted, investment-intensive activities necessarily rely on the self-conscious production of spectacles (i.e. distorted representations of reality) in order to gather the capital needed to operate and expand. In speculative enterprises, she adds,

profit must be imagined before it can be extracted; the possibility of economic performance must be conjured like a spirit to draw an audience of potential investors. The more spectacular the conjuring, the more possible an investment frenzy... conjuring is supposed to call up a world more dreamlike and sweeter than anything that exists; magic, rather than unsparing description, calls capital. The puzzle seems deeper the more the material and social worlds to be reshaped and exploited are geographically, culturally and politically remote from financial conjuring centres (Tsing 2005, pp. 57-59).

Spectacular accumulation, says Tsing, is therefore immanent to the extractive industries and their sets of financial practices, institutions and instruments (ibid). The conjuring of these dreamlike worlds can be patently observed in the evolution of the international market of raw materials, for example in terms of the growing share of commodity derivatives of total derivatives traded. According to Kaltenbrunner et al (2012), between 2004 and 2007 the gross value of commodity derivatives traded on over the counter (OTC) markets went from USD 176 billion to USD 690 billion, something that represents an increase in the relative share from 2.8% to 6.2% (p. 12). Financial derivatives (whose most common expressions are futures, options and swaps), it should be noted, are complex financial instruments whose value derives from the price –either present or future- of an asset, such as a commodity or currency, and not from the commodity as such (Hardt and Negri 2004, p. 280). Therefore, investing on a derivative does not imply investing on an actual commodity such as an ounce of gold, a barrel of oil, etc. Rather, derivatives aim at investing at the price fluctuations of the commodity in order to eschew market volatility, which means that by their very definition, they depend on the severance of all contacts with material reality. This, of course, and quite paradoxically too, has made hedging against volatility a source of volatility itself, as well as a source of profit for financial intermediaries (see Labban 2010).

In the section that follows, I will illustrate how Barrick Gold relied heavily on hedging their future gold production through financial derivatives that were sold to various market actors. This, it will be argued, ultimately unleashed a set of corporate and investment strategies that had massive sociospatial ramifications in the Pascua Lama mine, thousands of kilometres away from the Toronto Stock Exchange, where those conjuring manoeuvres actually took place. In other words, the Global, Mixed and Private level became interwoven in relations of mutual constitution, resulting in particular spatial configurations to the built environment in the areas surrounding the extraction site. However, and before delving into those matters, it is perhaps important to note that underlying the financialisation of natural resources is a substantial transformation in corporate behaviour that has translated into very problematic effects in everyday resource extraction operations. Such altered behaviour from non-financial firms is circumscribed within a general tendency that has been labelled “shareholder value” (see Froud et al 2000), by which corporate managers, in seeking to compensate for poor performance in terms of physical production, instilled a universal competition for financial results (French et al 2011).

Since the 1990s, corporate managers have been increasingly oriented towards achieving financial value for shareholders, something that is of course realised through financial engineering (Froud et al 2001). For example, Labban (2014) notes how in the US, the payout ratio (i.e. the ratio of dividends to net corporate profit) for oil companies went from being on average around 41% between 1963 and 1979, growing to around 50% between 1980 and 1989, and soaring to 84% in 2008 (p. 484). According to French et al (2011), the system of shareholder value is driven by the proliferation of financial coupon ownership among middle class households and workers, whose premiums become pooled and managed by institutional investors seeking to increase the value of those assets.<sup>36</sup> It is in this very circularity between financial institutions and households where we can begin to grasp the very intricate and interconnected way in which levels of social reality tend to coexist. The financial muscle of the high-powered financial masters of New York, Toronto, Tokyo, Frankfurt and London, springs to a considerable extent from the hard-earned money of the North American and European middle classes. As representatives of these pooled assets, institutional investors tend to be unyielding in their relations with corporate managers of the companies in which they own stock. This, Froud et al (2000) contend, leads to huge pressure over management strategies, jeopardising long-term integrity within the firm in order to favour short-term returns, something that as we shall see in the sections that follows, is patently reflected in Barrick Gold's corporate strategies.

It should also be noted that in the extractive industries, an important interpenetration of levels takes place in terms of corporate finance. According to Tsing (2005), the middle classes have also become increasingly involved in the mining industry as a result of the proliferation of information technologies, which opened foreign investment to the North-American "everyman". Because Canada has a long history with mining, and most of the largest mining corporations are based there, Canadian households, Tsing argues, invest on mining undertakings not only in search of personal profit, but also for reasons of national pride (ibid). There is, in that sense, a double circularity between private and global levels in the context of the international financial system (i.e. asset pooling and individual investment), resulting in the proliferation of institutional investors whose portfolios can easily reach trillions of dollars. Black Rock, one of the largest institutional investors in the world, for example, has USD 4.1

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<sup>36</sup> An institutional investor is a non-bank financial actor (either an organisation or person) that trades large sums of money in financial markets. As organisations, institutional investors usually take the forms of hedge funds, stock brokers, mutual funds, pension funds, and insurance companies.

trillion in assets under management which comprise 170 pension funds, banks, endowments, and insurance companies among others<sup>37</sup>. It is the biggest shareholder in half of the world's 30 largest companies –including oil companies like Exxon Mobil, Petrochina, and Chevron among others-, so this means that it exerts considerable influence over managerial decisions. Shareholder value, then, is a thoroughly disruptive phenomenon for corporate governance and for the material worlds corporations summon into being.

According to Labban (2014), shareholder value has resulted in catastrophic consequences for the workers and geographies that in some ways or others are affected by the extractive industries. This, Labban contends, is because instead of slowing down material production –as mainstream readings of financialisation would seem to suggest-, managerial strategies have aimed at intensifying it, albeit substantially degrading the ways in which it takes place. Mergers and acquisitions, plant closures and capacity reduction, divestments, outsourcing and offshoring, streamlining and ultimately, job destruction, Labban (2014) argues, are the bread and butter of the restructurings that companies continuously implement in their pursuit for shareholder value. This particular aspect will be crucial not only for understanding the processes of extended urbanisation to be analysed in this chapter, but also the geographies of labour that have emerged in the Huasco Valley with the arrival of transnational mining, an issue that will be addressed in detail in Chapter Four. This is yet another context in which the interplay between levels bursts into view, because disciplined investment at the corporate level ultimately means serial layoffs on the ground, something that Labban (2014) interprets as a strategy for regularising and disciplining the workforce. The more investment is disciplined by the logic of finance, Labban claims, “the more intense the contradiction and the more severe the disciplining of labour in the production process” (2014, p. 486). With those considerations in mind, the section that follows takes a close look at the inner workings of the gold mining industry, to then focus specifically on Barrick Gold and its flagship project Pascua Lama.

#### **4. Barrick Gold in the Wake of the Commodity Boom**

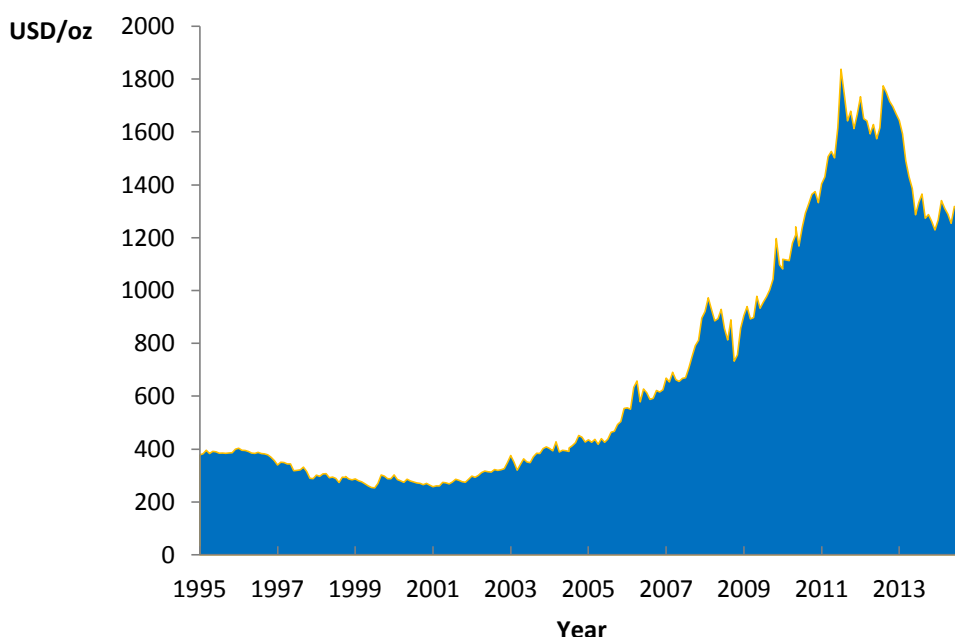
The historical turning point in the international price of gold is usually attributed to the collapse of the Bretton Woods agreement in 1973 (see Tsing 2005; Suárez 2012; Kaltenbrunner

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<sup>37</sup> 7 December, 2013 report by *The Economist*: <http://www.economist.com/news/briefing/21591164-getting-15-trillion-assets-single-risk-management-system-huge-achievement> (accessed 12 September 2014).

et al 2012), when the US government under the presidency of Richard Nixon decided to suspend the convertibility of the US dollar to gold. As a result, the US dollar became a fiat currency and the price of gold, which for almost thirty years had been held constant at around USD 35 per ounce, became a monetary asset and as a result, subject to increased international demand and market volatility. Gold was to be traded in the market as a luxury consumer good, as raw material for industrial and electronic processes, as a financial asset to protect economic actors against market volatility, and as a purely monetary asset (see Suárez 2012). Not surprisingly, its price skyrocketed during the years that followed the collapse of the Bretton Woods agreement, reaching its peak at USD 1,837 per ounce in 2011 (see Figure 3.1).<sup>38</sup>

**Figure 3.1**  
**INTERNATIONAL PRICE OF GOLD (USD PER OUNCE)**



**Source:** Author, with data provided by *Bullion Vault's* gold price chart.<sup>39</sup>

According to a special issue of *New Internationalist* on the gold industry, current prices have made gold mining a very troublesome business because previously remote and abandoned mining sites have once again become profitable and are consequently being reopened.<sup>40</sup> As a result, communities, geographies and water sources throughout Africa, Latin America, Asia and

<sup>38</sup> <https://www.bullionvault.com/gold-price-chart.do> (accessed 12 September 2014).

<sup>39</sup> Available at <https://www.bullionvault.com/gold-price-chart.do?modal=true> (accessed 12 September, 2014).

<sup>40</sup> *New Internationalist*, September 2014 issue.

even North America are now under tremendous strain as a result of price fluctuations. 10% of the gold that is extracted is actually employed in industrial or electronic processes –that is, destined for the satisfaction of human needs-, whereas the remaining 90% is transformed into jewellery or into bullions that end up stored in underground vaults (Suárez 2012, p. 138)<sup>41</sup>.

According to Gómez (2012), from 1493 to 1981 –a 488 year period-, 90,000 tons of gold were extracted from the soil, whereas from 1981 to 2012, 60,000 tons were extracted (p. 25). What this signals is that in only 30 years, gold extraction achieved an unprecedented intensity and scale. This leads Suárez (2012) to argue that the mining scheme that corresponds to the age of financialised capitalism is open-pit or open-cast mining. As opposed to underground mining, and as was argued in Chapter One, open-cast extraction has an immensely larger material footprint and because of its sprawling scales of operation, results in much more devastating effects upon communities, territories and ecosystems. Large-scale extraction through open-cast mining, Suárez (2012) contends, yields additional profits not only in terms of volume but also as a material backing for speculative activities such as derivative and futures trading. Financially speaking, and according to the Gold Council, during the last 20 years gold has been the best performing asset among all raw materials, yielding twice as much returns as platinum, five times as much as oil and almost four times as much as copper.<sup>42</sup> Also, it has been the second less volatile of all raw materials after beef (Suárez 2012). In terms of futures, gold has been recently undergoing a trading frenzy, especially in China, because in a recent report by the Futures Industry Association, gold futures traded on the Shanghai Futures Exchange (SHFE) went from 5.92 million contracts in 2012, to 20.09 million contracts in 2013 (Futures Industry Association 2013, p. 17).

In this context of increasing international demand and price fluctuations, Barrick Gold has become one of the most important companies in the gold mining industry, with operations in five continents and mineral reserves of 104 million ounces of gold, 888 million ounces of silver and 14 billion pounds of copper as of December 2013.<sup>43</sup> Registered in the Toronto Stock Exchange, Barrick extracted 7.42 million ounces of gold in 2012 and reached an operating cash

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<sup>41</sup> Marx (1981 [1894]) explains this by noting how gold is distinguished from other forms of wealth not by its magnitude –because that would be determined by the amount of labour objectified in them-, but as an autonomous embodiment and expression of the social character of wealth. Such social existence of gold, he says, “appears as something beyond, as a thing, object or commodity outside or alongside of the real elements of social wealth” (p. 707).

<sup>42</sup> World Gold Council: [www.gold.org](http://www.gold.org) (accessed 12 September 2014).

<sup>43</sup> Barrick Gold’s website: <http://www.barrick.com/company/profile/default.aspx> (accessed 12 September 2014).



flow of USD 4.2 billion in 2013,<sup>44</sup> thus becoming the largest gold producer in the world<sup>45</sup>. According to Tsing (2005), Barrick Gold is a company that has thrived on risk since its very beginnings, when Peter Munk –its founder- managed to make a fortune from the purchase of a Nevada Mine in 1986 that turned out to be the most profitable gold discovery in the world, pushing the company into a leading position. According to Newman, Munk was “a dreamer who became a king” (cited in Tsing 2005, p. 61). Barrick’s strategy still reflects the ambition that gave it notoriety in the 1990s and as a result, has been able to grow steadily through an aggressive combination of production and acquisition of already existing gold properties, currently boasting 26 gold mines, in addition to further projects under development in Australia, North America, South America and Africa.<sup>46</sup>

Gold production alone has not been the only driver of Barrick Gold and of the mining industry in general, as companies have been increasingly reliant on the combination of actual physical production with intricate financial strategies that –most notably-, include systematic issuance of corporate debt and hedging. Thus, according to the *Wall Street Journal*, during the last decade the largest gold mining corporations (Barrick Gold, Goldcorp, Newcrest and Newmont) generated the massive amount of USD 47.5 billion in operating cash flows (Oliver 2012). What is particularly problematic is that despite generating such revenues, these companies spent USD 68.5 billion –of which USD 43.4 billion corresponded to net capital expenditures. To cover this gap in their balance sheets, these companies opted for recurring to the issuance of equity shares before stock exchanges, which increased by 117% (ibid; De los Reyes 2014). To fund over runs in operational costs, De los Reyes (2014) notes how Barrick Gold in particular has repeatedly relied on a combination of internal financing, corporate debt and share issuances, something that has allowed it to maintain its leadership among physical producers.

In that sense, Barrick Gold reflects one of the general tendencies that underpin the financialisation of capitalism, and which consists on the fact that non-financial firms become increasingly involved in financial markets and processes on an independent basis, performing market transactions without recurring to banks or other financial actors (Labban 2010; Lapavitsas 2013). Such financially-oriented strategies, De los Reyes (2014) argues, led Barrick Gold to issue shares for USD 3 billion in 2009 and for USD 4 billion in 2013, in themselves the

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<sup>44</sup> According to data from Barrick Gold’s 2013 annual report.

<sup>45</sup> See Mining.com (<http://www.mining.com/top-10-gold-company-production-for-2012-80750/>, accessed 12 September, 2014).

<sup>46</sup> Data from Gold Investing News (<http://goldinvestingnews.com/investing-in-gold/top-10-gold-producers>, accessed 12 September 2014).

two largest equity offerings in the history of the Toronto Stock Exchange. Such issuances, it should be noted, were not aimed at financing further material production but followed an eminently financial logic, because they were intended to un-hedge the company's future gold production, which had been sold under fixed-price contracts to institutional investors in previous years, when the prospects for further price increases were uncertain. Then, as gold prices began to rise rapidly in the wake of the 2008 financial crisis, Barrick considered it needed to eliminate its fixed-price gold contracts in order to gain full leverage to the favourable gold price in all future production<sup>47</sup>. Thus, as Labban (2010) has argued, we can see here how finance becomes gradually less of an intermediary in the process of accumulation and more of a site of accumulation as such.

Furthermore, the pervasiveness of financial logics in the company's corporate governance can also be observed in its increasing orientation towards shareholder value as a result of the pressures exerted by institutional investors. Due to the underperformance of stocks, these investors have pressured the management to abandon a growth-oriented strategy because in their view, that undermines the ability of the company to deliver shareholder returns (see De los Reyes 2014). Therefore, and after firing its CEO and replacing him for the Chief Financing Office, the company has recently taken a more conservative approach on capital allocation, which it has chosen to encapsulate under the motto "returns will drive production, production will not drive returns" (ibid)<sup>48</sup>. With this, Barrick Gold begins to reflect the general trend among physical producers described by Labban (2010), whereby internal power structures tend to shift in order to align the interests of managers with those of shareholders, leading to prioritise short-term profits over long-term growth. In the company's 2013 annual report, Peter Munk bluntly synthesised this approach as follows,

Fortunately, we recognized early that the business climate was fundamentally changing. Investors were no longer interested only in growth. Free cash flow, increased dividends, and other shareholder-friendly moves became the new priorities. In retrospect, this new mindset was not surprising given that gold mining shares have for a number of years lagged behind the price of gold... Recognizing this shift, even before the tumultuous events of 2013, we had begun

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<sup>47</sup> Public announcement by Barrick Gold (see <http://www.barrick.com/investors/news/news-details/2009/BarrickAnnouncesPlantoEliminateGoldHedges1121019/default.aspx> accessed online 13 September, 2014).

<sup>48</sup> See Barrick Gold's 2013 Annual Report, p. 1.

a complete overhaul of our business strategy. When Jamie Solasky, our new CEO, was appointed in mid-2012, he immediately shifted our focus from production growth to maximizing free cash flow and risk-adjustment returns (Annual Report 2013, p. 3).

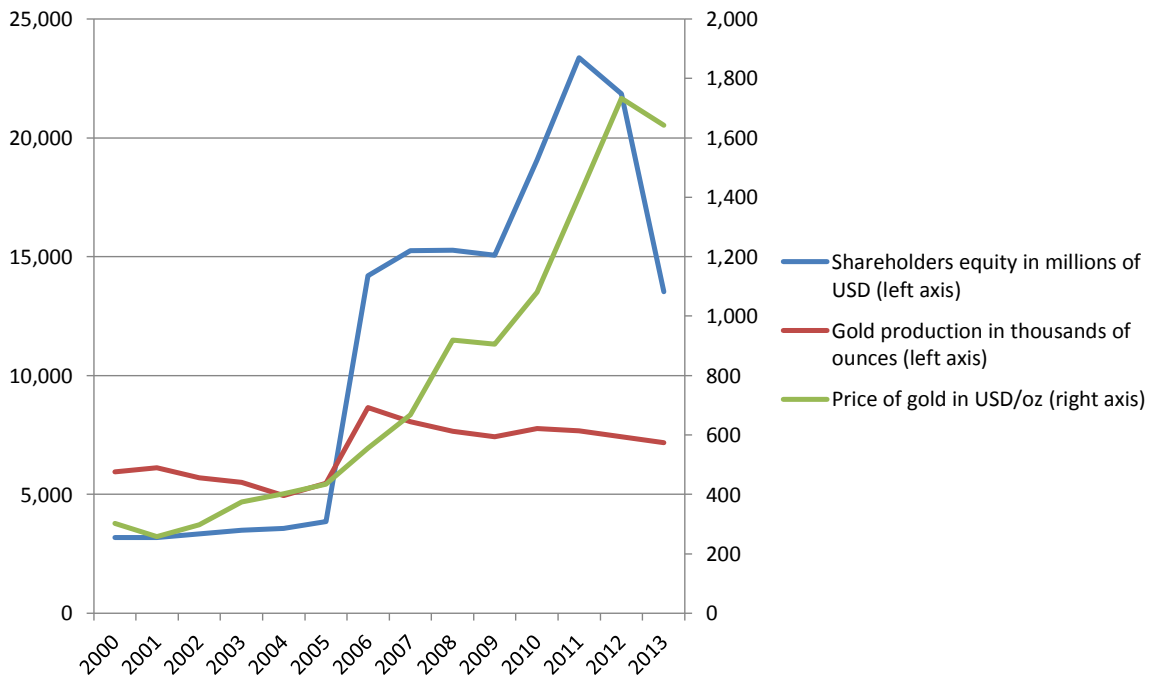
What this means is that the company adopted a “highly disciplined capital allocation framework” (ibid, p.3) that, according to Munk, has been followed by every senior mining company in the world. As we shall see in the case of Pascua Lama, and following Labban’s (2014) observations, the more investment is disciplined by the logic of finance (at the G-level), the more intense the contradiction and the more severe the negative effects of material production on the ground (at M and P levels). There is in this sense a clear interpenetration of levels as a result of Barrick Gold’s strategy, as its orientation towards shareholder value has resulted in pervasive consequences unfolding in the Chilean Andes, thousands of kilometres away from the company’s management headquarters. The ‘driven by returns’ outlook has not only undermined the conditions of the workforce in the mining site, but has also resulted in devastating effects for the environment as a result of poor practices on the ground –which have included mismanagement of waste, flawed assessments of environmental impact and so forth. In terms of figures, one can perhaps visualise the way in which revenues (in the form of shareholders equity) seems by all means increasingly disconnected from Barrick Gold’s material production. According to Figure 3.2, the amount of shareholders equity has apparently been fluctuating independently of gold extraction, particularly from 2006 onwards.

In Volume III of *Capital*, Marx (1981 [1894], Part Five) noted how finance appears to divorce itself from the material world by creating the illusion of self-breeding, self-valorising value that is apparently unmediated by the production process. Therefore, it was in interest-bearing capital where Marx considered that the capital relationship achieved its most fetishised, illusory form (ibid). Insofar as it constitutes an extension of credit in anticipation of future labour aimed at creating values ahead of commodity production, finance capital bears no relation with actual labour and therefore amounts to a speculative claim on future surplus value (Harvey 2006 [1982], p. 259; Marx 1981 [1894]). This led Marx to argue that when finance capital –as a claim of the appropriation of future surplus labour- starts to be advanced haphazardly, the connection with the expansion process of capital tends to become disconnected, and everything becomes “doubled and trebled and transformed into a mere phantom of the imagination” (referenced in Harvey 2006 [1982], p. 269). Figure 3.2 is clearly

illustrative of how disparate corporate finance and material production can be at certain points in time.

**Figure 3.2**

**BARRICK GOLD'S SHAREHOLDERS EQUITY VS GOLD PRODUCTION**



**Source:** Author, with data from Barrick Gold's 2000-2013 annual reports<sup>49</sup>.

Although this reconfiguration in corporate strategies and financial results may perhaps indicate that Barrick Gold is to a certain extent 'financialised', it does not mean that there has been a complete disconnection or severance from its material basis, as a strand of the financialisation literature sometimes seems inclined to think (see Nitzan and Bichler 2009). Marx (1981 [1894]) was aware that such disconnection was not possible, and when he reflected on the existing relationship between the credit system and the monetary basis, he compared it to the relationship between Catholicism and Protestantism (p. 727). For him, the credit system is no more emancipated from the monetary system as its basis than Protestantism from the foundations of Catholicism (ibid). Something similar happens in the extractive industries. Just as Labban (2010) observed for the case of the oil industry, although Barrick Gold's wealth is located predominantly in the stock market, the performance of its stocks is ultimately tied to the company's power over material production and exchange.

<sup>49</sup> Annual reports available at Barrick Gold's official website ([www.barrickgold.com](http://www.barrickgold.com), accessed 20 September 2014).

Accordingly, the corporate management has sought to intensify production in various ways, but following the financially disciplined logic that has been described above.

It is very important to stress that the role of the state as a mediating agent in the expansion of physical production has been crucial, because as Chapters One and Two pointed out, nation states exert absolute control over the soil and subsoil, and territories of extraction become strategically important sources of fiscal revenue. The case of Chile, for example, is highly illustrative of how political strategies and economic policies implemented at the level of the state create the material conditions for investment frenzies that can lead to vast inflows of foreign capital (like Barrick Gold's). According to Taylor (2006), one of the key reforms implemented by the Chicago Boys during the military regime consisted in reconfiguring the relation between domestic accumulation and global capitals. By contrast to national developmentalist models that had tended to protect domestically located productive capitals, neoliberal reforms implemented by the Chicago Boys aimed at prioritising capital in its money-form rather than as production (Taylor 2006). An emphasis on liquidity, Taylor suggests, was expected to enable capital to overcome barriers to valorisation and concentrate in whatever sectors offered more lucrative returns (ibid). Such shift from productive capital to money form was forged through a process of deregulation of both trade and finance. Alongside privatising banks and freeing interest rates, "the regime removed restrictions and provided incentives for foreign capital to flow into domestic enterprises and financial markets" (ibid, p. 61).

The effect of these reforms on the extractive industries was significant, because according to Taylor, they allowed large business conglomerates with access to international financial markets to "use this credit to purchase or establish industries in the new export sectors and also to procure state industries that the regime privatised at greatly subsidised prices" (2006, p. 61). Policies of financial deregulation and various forms of subsidies continued to be implemented by post-authoritarian governments, creating a very favourable business climate for large mining corporations like Barrick Gold, which after the 1990s started to develop low-cost, largely profitable investment projects across Chile's national territory. The notion of mediation grasps the financialisation of the mining corporations not as an isolated economic fact, but as entangled in the wider process of financialisation of capitalism, where the nation state also shifts its focus from fostering material production to yielding financial revenues. Dialectical thinking draws connections between these seemingly autonomous transformations and visualises the ultimate nature of total social reality in this particular stage of capitalist development. This will become the more evident when, in the section that follows, we shift

the focus of attention towards the actual geographies of extraction through the case of Pascua Lama, Barrick Gold's flagship project and one of the largest untapped gold deposits in the world. This analysis of social reality will provide a firm basis upon which to draw connections between levels G, M and P, and lead to a clearer understanding of the financial basis of urbanisation as a phenomenon that flows from the molecular to the global.

### **5. Pascua Lama and Barrick's Corporate Strategies**

Located in the Andes at around 4,600 metres above sea level, amidst millenary glaciers, primordial rocks and near the source of the Huasco River, Pascua Lama is one of the largest and most controversial gold mining projects in Latin America. Set to be developed between Chilean (70%) and Argentinean (30%) territory, Pascua Lama is the first binational mining project in the world, and as such, it is a direct offshoot of the Chile-Argentina mining agreement signed in 1997, which was analysed in the previous chapter. Its particular appeal lies in the fact that its estimated gold deposits amount to 16.9 million ounces of gold and 594 million ounces of silver that would be extracted over an area of 16.5 square kilometres (Urkidi 2008) at an annual rate of 800,000 ounces per year<sup>50</sup>. According to the Natural Resources Holdings, Pascua Lama ranks amongst the largest undeveloped gold deposits in the world and third in Latin America after Cerro Casale (Chile) and Las Cristinas (Venezuela) (cited in De los Reyes 2014). Initially branded "the largest, low cost mine in the world", Barrick estimated that its construction costs would be around USD 1.1 billion, numerous setbacks and complications made that figure grow more than five-fold. According to the company's Annual Reviews, capital expenditures on Pascua Lama for the 2000-2013 period amount to USD 6.6 billion, and this figure is set to keep moving upwards as the company faces even more obstacles from several fronts.

Above all, such cost overruns demonstrate that the relation between the sphere of corporate finance as a driver of revenues and the sphere of production is anything but severed. It also demonstrates that there is no simple and straightforward relation of causality between levels G and M, as the relations of production taking place in Pascua Lama (M-level) have not only been passive recipients of power structures, but have themselves determined much of what happens at stock exchanges and courts in Toronto and New York (G-level). Barrick Gold has devoted much time, energy and capital to make Pascua Lama work, and the USD 6.7 billion spent as fixed capital expenditures attests to such clarity of purpose. These unforeseen costs

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<sup>50</sup> Barrick Gold's 2002 Annual Report, p. 30.

have been justified to the shareholders and to other stakeholders in terms of the vast amount of returns the mine is likely to yield once in full operation. In other words, Pascua Lama itself is the product of the spectacular aspect of accumulation described by Tsing (2005), because Barrick Gold has construed before the shareholders an image of the mine as being the ultimate solution to the company's problems. Yet, as it usually happens with conjuring projects that span a global scale, the dreams of financiers clash with the unruliness of the natural environment –especially if the extraction site is at 4,600 metres of altitude- and the resistance of local communities.

Acts of conjuring, says Tsing (2005), ask participants to see a landscape that does not exist and must also cover the conditions of its own production. The fetishisation of infrastructural networks in a context of planetary urbanisation will be analysed in detail in Chapter Five, but it should suffice to say for the moment that just as the piping, sewage and electrical networks that sustain life in cities are rendered invisible (see Kaika and Swyngedouw 2000), extraction sites also tend to be banished from collective consciousness. This is particularly relevant in the case of Barrick Gold, because as a result of its financially-driven strategy, operations on the ground have been utterly detrimental to natural resources, landscapes and communities. However, the conditions in which exploration and land surveying operations took place were hidden from shareholders. The worlds conjured by Barrick Gold in the AGMs (annual general meetings) in Toronto therefore contrasted starkly with the dispossession, socioecological plunder and labour precariousness that were actually taking place in the Huasco Valley. Institutional investors, however, managed to see through the hype and found out about the difficulties faced by the company in bringing the project to life. In a 2013 report to Barrick's shareholders, Greenpeace (2013) alerted them not only about the ways in which the company had failed to abide by Chile's domestic laws and regulations, but how as a result of bad practices at the extraction site, it had been fined numerous times and was under ongoing investigation and prosecution by national courts. In 2014, these investors filed a lawsuit against Barrick Gold before the Ontario Superior Court of Justice for USD 6 billion, under allegations of concealing information about the obstacles faced by the company in Chile.<sup>51</sup>

It should be mentioned that the project has a long history, because although exploration and land surveying operations at the extraction site began in the late 1990s, the Government of

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<sup>51</sup> *The Globe and Mail*, 22 May 2014 (<http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/barrick-named-in-class-action-suit-over-troubled-pascua-lama-project/article18798574/>, accessed 24 July, 2014).

Chile did not grant formal approval for the project until 2006, when Barrick Gold was forced to reframe the proposal several times as a result of numerous concerns raised by experts and local communities in terms not only of environmental but of cultural and social impacts (see Molina and Yáñez 2008). Mineral deposits were said to be located near archaeological sites of the Diaguita indigenous people and also under large and millenary glaciers (Esperanza, Toro 1 and Toro 2) that are fundamental for provisioning water to all of the Huasco Valley during dry months. Since Pascua Lama was projected as an open cast mine, experts and communities feared that the effects on the glaciers would be devastating and as a result, the Huasco River would be seriously affected. Although the licence was granted in 2006 with around 400 caveats<sup>52</sup>, the construction of the mine did not begin until 2009, a year in which Barrick Gold started to incur in serious cost over runs and went from spending USD 202 million in 2009 to USD 724 million in 2010 and then all the way up to USD 1.9 billion in 2013<sup>53</sup>. Setbacks and obstacles in corporate operations have been very common, because as a result of restructurings, cost optimisation strategies and layoffs, the mine has tended to perform under very poor standards.<sup>54</sup>

As a result of such bad practices, and in response to a remedy of protection requested by 10 Diaguita indigenous communities before the Court of Appeals of Copiapó, the Sernageomin (Chile's national agency for mining and geology) decided to suspend all drilling, blasting, pre-stripping and unloading of solid waste in 2012 (Greenpeace 2013). Besides severe effects upon glaciers Toro 1, Toro 2 and Esperanza, communities argued that mining operations in the area were contaminating the Huasco River by indiscriminately unloading toxic waste upon its waters. Furthermore, the Sernageomin considered that the corporation had failed to comply with labour and occupational safety regulations, putting in jeopardy the lives and physical integrity of workers (Greenpeace 2013). If anything, Labban (2014) argues, disciplined investments are perhaps the principal mechanism for pacifying labour, something that is reflected not only in the increasing precariousness of the labouring activity but also in corporate strategies like layoffs. According to Salinas (2007, p. 111), serial layoffs have also been at the core of Barrick Gold's strategies for maximising profit and disciplining the workforce because as a result, the rate of unionisation in Pascua Lama has reduced dramatically. Upon submission of the application for a mining licence, Salinas notes how

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<sup>52</sup> See report by Reuters Latin America, 10 April 2013 (<http://lta.reuters.com/article/domesticNews/idLTASIE93906W20130410?pageNumber=2&virtualBrandChannel=0>, accessed 15 August 2014).

<sup>53</sup> In accordance with data from Barrick Gold's 2006-2013 annual reports.

<sup>54</sup> Interview with a member from Semillas de Agua, 27 November 2013.



Barrick Gold hired vast numbers of local workforce in order to mitigate local resistance to the project and once the licence was granted in 2006, the company laid off all local workers (ibid).

Above all, this case reflects Marx's (1981 [1894]) claim that finance tends only to *appear* as if it were unmediated by the production process. While executives in Toronto make every effort at performing financial alchemic transformations in order to increase dividends to shareholders, the company's engineers and managers at the extraction site strive for reducing by all means possible the costs associated with actual material operations for the sake of 'shareholder value'. Yet, the consequences of these processes of cost rationalisation have not only been utterly detrimental for local communities and natural resources, but for the very viability of the mining project itself. Operations at the extraction site have been systematically performed under very low labour and environmental standards and this has resulted in several obstacles to the company, which not only has had to face fines but also lawsuits and judiciary procedures at both the domestic and international levels. Chilean state agencies have become increasingly involved as a result of poor standards at the extraction site, with the suspension of activities ordered by Sernageomin followed by further suspensions, fines (of up to USD 17 million) and other administrative decisions that have greatly undermined corporate operations. As Chapter Four will explore in more detail, the setbacks and obstacles suffered by Barrick Gold have been to a large extent the result of multiscale mobilisation campaigns by local communities, which have resorted to legal, political and communicational mechanisms to hold the company accountable for its lack of compliance with legal and regulatory frameworks.

Most importantly, what the case of Pascua Lama demonstrates is the fact that, as Moore (2014) contends, financial markets are indeed powerful ways of organising nature. If anything, the 'driven by returns' corporate strategy has proven to exert chaotic effects on the ground, with rivers being polluted, glaciers destroyed, crops diminished, workers laid off and impoverished and communities in a state of continuous anxiety and distress. As such, it becomes clear how flows of fixed capital expenditures, when added to intricate financial manoeuvres performed at the headquarters of transnational corporations, can result in geographically uneven forms of urbanisation in remote lands –like the Huasco Valley. The sclerotic fabrics of urbanisation that have emerged in the Huasco Valley, it should be noted, have not been limited to effecting transformations in landscapes and built environments, for also social, cultural and financial practices have been reconfigured ostensibly. In that sense, the remainder of the chapter will illustrate how global, mixed and private levels of social reality interpenetrate and coexist, with financial practices and strategies at the headquarters

of Barrick Gold determining micro-financial practices at the level of the household and the everyday in Vallenar, the main town of the Huasco Valley. In sum, the purpose of the next section will be to show the way in which such shifting patterns of metabolic exchange purported by Pascua Lama, have also resulted in the material and representational production of urban space in Vallenar.

## **6. Financialisation of Everyday Life in the Huasco Valley**

Vallenar is the main town of the Huasco Valley, both demographically and administratively, as it is the capital of the Huasco Province.<sup>55</sup> Its location is strategic in geographical terms because it is next to the Pan-American Highway, a 28,500 km road network that cuts across Chile from south to north and leads all the way to the US and Canada. It is also located equidistantly between the mountain range –where vineyard agriculture, Pascua Lama and other mining projects are being developed- and the coast –where power plants are interspersed with tailings dams and olive plantations. It is therefore the point of convergence and hub of population flows, economic activity, logistical operations and political institutions. A member of the Council for the Defence of the Huasco Valley noted how before the mining boom, Vallenar had a deeply entrenched rural identity that gravitated around self-sustaining local economies based on small landholding and trade.<sup>56</sup> To the extent that it was outside of the urban gravitational field of Santiago, Vallenar was until relatively recently completely unaccustomed to large infrastructural developments, retail finance and commerce and in sum, to the cultural, technological and developmental rhythms of large urban agglomerations.

Since the turn of the century, when inward foreign direct investment started flowing haphazardly in the pursuit for raw materials, Vallenar began to undergo dramatic transformations at a very fast pace, becoming the centrepiece of a process of extended urbanisation that has stretched across all of the Huasco Valley. In less than ten years, the people of Vallenar experienced the arrival of the urban fabric not only in terms of transformations to the built environment, but also in terms of ways of living, as electronic devices, satellite television, retail stores, consumer culture and several other artefacts and practices became part and parcel of their everyday lives. A local activist notes how since 2006, when Pascua Lama began pre-construction operations and the flows of circulating money were distorted substantially, many local stores went out of business because they were no longer

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<sup>55</sup> According to the National Library of Congress (BCN 2013), the estimated population of Vallenar in 2012 was 46.207.

<sup>56</sup> Interview with a member from the Council for the Defence of the Huasco Valley (28 November, 2014).

available to compete with nation-wide supermarket chains offering a wide array of imported products.<sup>57</sup> Such microeconomic distortions, a local state official argued, also led to a state-driven boom in infrastructural development, as new roads were built, and also local public works like sports facilities, schools and parks were developed as well<sup>58</sup>. In his view, these public investment works had been in the pipeline for years, but it was the arrival of mining projects what triggered their actual development, as it was easier for the local government to justify public spending when it was aimed at facilitating economic activity.

At the mixed level, extended urbanisation in Vallenar was also reflected in the housing market, which grew at a dizzying pace, and with price increases of up to 300%. Construction companies from Santiago such as P.I., Santa Beatriz and Inca began to develop housing projects with around 700 houses each, including the first high rise housing project in Vallenar, which amounts to 300 flats.<sup>59</sup> According to an activist, such price increases resulted in intra-urban displacement, as many local tenants were no longer able to afford rents and had to move either to the town's periphery or to other cities like Copiapó and Calama<sup>60</sup>. Furthermore, and possibly foreseeing incoming flows of well-paid floating populations working temporarily at mining and energy projects, local investors built hotels, restaurants, bars, residence halls and private accommodations, all of them quite successful for a period of time until mining projects began to face legal problems before courts and regulatory agencies (see Chapter Four). In sum, the aforementioned official from Vallenar's Planning Department noted how as a result of these trends in urban change, the town went from a growth rate of 0.4 to 2.6 hectares per year.

Most importantly for the purpose of this chapter, it should be noted that microeconomic distortions driven by mining investments also attracted retail chains, which began to open several branches in Vallenar. The arrival of such chains is perhaps something that attests to how global, mixed and private levels of social reality can interpenetrate and shape the ways in which urban space is produced, both materially and representationally. Although retail stores indeed determine to a large extent the internal dynamics of households, the framework of levels allows us to visualise how such relations of mutual constitution are at the same time mediated by processes taking place at broader spatial scales. Thus, the proliferation of retail

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<sup>57</sup> Interview with a member from the Council for the Defence of the Huasco Valley, 28 November, 2013.

<sup>58</sup> Interview with an official from Vallenar's Planning Department (SecPlan), 3 December 2013.

<sup>59</sup> Interview with an official from Vallenar's Planning Department (SecPlan), 3 December 2013.

<sup>60</sup> Interview with a member from the Council for the Defence of the Huasco Valley, 3 December 2013.

chains in Chile is circumscribed within a global tendency that took place from the 1990s onwards and consisted of the expansion of debt and retail banking across diverse segments of mass consumption as a result of the retreat of the state in the provision of public goods and the intensification of international trade. Ossandón (2014) notes how in Chile, retail financing underwent a vertiginous growth during the 1990s, as credit cards issued by banks increased from 1,310,325 in 1993 to 4,499,627 in 2007, while those issued by retail stores skyrocketed from 1,350,000 to 19,273,919 during the same time period (p. 430). This means that there are more than four retail cards per bank card, an outrageous figure when seen in perspective with other countries where the same rate fluctuates between 0.25 (Colombia), 0.9 (United States) and 1.5 (Brazil) (ibid, p. 430).

The proliferation of credit offered by retail stores in Chile also reflects the tendency observed by Lapavistas (2013) at the global level, whereby non-financial enterprises become increasingly involved in financial processes on an independent basis, without recurring to banks. In Chile, this shift in corporate behaviour became distinctly rooted in corporate governance structures when retail chains began to create their own internal risk and credit areas and issue their own credit cards (Ossandón 2014). With time, retail companies realised that the issuance of credit cards not only allowed them to eschew intermediation fees charged by banks as well as value-added tax, but that it was also a very good business in its own right. As such, they began to develop increasingly differentiated financial products to be consumed by the Chilean middle classes (see Marambio 2011; Ossandón 2014). As financial ecology authors have argued, the financial system tends to make great efforts in order to project its networks into different types of financial landscapes, especially aiming at those made up of less privileged individuals and households at the margins of society (Wyly et al 2008; French et al 2011). According to Marambio (2011), retail chains in Chile fit into this very logic, as their aim is to “include” segments of the population that do not have any access to finance under regular credit-scoring standards. Students, housewives, retired workers and even the unemployed become the recipients of these retail financial products and since they are considered “high-risk”, are charged higher commissions, fees and interests (Marambio 2011).

Accordingly, the types of financial practices that have proliferated among the households, workplaces and streets of Vallenar with the irruption of the urban fabric are the result complex processes of economic transformation that stretch from the private to the planetary. The forms of predatory lending that have been projected across the geographies of Vallenar thus reflect these complex mediations, because the local population is usually under-remunerated,

outsourced, self or temporarily employed (see Chapter Four). As a result, the types of retail chains that have opened branches in Vallenar are those renowned in Chile for having a low-income customer base. It should be noted that Falabella, París, Cencosud and Ripley are the largest retail chains in Chile and their financial products are usually aimed at economically stable segments of the middle and upper classes with high levels of financial literacy. A second tier of retail chains that includes Hites, Abcdin, Corona, Tricot and La Polar, not only relies more heavily on credit as a source of revenue, but also targets marginalised, financially illiterate segments of the population (Ossandón 2014). Unsurprisingly, the streets of Vallenar are now full of stores from the latter group offering all sorts of household appliances, iPads, clothing, medicines, holiday packages and most importantly, credit cards (see Figure 3.3).

**Figure 3.3**  
**RETAIL LANDSCAPES IN VALLENAR**



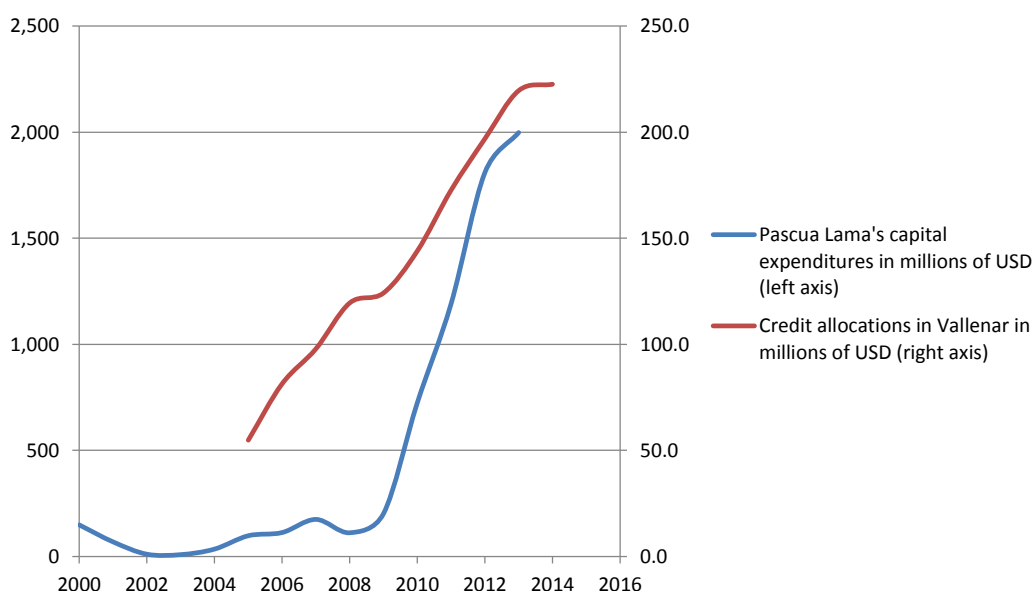
**Source:** Author.

The configuration and reconfiguration of these credit landscapes allows us to visualise the eminently uneven nature of processes of extended urbanisation, because the types of financial actors that have ensued the arrival of transnational mining are precisely the ones that

specialise in “high-risk” consumers. Top tier retail stores like Falabella, an interviewee noted,<sup>61</sup> have been by contrast completely uninterested in Vallenar despite the region’s rapid economic growth. Unfortunately, specific data that illustrates in quantitative terms the extent to which households have become financialised as a result of their interaction with retail stores was not available for two main reasons. The first is that domestic regulatory frameworks have not evolved at the same speed as the retail sector in Chile. This means that the Superintendencia of Banks and Financial Institutions (SBIF in Spanish), which is in charge of overseeing credit allocations to households, cannot exert full supervision upon retail stores because they have not yet been legally declared as proper financial institutions. However, and although retail stores report certain aspects of their activity to the SBIF, this information is not disaggregated by towns so it is impossible to know in full certainty how much credit is being allocated locally in Vallenar. However, and as Figure 3.4 illustrates, the amount of private credit allocated by banks -which by contrast is rigorously reported to the SBIF- can perhaps illustrate the extent to which local households and firms have been increasingly reliant on the financial system.

**Figure 3.4**

**CREDIT ALLOCATIONS IN VALLENAR VS CAPITAL EXPENDITURES (PASCUA LAMA)**



**Source:** Author with data from Barrick Gold’s annual reports and the SBIF’s 2005-2014 annual reports on credit allocations<sup>62</sup>.

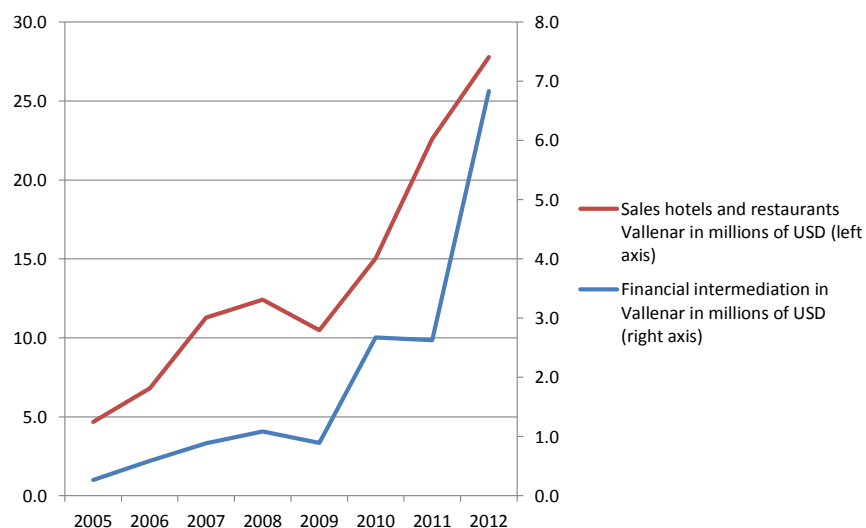
<sup>61</sup> Interview with an official from Vallenar’s Planning Department (SecPlan), 3 December 2013.

<sup>62</sup> Barrick Gold’s annual reports are available at the company’s official website ([www.barrick.com](http://www.barrick.com)), and the SBIF’s annual reports on credit allocations are available at the organisation’s website ([www.sbif.cl](http://www.sbif.cl)).

Another very striking trend that is evinced in Figure 3.4 is perhaps the correlation between capital expenditures by Barrick Gold in its Pascua Lama project and the amount of credit allocated locally by banks and other financial institutions. With this, the interpenetration of levels and the manifold mediations that on the one hand transform corporate governance structures in Toronto and on the other, lead to a profound reconfiguration of consumption and micro-financial practices in geographically remote places –like Vallenar–, start to appear not as ontologically distinct fragments but as parts of an interconnected historical totality. Here is where the Lefebvrian dialectic can illuminate how all social life is intimately interrelated under neoliberalising capitalism, for it is precisely in everyday life where the interpenetrations between the natural and the historical are concretely realised (Lefebvre 2008 [1947]). Financial practices, especially when they are performed within an institutional, corporate setting, are distinctively constitutive of the urban and in that sense, Vallenar has not only been urbanised by becoming the recipient of infrastructures and built environments, but also by shifting frameworks of everyday activity. As such, financial intermediation and sales in hotels and restaurants are two further variables that also evince how shifting frameworks of interaction among the local community tend towards an increasingly predominant role of finance and consumption (see Figure 3.5).

**Figure 3.5**

**FINANCIAL INTERMEDIATION AND SALES OF HOTELS AND RESTAURANTS IN VALLENAR**



**Source:** Author with data from the Chile’s Internal Revenue Agency’s (SII in Spanish) 2013 report of regional economic activity<sup>63</sup>.

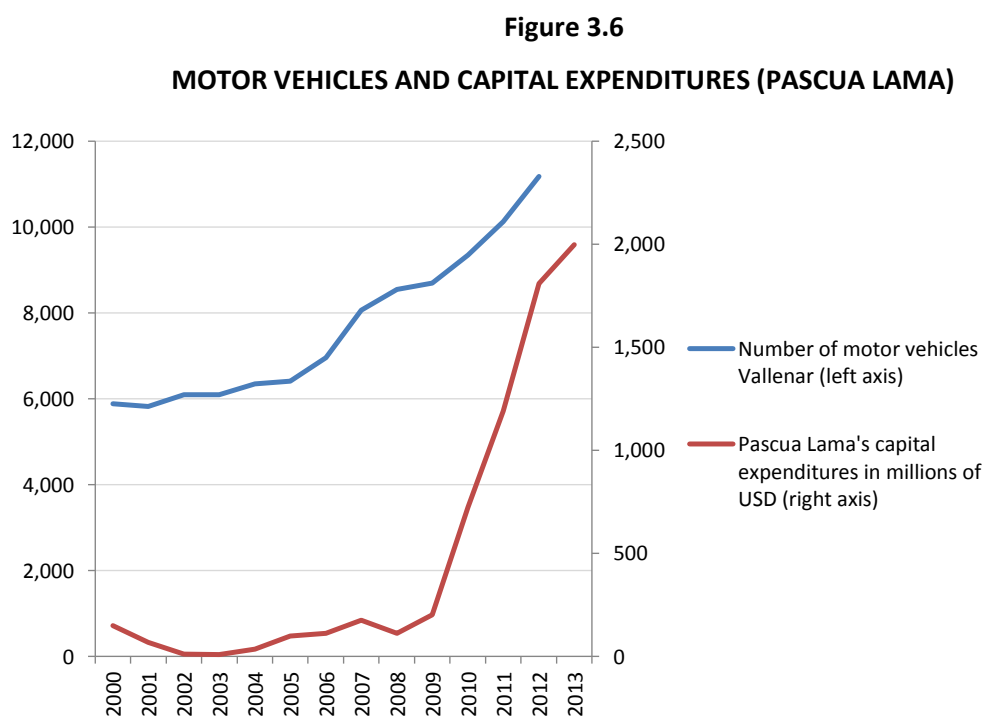
<sup>63</sup> Available at the SII’s website ([www.sii.cl](http://www.sii.cl), accessed 23 September, 2014).

During my fieldwork in Vallenar, the extent to which local economies had been completely distorted by incoming flows of money could be easily inferred simply by eating at a restaurant. The menus of several restaurants and pubs in the town centre boasted similar prices to those located in central London. Financial intermediation is also rampant (see Figure 3.5), and given the sort of credit that is offered to the local community by second tier retail stores and other sorts of intermediaries, urban space is being produced in profoundly uneven and unjust ways. Christian Schmid (2014) notes how commuting is perhaps a clear example of how the urban landscape is produced through quotidian, situated routines. Following that line of argument we could also argue that the networks of interaction established in space by these new segments of consumers and of financial intermediaries are constitutive of the emerging urban landscapes of Vallenar. Moreover, Schmid (2014) suggests that urbanisation not only entails the enactment of networks of interaction but requires also the diffusion and alignment of (urban) styles and fashions so in that sense, credit cards, electronic devices and fast food - among other cultural artefacts of urbanisation-, contribute to such shifting frameworks of interaction. As institutionally grounded financial practices and mass consumption patterns proliferate, agrarian identities and ways of living –which before the turn of the century were deeply entrenched among the local community-, start to erode and wither away under the insurmountable pressures of an exploding urban form.

The daily commute has also been radically transformed as a result of the arrival of transnational mining and the subsequent access to local credit, because the streets of the town are now full of cars to the point that it is much easier to get around town on foot. Finding a parking space during working hours is extremely difficult. I rented a car to do fieldwork in the Huasco Valley and when interviewing people in Vallenar I had to leave the car parked in the outskirts of the town because most of the time it was simply not possible to find a parking space within the town itself. Figure 3.6 illustrates how the total number of motor vehicles not only doubled during the last decade, but how its dramatic increase resembles the curve of capital expenditures on Pascua Lama. Interviewees noted how in recent years traffic has come to be one of the most important problems for Vallenar, because its streets are simply not suitable to accommodate so many motor vehicles. They also noted how the financial aspect of this outburst of urban traffic is deeply affecting the quality of life among households. Allegedly, when mining projects were at the zenith of their operations back in 2006, many local residents decided to buy cars by recurring to personal credit because they felt economic prospects for the region were looking better than ever. As time went by and investment projects began to



face legal complications and local labour markets started to become more precarious, the mindset of these newly financialised and urbanised subjects changed<sup>64</sup>.



**Source:** Author with data from Barrick Gold’s annual reports and the National Institute of Statistics’ (INE in Spanish) 2013 regional report on circulating motor vehicles<sup>65</sup>.

Those once enthusiastic car buyers are now under siege by interests not only from car loans but also from other forms of personal debt like mortgages, credit cards and credit offered by retail stores. From my conversations with them, I felt that the changes have been so intense and fast-paced that they have hardly had any time to process them and are now somehow driven under the juggernaut of debt-driven urban life under neoliberal capitalism. They frequently juxtapose the memories of their recent agrarian past to the current state of general anxiety caused by traffic-ridden streets, high rents, predatory forms of debt, labour precariousness (see Chapter Four) and in sum, much of what is distinctive of everyday life in large urban agglomerations. In an informal conversation, a member of the local community remarked how they had been fooled into buying the “Santiago lifestyle” and now they have to pay for everything and how everything they supposedly need is now sliced, diced and sold at the nearest retail store. What they do not know is that it is not the Santiago lifestyle that they

<sup>64</sup> Interviews with an official from Vallenar’s Planning Department, and with two members from the Council for the Defence of the Huasco Valley, on 3 December, 27 November and 4 December, respectively.

<sup>65</sup> Provided by Vallenar’s Planning Department.

are living, but the lifestyle of its most impoverished and marginalised areas, where financial provision tends to be at its most predatory.

In a study of rural indebtedness, Gerber (2014) remarked how it is precisely the implementation of credit/debit relations among the peasantry which ultimately fosters market discipline, shaping capitalist rationality and culture. By focussing on examples of rapidly industrialising countries, he noted how institutionalised credit was the transformative agent that eroded the “culturally and ecologically embedded ‘experiential’ knowledge” of pre-capitalist societies, replacing it by an epistemological system that was characterised by an ‘algorithmic’, rationalistic and maximising orientation (ibid, p. 737). When introduced to a system of institutionalised credit, Gerber notes how the individual is simply fostered to master ‘algorithmic knowledge’ in order to survive both socioeconomically and physically (ibid). What is perhaps more striking is that the shift in corporate behaviour analysed in previous sections, whereby short-term returns are increasingly favoured over long-term growth, is something that goes beyond large mining corporations (G-level) and also interpenetrates with the practices of households and small-scale farmers (M and P levels). According to Gerber, once farmers enter an interest-based relationship, they are compelled to think and behave in particular ways so as to secure timely repayments (ibid). The debtor begins to think in individual terms and prioritises short-term benefits and as a result, “land, harvests, labour time and natural resources are monetarily evaluated while surrounding sociocultural and ecological considerations remain secondary” (ibid, p. 738).

Although my study was not strictly ethnographic and for that reason I have no specific insights of how everyday financial calculations within households or smallholders have changed, merely by speaking with members of the local community on an informal basis it was palpable that the irruption of these credit relations has rendered the financialised, calculative and profit-maximising subjectivities described by Gerber (2014). Thinking about the nature of cities, Georg Simmel argued in an influential 1903 essay that it was not the built environment, population density or either infrastructural networks which defined the sphere of the urban. As the seat of the ‘money economy’, Simmel (1950 [1903]) argued, the metropolis becomes a distinct sociospatial condition because it fills the daily life of many people with calculative mindsets functioning in terms of profit-maximising, cost/benefit rationales. Weighing, calculating, enumerating, and reducing qualitative value to quantitative terms, said Simmel, are practices constitutive of modern urban life (ibid; see also Mitchell 2002). For Simmel (1950 [1903]), the essentially individualistic character of the ‘mental life’ of the metropolis is starkly

juxtaposed to that of the small town, which rests more on feelings and emotional relationships.

A member of a civil society organisation in Vallenar reported how, along with institutionalised credit systems, the proliferation of large-scale agribusiness has had devastating effects on agricultural production as well as on the very subjective makeup of the smallholder. According to the interviewee, not only agribusiness has pervasive socioecological effects upon the large estates in which it is developed, but it also distorts the mindset of local producers, who feel increasingly pressured to implement profit-oriented monoculture techniques at the expense of soil fertility in the long-term. Also, and in order to increase productivity and be able to compete with larger producers, they are also increasingly pressured to recur to various forms of debt instruments, widely available from all sorts of stores and financial intermediaries.<sup>66</sup> This calculative mindset, which for Simmel was indicative of urbanisation, has become widespread across the geographies of the Huasco Valley, and the figures of credit allocation in Vallenar by banks attest to the degree to which finance has pervaded the most intimate confines of social life –such as family holidays, the daily commute, the purchase of medicines, etc.

If we think about the notions of totality and mediation in the context of these radical sociospatial transformations, then we begin to perceive how financialised subjects in Vallenar reflect the complex dynamics and inner transformations unfolding within the mining industry, within resource extraction broadly considered and within global capitalism in general. As Harvey (2006 [1982]) contends, between the universal and the particular lies a whole assemblage of imbricated organisational arrangements that mediate the dynamics of capital flow within the space economy of capitalism, and that yield manifold scenarios of class struggle and social discontent. For example, he notes how when a worker buys a house at a particular place and time, she does so on the basis of specific mortgage arrangements which are sanctioned by legal frameworks and enforced by state institutions, all of which are promoted by bourgeois ideology (ibid). In the end, Harvey claims that all of those mediations are ultimately “captured and reduced... to a monthly payment to the bank” (ibid, p. 424).

Above all, it is important to foreground the extent to which the processes of financial subjectification taking place in Vallenar are the result of the complex mediations between

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<sup>66</sup> Interview with a member of Creando Valle, 1 December 2013.

commodity markets, Barrick Gold's corporate governance structures, the Chilean State and retail finance at the local level. Out of these densely interwoven networks of technologies, prices, agencies, practices and regulations, profoundly uneven forms of urban space begin to emerge. In the vocabulary of financial ecology literature, Vallenar would resemble more a "relic" ecology instead (see for example Leyshon et al 2004) of a middle-class one, because the latter is composed of financially literate subjects with access to a wide array of financial services. The former, on the other hand, consists on socio-economically deprived financial subjects that are excluded from mainstream financial provision on the basis of being "high risk" and supposedly unprofitable (see Leyshon et al 2004; Hall 2011). The grim financial landscapes of Vallenar are thus reminiscent of Lefebvre's (2009 [1978]) claim that although it no longer makes any sense to think about city and country, it does not necessarily mean they have been harmoniously superseded, for each survive as places assigned to the territorial division of labour. Under this view, Vallenar is a functional geography, an operational landscape of impoverishment and exploitation whose lifeblood sustains an increasingly ruthless and financialised extractive industrialism. As a local official remarked, "not even the executives of the mining companies with operations in the Huasco Valley want to live in Vallenar".<sup>67</sup> They usually live in La Serena, the nearest 'decent' city, where they can enjoy cinemas, golf courts and top tier retail stores.

## **7. Conclusions**

One of the main aims of this chapter has been to demonstrate how the planetary extension of the urban form and the planetary extension of fictitious capital –either in the form of investments or retail financial products- are inextricably linked, with the urbanisation of the Huasco Valley being a case in point. Resource extraction is perhaps the activity where this tension is most evident, because besides being an investment-intensive industry that relies on increasingly differentiated and sophisticated forms of credit arrangements, it necessarily goes hand in hand with a relentless transformation of territories, communities and ways of living. As such, I have sought to illustrate how the inner workings of a mining industry that increasingly favours short term returns over long term growth, has resulted in profoundly ominous effects in geographies of extraction across the world. The financialisation of the corporation, it was argued, has also been coupled by state-oriented strategies to favour capital in its money-form in order to attract capital allocations from international markets. The case of Barrick Gold and its flagship project Pascua Lama is very illustrative of what can be considered a trend that not

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<sup>67</sup> Interview with an official from Vallenar's Planning Department (SecPlan), 3 December 2013.

only determines the practices and governance structures of the mining industry but also those of oil, forestry and agribusiness corporations. As Barrick Gold's founder Peter Munk remarked in one of the company's annual reports<sup>68</sup>, the "driven by returns" outlook has been implemented and followed by companies across the board in the mining industry and is now a blueprint on how to optimise production in order to yield more and more returns to shareholders.

What Munk forgot to mention to the shareholders is how strategies aimed at flexibility, cost reduction, rationalisation and streamlining that underlie the "driven by returns" outlook exert profoundly devastating effects upon material production and the socio-natural worlds surrounding it. The poisoning of rivers, destruction of glaciers, practices that fail to meet domestic regulatory frameworks, systematic disciplining of the labour force, fines and lawsuits are but a few of the consequences of the corporation's desperate attempts to create more 'value' for shareholders. The framework of disciplined investments therefore needs to be understood as a definitive determinant of the urbanism of resource extraction, because it leads to the specific material production of geographically uneven forms of human occupation on the ground. Yet, the chapter also aimed at illustrating how the financialisation of mining corporations that underpins the expansion of the urban fabric goes beyond the material transformation and production of geographies and built environments, for the urban is also brought into being by shifting frameworks of interaction among individuals. As such, the chapter also illustrated how increasing flows of fixed capital expenditures (around USD 7 billion) created microeconomic distortions that led to the emergence of distinctly financialised cultures and financialised subjects at the local level, themselves definitive agents of urbanisation.

Due to the prevalence of financial illiteracy and poor working conditions among the local community, Vallenar has become the recipient of various types of money capitalists (i.e. financial intermediaries) offering exploitative forms of financial provision that have also resulted in the representational production of unjust urban landscapes. From once being an agricultural village with local, self-sustained trading networks, the streets of Vallenar are now filled with nation-wide retail stores, banks, travel agencies, car dealers and supermarkets, some of them offering predatory and increasingly differentiated forms of credit to workers and households. What is most important, however, is that the emergence of these financialised

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<sup>68</sup> Introduction to Barrick Gold's 2013 annual report (p.2).

cultures can be traced back to internal transformations taking place within the mining industry, because it was as a result of cost overruns incurred by Barrick Gold after 2006 as a result of its “driven by returns” rationale that microeconomic dynamics at the extraction site became distorted and credit allocations skyrocketed. In that sense, the notion of totality provides crucial analytical and methodological tools to visualise transnational financial practices and institutions (G-level) evolving in relations of mutual constitution with those of financialised households and subjects on the ground (M and P levels). By mobilising the notion of totality as Lefebvre would have us do, we then begin to supersede fragmentary views of reality that abound within bourgeois political economy and start perceiving the global financial system as an intricate set of complex interrelations that cut across everyday, urban and transnational levels of social reality.

Furthermore, the case of Vallendar is also illustrative of how financial dynamics and practices are powerful metabolic forces that become inscribed in the landscape and exert radical transformations upon everyday life. Such metabolic flows have transfigured the streets of Vallendar, which is now filled with glass cabinets displaying electronics and clothing, high-priced restaurants and traffic-ridden streets. The geographic embeddedness of these apparently transcendent processes of metabolic exchange will be examined in more depth throughout Chapter Five, but for the moment it should suffice to point out that, as the previous chapter outlined, international financial markets are indeed powerful ways of transforming (urban) nature. Yet, besides external nature, metabolic flows have also been concomitant to the transformation of internal human natures and have shaped the production of new urban subjects across the Huasco Valley. Besides financialised subjects under the burden of debt, it should also be noted that these sociospatial transformations have resulted in new labouring subjectivities which have been able to challenge the devastating effects of transnational mining in the valley. For that reason, the following chapter explores the labouring worlds that have been summoned into existence by the arrival of transnational capital. Such analysis is crucial within the dissertation because it is precisely in the transformation of human productive subjectivity, I will argue, where the emancipatory promise of planetary urbanisation lies.

## CHAPTER FOUR

### Extended Urbanisation and the Transformation of Labour in the Huasco Valley

#### 1. Introduction

This chapter plays a pivotal role in the dissertation, because it is the first of three chapters that interrogate the political dimensions of planetary urbanisation in the context of the Huasco Valley. The previous three chapters have already analysed the ways in which space and nature are produced under the complete urbanisation of society. This has entailed an enquiry into issues that are crucial for envisioning a geopolitical economy/ecology of planetary urbanisation, such as the commodity boom (Chapter One), the metabolic implications of contemporary neoliberalising capitalism (Chapter Two), and the financialisation of natural resources (Chapter Three). The second section of the dissertation sets out to explore the ways in which the processes of extended urbanisation taking place in Chile and in the Huasco Valley, have rendered new forms of human productive subjectivity that determine the conditions of possibility for emancipatory change. Following the geographical-historical materialist approach of this dissertation, this will entail an enquiry of labour transformations, so this chapter seeks to answer the research question that specifically asks about the relation between mode of production and the planetary expansion of the urban form.

Since human labour –and the process of production broadly considered- is the ultimate linchpin that mediates the metabolic relation between external and internal natures (see Marx 1976 [1867]; Foster 2000; Smith 2008 [1984]; Swyngedouw 2006; Haraway 1991), it is an important analytical focal point for deciphering the ways in which revolutionary consciousness is produced under an increasingly urbanised world. Since the publication of Manuel Castells' watershed work *The Urban Question* in the early 1970s, labour and urbanisation have been considered to be closely intermingled in mutually constitutive ways (see Merrifield 2014; Brenner 2013). Castells defined the urban in functional terms, because for him it was above all the material embodiment of processes of collective consumption organised by the state with the purpose of ensuring the reproduction of capitalism as an economic system (Castells 1977 [1972]; see also Merrifield 2014; Brenner 2013). It was precisely for this reason that despite the importance of Lefebvre's *The Urban Revolution* (2003 [1970]) as a foundational work within Marxist urban theory, it nonetheless garnered criticism in its time (see Castells 1977 [1972] and Harvey 1976, 2012), for supposedly granting an excessive priority to the structure of spatial relations while overlooking crucial questions of production, social forms of labour and class (see Soja 1989; Charnock 2014).

Although Lefebvre never responded formally to such criticisms, in the 1972 book *La Pensée Marxiste et la Ville*, he reflected at length on issues of labour, technology and the mode of production as he substantiated some of the claims he had made a few years back on what he considered to be the ‘complete urbanisation of society’ (see 2003 [1970]). In this book –which will be published in English for the first time in 2016–, Lefebvre argued that automation and the mechanisation of production was structurally inseparable from the expansion of urbanisation on a planetary scale (see Lefebvre 1973 [1972]; Merrifield 2013b). He considered that the very information technologies and automated work that made possible the explosion of the city into myriad urban fragments, also implied a transition from salaried to informal forms of labour (Lefebvre 1973 [1972]), such as self-employment, underemployment and temporary work. For Lefebvre, as the urban fabric extends its grip on the planet and technological innovation ensues, labour markets will not only tend toward flexibility, but also towards precariousness, therefore making informal, post-salaried work the hallmark of urban society (ibid).

Also, in a 1989 essay written for *Le Monde Diplomatique*, and continuing his analysis along these lines, Lefebvre argued that the emergence and proliferation of information technologies would lead to new ways of organising production as well as urban space, with the condition of urban dwellers being substantially degraded as a result (Lefebvre 2014 [1989]; see also Brenner and Wachsmuth 2014). Four decades later, Lefebvre’s words have become a vivid reflection of our current reality, as in 2009 the OECD reported that around half of the world’s population is engaged in informal employment and that by 2020 the figure will increase to two thirds (see Merrifield 2013b, p. 25). For Merrifield (2013b; see also Wyly 2013), these figures account for the fact that the enormous growth in wealth and the rise in productivity of high-tech industries have derived in increasing numbers of redundant workers. With automation, computer-aided production, robotics and so forth, Merrifield contends, only a relatively small number of salaried jobs have survived (Merrifield 2013b).

Merrifield (2013b) contends that this should not be interpreted as capitalism’s ultimate victory but its very opposite, the beginnings of its systemic demise. This, says Merrifield, is where the actual promise of planetary urbanisation lies because the very forces that universalise technology, also develop the material powers of the labouring subject, whose vitality is applied to vernacular forms of knowledge, community and mobilisation (ibid). In the texts mentioned above, Lefebvre points in such a direction by noting how the proliferation of communication



technologies and the 'becoming worldwide' of knowledge would lead not only to the disappearance of the traditional city with a strong, productive centre, but also to the disappearance of the peasantry (Lefebvre 1973 [1972], p. 134). Thus, a new form of *citoyen* (citizen) that thrives on mobility, communication and renewal would dissolve the traditional boundaries between city and country, establishing relations that would span cities, countries and continents. The right to the city, he concluded in his 1989 essay, "implies nothing less than a revolutionary concept of citizenship" (2014 [1989], p. 570). The cry and the demand, once tethered to the boundaries of the city, would now be ratcheted up by information technologies and acquire a truly global extent.

With those considerations in mind, the purpose of this chapter is to interrogate labour transformations resulting from the process of extended urbanisation taking place in the Huasco Valley, in order to analyse how technological modernisation and the automation of productive processes, despite having a detrimental effect on working conditions, have translated into new patterns of human productive subjectivity, community and social resistance. With the arrival of spatially integrated infrastructures, technologically transformed systems of machinery and transnational capital oriented towards large-scale resource extraction, not only has a burgeoning service sector gravitating around mining corporations emerged, but traditional activities such as agriculture and mining have been qualitatively transformed in substantial ways. I will argue that in very much the same ways that production has become communicative and mobile, an equally outward-looking (i.e. mobile, open to change, prone to initiating cooperation) labouring subject has emerged. Because of her standpoint within the productive process and of its everyday contact with socioecological degradation, labour precarisation and information technologies, this labouring subject has been able to shed her isolated state and become communicative, mobile and capable of furthering class aims in radically democratic ways.

Such analysis is of central importance not only because it aims at harmonising the sociospatial implications of planetary urbanisation with issues of labour, class and production –thus avoiding any ideological or mystified treatment of the urban-, but most importantly because the transformations in productive structures taking place in the operational landscapes of the Huasco Valley signal something of significant analytical and theoretical relevance: the demise of the traditional peasant as a distinct political category, which is simultaneously the demise of the traditional division between city and country. As the urban fabric pervades the realm of the non-urban, the ways of exerting and of organising production designed and implemented

in large urban agglomerations become exported to their operational landscapes. Similarly to what happened during the Industrial Revolution, the peasant undergoes a radical metamorphosis, only this time it does not become a wage labourer –like Marx observed in his discussion on the real subsumption of labour to capital (1976 [1867]),<sup>69</sup> but a flexible, outsourced worker. This, I will argue, determines the conditions of possibility for radical and emancipatory change, and is where Lefebvre (1973 [1972]; 2014 [1989]) was leading us with his notion of revolutionary, global citizenship. Mobility, communication and renewal –the three of them crucial preconditions for political action for Lefebvre- are the very characteristics that constitute the modern individual under planetary urbanisation.

The chapter will consequently be structured as follows: the first section provides a theoretical discussion on the dialectical relationship between labour, technological modernisation and revolutionary consciousness, thinking about potential ways to confront such dialectic in the face of flexible forms of production. To fulfil such task, I revisit some key Marxian texts as well as Michael Hardt and Antonio Negri’s theory of the informatisation of production to think about the ways in which the introduction of information technologies and of flexible means of production can determine new types of labouring subjectivities. A second section confronts those insights with some of Lefebvre’s late and recently rediscovered writings with the purpose of considering the effect that those transformations in the mode of production exert upon working subjects in the operational landscapes of extended urbanisation. A third section goes on to provide some empirical context by making an enquiry into labour transformations in the Chilean (and Latin American) economy. Considering how flexibility and information technologies have transformed work cultures in the Global South will provide a firm basis to extend such analytics to the territories being operationalised as a result of the resource extraction boom. The final section then moves to develop a historically and geographically specific account of the figures of labour that have emerged after the demise of the traditional peasant in the Huasco Valley, and of their struggle against transnational capital.

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<sup>69</sup> In Volume 1 of *Capital*, Marx develops an analytical distinction between formal and real subsumption of labour to capital under the capitalist mode of production. In formal subsumption, capital takes over an already existing labour process developed by different and more archaic modes of production (e.g. mining, sowing, knitting, etc), involving the direct exploitation of the labour of others (1976 [1867], p. 1021). By contrast, real subsumption involves the development of a specifically capitalist mode of production (e.g. large-scale industry). This, says Marx, “not only transforms the situations of the various agents of production, it also *revolutionizes* their actual mode of labour and the real nature of the labour process as a whole” (ibid, p. 1021).

## 2. Technological Modernisation, Labour and Revolutionary Consciousness

Through labour, we not only produce and transform external nature; we also produce ourselves individually as well as collectively. An expanded conception of production, which has its roots in Hegel's philosophy, was reworked by Marx into one of the foremost ontological assumptions of his critique of political economy. Instruments of labour, Marx argued, not only supply a standard of the level of development which human work has achieved, but they also indicate of the types of social relations that result from the labouring activity (1976 [1867], p. 286; see also Marx and Engels 1998 [1845]). The imprint of this worldview can still be felt not only among Marxism, but also among strands of critical thought that have appropriated it to theorise situated knowledges, material culture, cyborg feminisms, as well as the interaction between technology and society (see for example Haraway 1991, 2006; Sandoval 2000).<sup>70</sup> Paulo Freire 2000 [1970] summarises this approach eloquently by arguing that it is as transformative and creative beings that humans, "in their permanent relations with reality, produce not only material goods ... but also social institutions, ideas, concepts" (p. 101). Such intimate interfusion of subjective and material realities is explained by Hardt (2010) through the examples of the refrigerator and the automobile. These objects, Hardt notes, are only midpoints for the creation of labour and gender relations of the nuclear family (in the case of the refrigerator) and of the mass society of individuals isolated but together (in the case of cars) along a highway.

To the extent that the technical basis of large-scale industry is intrinsically revolutionary, Marx suggests that it entails a continuous transformation of the material conditions of social labour and consequently, of the forms of exertion of productive subjectivity of workers and their organisation as a properly collective body (Marx 1973 [1939], 1976 [1867]; Starosta 2011). Indeed, in his *Manuscripts* of 1844, Marx suggests that it is precisely in the historical transformation of the material and social forms of labour where the key to revolutionary subjectivity -and hence to the abolition of capital- should reside (Starosta 2011; Hardt 2010; Berman 1990 [1982]). In other words, the split between subjectivity (mind) and objectivity (material world), which for Georg Lukács (1971 [1923], p. 171) is induced upon the individual by the compulsion to objectify herself as a commodity, is to be overcome and made conscious of through the mediating powers of the labouring activity. In light of such considerations, technological modernisation –in the form of systems of machinery and communication-, and

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<sup>70</sup> For the relationship between Georg Lukács' notion of the standpoint of the proletariat and science and technology studies, see Loftus (2012, Chapter Three).

the way in which it transforms the labouring activity, is undoubtedly the centrepiece for understanding the ways in which consciousness -and sociality in general-, are produced.

In *Capital* and the *Grundrisse*, Marx sets the foundations for grasping the complex mediations that take place between technology and society by exploring how the real subsumption of labour to capital determines the production of revolutionary subjectivity (Starosta 2011, p. 42). With the introduction of large-scale industry, and in contradistinction to the particularism of the wage-labourer in manufacture, Marx notes how a 'universal worker' comes to be the most genuine product yielded by systems of machinery. In Marx's words,

Along with the tool, the skill of the worker in handling it passes over to the machine. The capabilities of the tool are emancipated from the restraints inseparable from human labour-power. This destroys the technical foundation on which the division of labour in manufacture was based. Hence, in place of the hierarchy of specialized workers that characterizes manufacture, there appears, in the automatic factory, a tendency to equalize and reduce to an identical level every kind of work that has to be done by the minders of the machines; in place of the artificially produced distinctions between the specialized workers, it is natural differences of age and sex that predominate (1976 [1867], p. 545).

Given the technical dynamism that is immanent to large-scale industry, this universal worker leaves behind the productive one-sidedness from manufacturing work and becomes accustomed to the variation of labour, fluidity of functions, and mobility in all directions (Marx 1976 [1867], p. 617). Systems of machinery, nonetheless, exert crude violence over the worker, because as Marx notes, in manufacture the workers are part of a living mechanism whereas in the factory, there is a lifeless mechanism (i.e. machinery) into which the labourers are incorporated as its 'living appendages' (ibid, p. 548). In other words, the worker not only becomes a part of the machine, but is controlled by it. However, and despite the fact that factory work tends to devastate the worker by confiscating 'every atom' of bodily and intellectual freedom (ibid, p. 548), in requiring ever more complex forms of labour, it also entails the expansion of its productive subjectivity –both as an individual and as part of the collective labourer (Starosta 2011; see also Sayers 2007).

In the *Grundrisse*, Marx notes how in expanding its productive subjectivity by means of the conscious regulation of the technical practicalities of the labour process, the worker is able to

break free from the fetters imposed by the machine. In the so-called “Fragment on Machines”, Marx argues that automatic systems of machinery become “organs of the human brain, created by the human hand; the power of knowledge, objectified” (1973 [1939], p. 706). These powers of social production, says Marx, have been produced not only in the form of knowledge (i.e. science and technology), but also as “immediate organs of social practice, of the real life process” (ibid, p. 706). In other words, scientific knowledge -objectified in the machine-, percolates deep into the fabric of the everyday productive process and becomes interwoven with the practical activity of the labourer, who in turn becomes increasingly capable of not only regulating such automatic systems but also of organising any form of social cooperation on the basis of large-scale industry (Starosta 2005, 2011). Yet, despite these substantial changes in the internal landscape of the worker, Starosta considers that even more transformations in productive structures are required so as to underlie the historical constitution of the revolutionary subject (2011, p. 51). However, he points the way forward by arguing that the *Grundrisse* and *Capital* provide the elements for future investigations in this regard (Starosta 2011, p. 51).

Marx’s trailblazing analysis sets solid foundations to think about the ways in which science and technology, when applied to the productive process through the real subsumption of labour to capital, determine how individuals not only conceive, but also produce and appropriate the world around them. Such revolutionary anthropology, which according to Eagleton (1990, pp. 207-208), tracks the roots of human rationality to their hidden source in the needs and capacities of the productive body, is what allows us to connect lived experience with history. Under the worldview proposed by Marx, the body and the historical would therefore become inseparable and co-determining. The challenge of contemporary critical thought, then, would be to historicise the process of human development that has followed the decline of traditional industry in many parts of the world, and especially in the face of the whirlwind of technological innovation that has swept through the last decades. Information technologies and flexible means of production have transformed productive structures, mobilities and social institutions, so the question to ask is in which ways such changes can determine the conditions of possibility for the constitution of the revolutionary subject.

During his exile in France in the late 1980’s, Antonio Negri tried to comprehend the effects that a rapidly de-industrialising and increasingly informational mode of production would exert over the subjective composition of the labourer. Negri (1989, p. 84) believed that Marx’s description of the successive phases of subsumption left the door open for further

investigations on the subjective repercussions of technological change. The universal worker that emerged with heavy industry, Negri argued, was shedding its skin and transfiguring into a 'socialised worker' (*operaio sociale*) thanks to the implementation of information technologies and flexible means of production in the labouring process. In particular, Negri (1989) described a paradigm of production that was being carried out both within and outside the factory. For him, work became diffused throughout the entire society due to expanding scales of production and of the complex integration of labour processes. For him, this system can be described as one of 'spatial universality', for there is not only a social and international diffusion of work, but there is also increased coordination and integration over the entire surface of the globe (ibid, p. 78).

The effects of this system on the worker are therefore manifold, Negri argues, because every subject of this productive complex becomes involved in overpowering cooperative networks that stretch beyond cities and countries. If the 'universal worker' hinted at by Marx was animated by an awareness of productive cooperation restricted to large areas of mass-production, Negri argues that this emerging 'socialised worker' is, by contrast, "recombining conception and execution within a universal horizon" (1989, p. 78). In large-scale industry, Starosta observed how the increasingly scientific character of production made the capitalist unable to intervene directly, thus making the development of the powers of intellectual labour and their exercise, an attribute of the labouring classes (2011, p. 54). Under the conditions of late capitalism, the tendency described by Starosta becomes substantially intensified, and this leads Negri to argue that the agents of this enormously powerful engine have a different subjective make-up than that of the Taylorised (universal) worker, because for Negri,

they coordinate different work cycles; they construct social watersheds within which the most diverse productive potentialities are gathered and developed; and overthrow old work practices; they disorganize and throw off the habits and rules of corporatism (1989, p. 79).

The socialised worker, Negri continues, is not only a producer of surplus value but also a producer of the social cooperation necessary for work. This function, which formerly pertained to the capitalist (in its role as a supervisor), according to Negri, has been fully internalised by the worker, who is now the originator of the cooperative dynamics required for production (ibid). For this reason, the collective consciousness that was unleashed by large systems of machinery is expanded considerably as a result of the introduction of technologies of

information to the productive process. Because of these technologies –which are immanent to flexible productive structures-, workers start to see themselves as the organisers of the collective labouring process (Negri 1989). In sum, Negri concludes that while in Marx’s work the idea of the socialised worker was described as an abstract possibility, in late stages of capitalist development we begin to witness its actualisation (ibid). The following subsection then goes on to explore in more detail these shifting paradigms of production and their effects on the productive subjectivity of the labourer.

### *2.1. The Informatisation of Production*

The phenomenon observed by Negri in the text cited in the previous subsection gained even more momentum during the 1990’s after the decline of Keynesianism -in the Global North- and state-led development -in the Global South- on the one hand, and the entrenchment of neoliberalism on the other. In this context of heightened competition, unprecedented advancements in information technologies, increasingly differentiated consumer behaviour and proliferating deregulation schemes, capitalists were forced to introduce further flexibility-oriented strategies to maintain profitability. The implementation of such strategies, Stecher (2014; see also Ramos 2014) notes, were generally aimed at reducing payroll costs, increasing efficiency in production and most importantly, harmonising the global productive rationale with the internal dynamics of the individual firm. For Stecher (2013, 2014), these strategies can be grouped as follows: first, strategies for quantitative flexibility, which include the implementation of flexible payroll schemes (either through temporary, part-time or outsourced workforce) and which allow the firm to adapt to the shifting nature of the market; second, strategies for functional flexibility, which imply on the one hand an outsourcing of a part of the productive process and on the other, its re-organisation within the firm itself through the introduction of polifunctionality (diverging tasks for a single worker), teamwork, variable salaries based on incentives, and mechanisms for the empowerment and self-regulation of the worker; and third, strategies for external flexibility, which imply the development of inter-firm networks.

The works that Negri co-authored with Michael Hardt after the turn of the century (see Hardt and Negri 2001, 2004, 2009, 2012) seek to interrogate those emerging labouring worlds and their impacts on the development of the material powers of the individual as a working subject. First of all, Hardt and Negri begin by identifying this emerging economic paradigm as the “informatisation of production”. For them (Hardt and Negri 2001; see also Hardt 1999), in very much the same ways that industry exerted a dominating effect over all forms of

production in the nineteenth century and a considerable part of the twentieth,<sup>71</sup> information technologies have been transforming production during the last few decades not only by redefining and rejuvenating manufacturing processes, but by creating massive labour migrations from industry to the service economy (i.e. tertiary sector) (p. 285).<sup>72</sup> Despite being concentrated in specific parts of the world (mostly in the Global North), the informatisation of production nonetheless exerts a powerful influence over productive structures everywhere. As Jodi Dean has noted, information technologies now drive most economic activities –including traditional ones, like mining and agriculture– so this means that “capitalism has subsumed communication such that communication does not provide a critical outside” (2012, p. 128). As the last section of this chapter will illustrate, the layers of extended urbanisation that have been cast upon the Huasco Valley reflect the growing domination of information technology on traditional economic activities such as mining and agriculture –even in geographically remote areas of the Global South.

To the extent that knowledge, affects, information and communication increasingly dictate both form and content of capitalist production, labour and the labouring process have also been subject to substantial changes (Hardt 1999; Berardi 2006). Under the informatisation of production, the type of work that has become hegemonic is immaterial, that is, the “labour that creates immaterial products, such as knowledge, information, communication, a relationship or an emotional response” (Hardt and Negri 2004, p. 108. See also Lazzarato 2006). For Hardt and Negri, immaterial labour can be either intellectual or affective. The former aims at the production of ideas, symbols, algorithms, texts, images and other informational products, whereas the latter aims at the production of affects such as joy, satisfaction, well-being, excitement, and so forth (Hardt and Negri 2004, p. 208. See also Hardt and Negri 2001). These two forms of immaterial labour usually coexist, to the point of sometimes becoming inextricably linked, such as in the case of journalists, who are not only required to provide information but to make news “exciting and desirable” (Hardt and Negri 2004, p. 108). Far from being intangible, this type of labour is eminently physical, because it

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<sup>71</sup> For Hardt and Negri (2001), when agriculture came under the domination of industry, even when the latter was still dominant in quantitative terms, it became subject to the social and financial pressures of industry, and it therefore had to industrialise. It did not disappear, of course. It became instead a modernised, industrialised agriculture –in other words, it became a factory (ibid, p. 284). In the sphere of agriculture, Marx noted in Volume 1 of *Capital*, is where industry has the most revolutionary effect, as it replaces the figure of the peasant for that of the wage-labourer (1976 [1867], p. 637).

<sup>72</sup> The tendency for information and knowledge to become the main driving force of the economy was foreseen by Marx in a well-known passage of the *Grundrisse* in which he noted how “general social knowledge” (i.e. the general intellect) was becoming a direct force of production (Marx 1973 [1939], p. 706).



involves the use of the body –like all types of labour do- (Negri 2011).<sup>73</sup> What makes this labour immaterial then is the nature of its product, because not only it creates material goods but cooperation, social relationships and social life itself (Hardt and Negri 2004, p. 109).

Most importantly, the qualitative predominance of immaterial labour, according to Hardt and Negri (2004), tends to transform the organisation of production “from the linear relationships of the assembly line to the innumerable and indeterminate relationships of distributed networks” (p. 113). Technical systems of production would then start to mirror their social composition, having on the one hand technological networks and on the other the cooperation of social subjects put to work (ibid, 113). In other words, immaterial labour generally produces cooperation autonomously from capitalist command (Hardt and Negri 2009), and it is precisely the networks, forms of community and social subjects that emerge from these encounters which hold the potential for the social liberation of the producer (Hardt 1999; Negri 1989, 1999, 2013; Hardt and Negri 2009).<sup>74</sup> Also, it should be noted that the increasing precariousness of the labouring activity is something that profoundly punctuates the subjective landscape of the worker. Escalating pressures to implement strategies for quantitative flexibility in the firm (i.e. part-time, outsourced and temporary work), coupled with labour deregulation, translate into an everyday experience of uncertainty and precariousness for the worker. Furthermore, automation of production results in more and

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<sup>73</sup> For Casarino, the communicative substance under the current productive paradigm is enacted first and foremost by material networks of satellites, fiber optic cables, laptops, smartphones, antennas, screens, software, among many other infrastructural and technological arrangements, all of which may be occluded under the concept of “immaterial labour” (Casarino and Negri 2008).

<sup>74</sup> It should be noted that theories of the informatisation of production have aroused considerable criticism and controversy, especially from certain segments of Marxism (see for example Caffentzis 2005; Camfield 2007; Henninger 2007; Sayers 2007; Holloway 2010; Starosta 2012; Huws 2014). First, Hardt and Negri’s engagements with Spinoza are usually construed as a departure from the Hegelian roots of Marxism (see Harvey 2009; Holloway 2002, 2010). A second criticism, which springs from the previous one, questions *Operaismo’s* critical readings of dialectics (Holloway et al 2008). Some of these authors, especially Michael Hardt, have been critical of the dialectical method, arguing that it tends to impose closure and synthesis on that which is *per se* open and ateleological (see Hardt and Colectivo Situaciones 2007; Hardt 2010). Third, Hardt and Negri have purported a supposed crisis of the Marxian law of value on the grounds of the impossibility of measuring not only the immaterial components in a commodity, but socially necessary labour time as well –since allegedly, the dividing line between work and leisure time has become blurred (see Hardt and Negri 2001, 2004; Negri 1999, 2011; Virno 2006). However, engaging in a detailed discussion of such tensions goes beyond the scope of this dissertation because the purpose here is not to defend or criticise Hardt and Negri’s theoretical contributions, but to offer analytical and methodological tools to engage with the issue of planetary urbanisation. What is important to note, however, is that those tensions do not necessarily preclude the possibility for fruitful dialogues with a historical-geographical materialism in general, and with the Lefebvrian worldview in particular (see Harvey 2009; Arboleda 2015). Indeed, David Harvey has welcomed some of Hardt and Negri’s theorisations on revolutionary consciousness under late capitalism as well as some of their views on the city (2009, 2012; see Hardt and Negri 2009).

more redundant workers and as Lefebvre (1973 [1972]; see also Merrifield 2013b) noted, unemployment (and underemployment) as a result of this, comes to be structurally inseparable from the dynamics of contemporary urbanisation.

The political implications of this reconfigured productive subjectivity are manifold, because to the extent that the labourer is now the originator of social cooperation and that the experience of precariousness pervades every aspect of the everyday (even for the most qualified workforce), the conditions of possibility for the emergence of the revolutionary subject become ever the more actual. In other words, and as Wyly has put it, planetary urbanisation and technological change are co-evolving in a form of capitalism that is “stunningly new –and yet eerily familiar” (2013, p. 390). Put bluntly, behind the façade of this hyper-connected, hyper-accelerated and hyper-commodified global economy, we find the same types of alienation, commodity fetishism and reified consciousness that were observed by Marx in the wake of large-scale industrialisation. Such types of alienation, exploitation and dispossession are what in the end explain the consolidation of class antagonisms and the drive of workers to overthrow the fetters imposed by bourgeois society. The means to break free from such fetters, however, is what has evolved substantially due to technological modernisation, and this is what this chapter intends to highlight through the case of the extended urbanisation of the Huasco Valley in Chile.

In the section that follows, I elaborate on the sociospatial implications of the labour transformations discussed in previous paragraphs by placing special emphasis on the operational landscapes of extended urbanisation. The possibilities for communication and mobility that are immanent to the rejuvenated systems of production, I will argue, are what have eroded the peasantry as a category of practice and constitute the emancipatory promise of planetary urbanisation.

### **3. Planetary Urbanisation and the Metamorphosis of the Peasant**

In *La Pensée Marxiste et la Ville*, Lefebvre (1973 [1972]) elaborates on the dialectical relationship between subjectivity, technology and urbanisation, and at a crucial point of the book asks a penetrating and provocative question that reflects the way in which he visualizes their intimate interrelation:

What would happen if automatic devices were to invade streets, monuments, houses? If the combination of these mechanical and intellectual elements was to

invade the intellect itself and become subordinate to human beings? (p. 76, my translation).

Lefebvre here not only draws much of his inspiration from, but also comments on certain aspects of the so-called “Fragment on Machines” of the *Grundrisse*, where Marx famously observed how general social knowledge (i.e. ‘the general intellect’), was increasingly objectified in machines, and was therefore becoming a direct force of production (see Marx 1973 [1939], p. 706). Scientific analysis and the application of mechanical and chemical laws, Lefebvre argued, allows an automatic exertion of the work that was previously performed by labourers (1973 [1972], p. 72). He conveys what could be regarded as a bleak image of a future where living labour is displaced by the predominance of machines as the ultimate embodiment of dead, automated labour. Automatic devices, he continued, which are capable of achieving a prodigious productivity, replace scarcity with abundance (ibid, p. 74). According to Lefebvre, with the mobilisation of these colossal and automated forces of production, the activity of the social labourer starts to fade away and is gradually degraded. In short, for Lefebvre the end of the city necessarily goes hand in hand with substantial transformations of labouring activity, which tends to degrade the labourer (ibid, p. 74-75).

More than forty years after the publication of this book, how should we interpret such formulations? As is usually the case with Lefebvre, some of his most provocative ideas tend to be expressed in a somewhat loose fashion and therefore demand an openly hermeneutic stance from the reader. In the ‘Foreword’ to the 2003 edition of *The Urban Revolution*, Neil Smith commented on Lefebvre’s style, arguing that his tendency to embrace a tension between rigour and fantasy, as well as between “hard-nosed critique” and political desire, made him simultaneously fascinating and difficult to read (Smith, in Lefebvre 2003 [1970], p. xii). For that reason, Smith argued for an open and exploratory interpretation of his ideas, because despite the fact that “he rarely if ever provides a linear argument”, such ideas often lead to unparalleled vantage points for grasping the complex nature of social reality. *La Pensée Marxiste et la Ville* is no exception, as Lefebvre develops some powerful and lucid arguments about labour and urbanisation that never culminate in a prescriptive, sharp synthesis.

In a recent article, Merrifield (2013b) commented on some aspects of *La Pensée Marxiste et la Ville*, and argued that what Lefebvre ultimately intended to suggest was that with the expansion of the urban fabric across the planet, the world of steady labour was due to deteriorate because more layers of urbanisation implied further predominance of information

technologies in productive structures. This, Merrifield argued, would result in the proliferating types of informal work that we are currently witnessing, which translate into the fact that by 2020 the OECD estimated that two thirds of the workforce in the world will be engaging in employment somehow “self-made and irregular, usually undocumented and always self-reliant...” (Merrifield 2013b, p. 25). As the next section will illustrate, this tendency is equally present in the Global South, because the evidence of labour transformations in Latin America to be discussed reflect the emergence of more flexible and information-driven, but also of increasingly precarious and unstable labour markets. In sum, what Lefebvre wanted to convey is that with the passage from cities to urban society, the predominant type of economy would be a service economy of temporary, outsourced jobs (Merrifield 2013b). This ‘post-work society’, argues Merrifield, is in the process of being politicised, because “if capitalists can do without workers, it is time for workers to realize that they can do without capitalists...” (ibid, p. 28). Although this analysis is by all means insightful and clarifies some aspects of the book, Merrifield does not engage with one of Lefebvre’s main ideas, which is that these transformations in labour markets also spill over to the countryside and in so doing, they collapse the distinction between urban and non-urban (see Lefebvre 1973 [1972]).

To discover the scope of such claim, it is worth unpacking Lefebvre’s ruminations about the projection of information technologies and automated systems of production across the non-urban realm. With this, Lefebvre is leading us perhaps to one of the most exciting and visionary of the arguments in the book, which is the dissolution of the peasant as a category of practice –and as a result, the dissolution of the most important boundary between city and country. As the capitalist regime takes over agriculture, he notes, the demand for living labour decreases in inverse proportion as capital accumulation in the countryside increases (Lefebvre 1973 [1972]). As such, Lefebvre observes that a segment of the rural population is always on the verge of becoming urban whenever it is rendered superfluous due to technological progress and fixed investments on agriculture (ibid, p. 134). Therefore, he hints at the contemporary dialectic between concentrated and extended forms of urbanisation by suggesting that the productive powers of industry, which tend to be concentrated in cities, have a powerful effect on the countryside (ibid, p, 134). Therefore, in a very prescient manner Lefebvre foresees the sociospatial ramifications of the contemporary geographies of resource extraction that are taking place across the world because in his words,

A revolution that is prompted by the effects of large industry on agriculture and on the social relations of the agents of agrarian production is a true revolution;

the growth of the cultivated surfaces, but the decline of the rural population, depopulation of the countryside ... the countryside disappears in a double sense: by the industrialisation of agrarian production and the concomitant disappearance of the peasants on the one hand (and with it, the village) and on the other, by the destruction of nature (ibid, p. 134, 136, my translation).

The complete urbanisation of society then not only ambles forward, says Lefebvre, but accelerates substantially under the domain of large industry, the bourgeoisie and capital (ibid). It is indeed a revolutionary process, Lefebvre contends, because “it transforms the surface of the globe as well as society itself” (ibid, p. 136, my translation). In today’s urban society, the operational landscapes of extended urbanisation after the commodity boom have not only become the recipients of technologically rejuvenated systems of machinery, but also of labour instability and precariousness. This, as we shall see in the last section of the chapter, can be felt with full intensity throughout the Huasco Valley, where underemployment, outsourcing and a burgeoning tertiary sector have become the daily reality of the local communities who struggle on an ongoing basis with the uncertainty of informal work. In Volume 1 of *Capital*, and following a similar line of argument, Marx observed how the sphere of agriculture was where industry had the most revolutionary effects because it annihilated the ‘peasant’, replacing it for the ‘wage-labourer’ (1976 [1867]), p. 637).

What is perhaps most contradictory about this process of extended urbanisation is that just as it degrades the quality of labour, it empowers the labourer, who starts to see herself as the conscious regulator of the collective labouring process –something that was discussed in the previous section with the notion of the socialised worker. As the case of the Huasco Valley will reveal, it is precisely in the operational landscapes where the qualitative predominance of information technologies over traditional activities can be patently observed. Despite the fact that mining and agriculture are still the main economic activities in this region of northern Chile, the technical composition of labour has been subjected to the pressures of information technologies and flexibility schemes, and as a result the labouring activity has been qualitatively transformed in substantial ways. Thus, and as Hardt and Negri (2001) note, just as during the Industrial Revolution agriculture had to become “industrialised”, the processes of extended urbanisation following the commodity boom have forced agriculture –as well as mining-, to become transformed by the informatisation of production. This, added to the emergence of tertiary sectors that provide a wide range of services to transnational capital extracting resources, as well as to the precarisation of labour, have produced a genuine

metamorphosis in the peasant, which has begun to emerge as an urbanised subject that is mobile, outward-looking, proficient in the use of IT, and prone to cooperative engagement.

As the peasantry becomes communicative and active, Hardt and Negri suggest, it ceases to exist as a separate political category and this ultimately implies a “decline in the political significance of the division between city and country” (2004, p. 124). In this context, the figure of the peasant emerges from its passive and isolated state “like the butterfly emerging from its chrysalis” and in so doing, discovers itself as one among other figures of labour that despite the differences, shares common conditions of existence (ibid, p.124). Paradoxically, then, the final victory of the peasant revolution is the end of the peasantry, its own destruction as a class (Hardt and Negri 2004). Technology, it should be noted, plays a definitive role in this process. The “conscious, technological application of science”, says Marx, is what replaces the traditional way of exerting production in the countryside and at the same time completes the disintegration of the “primitive familial union which bound agriculture and manufacture together when they were both at an undeveloped and childlike state” (ibid, p. 637). Therefore, when the peasant undergoes such radical metamorphosis, Marx notes how class antagonisms and the concomitant need for social transformation tend to acquire the same intensity in the country as in the city (1976 [1867], p. 637).

In fact, and in the case of Latin America, it is paradoxically the operational landscapes of extended urbanisation –and not large urban agglomerations- where resistance to resource extraction has been most intense and fierce. This echoes what Raymond Williams observed in the rapidly industrialising English countryside of the nineteenth and twentieth centuries. Against the background of so much poverty and suffering, Williams argued that there was “more spirit, more self-organisation and in the end more achievement among the rural labourers than among most of their apparently preferred predecessors” (2011 [1973], p. 184). Indeed, he notes how at the international level, actual revolutions such as the ones in China and Cuba, have taken place with the countryside –and not the city- as the starting point. He therefore argues against the liberal, patronising perspective of rural history in which the country is naturalised as being idiotic and barbarian. Quite paradoxically, Williams notes, it is precisely those “rural idiots” who during considerable periods of capitalist history have been the main revolutionary force in the world (2011 [1973]). This revolutionary movement has superseded factories, mines, plantations and areas of production in general, and takes place on territories of urbanisation (in both concentrated and extended forms).

In the Huasco Valley, social mobilisation and revolt is being initiated by local workers who feel increasingly dispossessed and impoverished by a resource extraction-led mode of production, something that evinces the continued centrality of labour antagonisms to the contemporary productive paradigm. Despite the fact that the urban question described by Castells in the early 1970s has changed in substantial ways (see Merrifield 2014), relations of production and of class are nonetheless still central for making sense of the global urban condition, and this is something that this chapter has set out to illustrate theoretically and empirically. As Ekers and Loftus (2013) have argued, it is of much importance to historicise labour in order to attain more situated, politically stronger understandings of how urban environments are produced. For that reason, and before looking at the particularities of the Huasco Valley, the following section sets out to briefly frame the historical transformation of social forms of labour that have taken place in Chile and Latin America.

#### **4. Labour Transformations in Latin America and Chile**

Perhaps one of the most salient characteristics of the informatisation of production is that it disrupts the linear nature of stages of development that characterised old international divisions of labour, where there was a substantial gap in terms of the productivity of systems of machinery between developed and developing nations (Hardt and Negri 2001). Fixed capital, Hardt and Negri argue, is now generally exported to subordinated economies at its highest stage of productivity, which means that for example an automobile factory in Mexico or Brazil no longer works with outdated productive infrastructures but makes use of the most advanced computer and informational technologies available (ibid, 287). Therefore, countries with varied economies in the Global South can now support simultaneously all levels of productive processes, like information-based service production, modern industrial production of material goods, handicraft, mining and agricultural production (ibid, 288).

With such transfers of technology across borders, Latin American geographies and societies have been undergoing substantial changes, most of which are clearly reflected in its productive matrix, in the labouring activity, and in recent patterns of land-use change taking place beyond large urban areas. Recent studies reflect empirically how a new international division of labour in Latin America has resulted in specific changes not only on productive and entrepreneurial activity, but also on social production and labouring subjectivities. Stecher (2014) notes how the social composition of labour has mutated as a result of this process –in Chile as in Latin America more generally-, because during the 1970-2010 period, there was a considerable reduction of ‘salaried-industrial’ workforce from primary and secondary sectors of the

economy, with a concomitant increase in the workforce employed by the tertiary sector (ibid, p. 913). In present-day Chile, and according to the National Statistics Office (INE in Spanish), the domestic workforce is distributed as follows: 12% in the primary sector, 22% in the secondary sector and 66% in the tertiary sector (INE 2011, referenced in Stecher 2014, p. 913).

From once being inward-looking and unreflexive about the external economic environment, Ramos (2014) notes how firms have had to adopt organisational adaptability strategies that consist of a more active and outward-looking rationale in which the external environment is as important as the inner dynamics of the firm. This has in turn led to an entrepreneurial model of organisational interconnection that is punctuated by outsourcing, flexibility, productive chains, strategic alliances, as well as a growing orientation towards the global market (Ramos 2014; Ossandón and Tironi 2012). Besides organisational flexibility (via outsourcings, inter-organisational networks and so forth), firms tend to implement strategies for technical flexibility, such as cybernetic infrastructures, as well as sophisticated machineries and microelectronic devices to enhance manufacturing, agriculture and several other productive activities (Ramos 2014).

It is worth stressing, however, that despite these manifest transformations in productive structures, Ramos (2014) and Stecher (2014) warn about unproblematic assumptions of 'post-industrial' capitalism or of 'post-Fordism' in the region. First, and by contrast to what happens in the Global North, a considerable part of Latin America's population has always worked informally, either through underemployment, unregulated street vending and so forth. Most of these populations have therefore remained at the margins of the technological innovations described above. Second, the non-linear nature of flexible accumulation is most acutely felt in Latin America, because it is very usual for flexible, industrial and traditional productive structures to coexist within specific sectors of the economy, and sometimes even within specific firms. As the next section illustrates in the case of the Huasco Valley, the heterogeneous coexistence of productive paradigms can be patently observed in agriculture and mining. Finally, work cultures based on horizontality and autonomy –which, according to Hardt and Negri, are intrinsic to the current productive paradigm-, have progressed slowly in Latin America, when compared to advanced capitalist countries of the Global North (Ramos 2014). Decision-making, Ramos (2014) contends, is still concentrated in mid-level employees and the supervisor is still seen as a relevant authority figure.



In Chile, these modernising processes have resulted in a tendency toward precariousness and inequality within labour markets –in terms of social security and basic income- that contrasts starkly with the high rates of economic growth observed during the last two decades, as well as with other macroeconomic accomplishments of Chile’s model (Stecher 2014; Ramos 2014). Such precariousness has become pervasive even among privileged workers of the formal sector. These tendencies for labour to deteriorate are taking place in a regional context in which paradoxically, unemployment has declined to its lowest levels in decades (6.4% in 2012 according to the ECLAC 2013b, p. 5). Gender gaps and self-employment have also shown considerable reductions (ECLAC 2013b, p. 5), so this means that the current macrostructural performance in Latin America is overshadowing to some extent the global tendency to labour precariousness. These quantitative indicators, however, occlude fundamental qualitative changes in labour markets, such as for example temporary work, variable remunerations, outsourcing and so forth.

What is important to note here, as it resonates with the socialised worker pointed at by Negri (1989), is that the outward-looking approach adopted by firms has spilled over to the subjectivity of the labourer as well. As Negri noted, the subjectivity of the socialised worker is not confined to areas of mass production, but because of inter-organisational networks and expanded scales of production, it transgresses the workplace and situates itself within a universal horizon. Indeed, when speaking about the centrality of work in their lives, the interviewees in a recent study usually talked about their role in the *labour market* and not necessarily in a specific post (Godoy et al 2014, p. 5332). All of them cultivate an attitude of being ‘open’ and ‘available’ to new opportunities and focus more on the labour market in broad terms than on the particular firm for which they work (Godoy et al 2014, p. 5332). The alienating and antagonistic element of labour nonetheless persists under the new paradigm of production, because the interviewees refer to labour in negative terms, often experiencing it as a ‘colonising force’ that feeds on their vitality and hampers their projects for self-realisation (Godoy et al 2014).

In light of the above, the new types of productive subjectivity that spring from flexible forms of capitalism in Latin America do not necessarily imply that the politics of labour is something of the past. On the contrary, and as recent cycles of political contestation in Chile have demonstrated, emerging patterns of social relations established by an impoverished and marginalised workforce have indeed up-scaled situated areas of production and spilled over to the domain of the city itself. In 2011, the images of hundreds of thousands of protesters

crowding and swarming in streets and squares of Santiago de Chile, demanding free education for all under the slogan “*educación gratuita y de calidad*” (free and quality education for all), circulated the whole globe. Such display of social discontent and revolt, which had not been witnessed in Chile since the last years of the Pinochet dictatorship in the late 1980s, not only undermined the legitimacy of the government of then president Sebastián Piñera, but bred a new generation of politically progressive leaders that under the banner of constitutional reform, were able to reach Parliament during the last elections. Yet, as Camargo (2012) has noted, the impetus behind this movement sprung not from students, but from impoverished workers, most of whom were overburdened with student loans that doubled –and sometimes tripled- the original cost of the academic program undertaken.

This is not to say that student leaders did not play a central role in socialising the conflict among the grassroots and the media, because they did. The bulk of protesters, however, were working subjects waking up from forty years of neoliberal rule, feeling under siege not only by overpriced student loans, but by the low standards of work that were unable to cover such loans and earn them a good living. Under these circumstances, the shift from cities to urban society as envisaged by Lefebvre (1973 [1972]; 2003 [1970]) has by all means implied a shift from steady to post-salaried work. In this context, workers do construe the past of steady, salaried labour as a lost epoch that is looked at with nostalgia. The contradictory part –and this is what Berman (1990 [1982]) viewed as being the hallmark of the experience of modernity-, is that in the midst of this maelstrom, labouring subjects have also thrived on the possibilities offered by technological innovation, flexibility and mobility, and new forms of community and of relating to self and other have emerged as a result.

Nowhere can this phenomenon be perceived with more clarity than in the operational landscapes of extended urbanisation that have emerged throughout Latin America around extraction sites. As the urban fabric extends its planetary domain, rejuvenated systems of industrial and agricultural production become projected across rural areas and the transformations they exert result the more evident, the more acute and revolutionary the changes in the mode of production. The remainder of this paper then goes on to look at labour transformations in the Huasco Valley, where the introduction of technologically rejuvenated systems of machinery and agricultural production are possibly the best vantage point from which to observe not only the metamorphosis of the peasant described in the previous section, but also the effects of information technologies on human productive subjectivity.

## 5. The Extended Urbanisation of Labour in the Huasco Valley

Thinking about the relationship between large-scale industry and class consciousness in nineteenth-century England, Raymond Williams (2011 [1973], p. 220) considered that industrial cities like Manchester, Bradford and Leeds, offered much more privileged angles from which to observe worker subjectivity than London, a metropolis where social relations were particularly multifarious and mystified. Something similar happens with large urban agglomerations like Santiago under flexible accumulation, because their sheer magnitude and density can perhaps obscure the general observation of social phenomena along specifically demarcated class lines. In particular, the arrival of large-scale mining and agribusiness to the Huasco Valley –a traditionally agrarian region- reveals how information technologies and the automation of productive processes result in new forms of subjectivity. Indeed, some of Lefebvre's (1973 [1972]; 2014 [1989]) later texts on urbanisation gravitate around the dialectical interaction between labour and technology, which he saw as structuring the material basis for the planetary extension of the urban form –as well as for its emancipatory potential.

As was noted in previous sections, Lefebvre argued that the automation of production portends towards the end of productive work, a phenomenon that correlates positively with growing urbanisation. If there is something that typifies contemporary forms of mining and agribusiness –besides their sprawling scales of production-, it is their increasingly automated productive structures. Community leaders and local activists in the Huasco Valley invariably cite rampant unemployment as being one of the most crucial issues resulting from the arrival of transnational mining to their territory. They point out how during their construction or extension, mines and energy projects require large numbers of workers –obviously on a temporary basis-, but during periods of regular operations, they are basically run by a few highly-qualified employees, usually from abroad.<sup>75</sup> This phenomenon reflects a broader tendency observed by the ECLAC at the Latin American level, consisting on the fact that large and transnational capitals are paradoxically the ones that provide the fewer jobs. In terms of figures, companies that drive 67% of regional GDP provide 20% of jobs, whereas small companies, which drive 10% of GDP, provide 50% of jobs (ECLAC, referenced in Stecher 2014, p. 945). According to Infante and Sunkel (2009), this tendency is clearly replicated in Chile's domestic economy.

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<sup>75</sup> Interview with a member of SOS Huasco, 4 December 2013.

The arrival of transnational mining, energy and agribusiness corporations to the valley has therefore resulted in profound transformations not only of the material, labouring activity itself, but to the narratives that local communities have concerning work. Communities frequently juxtapose the memories of an agrarian past, when breeding livestock or working on small-scale agriculture offered stable means to provide for themselves, to the current situation of labour precariousness and instability, where all work is now temporary, seasonal and poorly remunerated. Local unemployment figures do not reflect the qualitative changes taking place in local labour markets because as a result of growing labour instability and precariousness, a booming tertiary sector of medium and small-sized firms offering all sorts of services to mining corporations has emerged.<sup>76</sup> According to COCHILCO (2005, p. 268), in 2004 the copper mining industry individually considered, advanced USD 5 billion in operational expenditures, of which USD 1.3 billion corresponded to the acquisition of goods and inputs, and USD 1.7 billion were spent on non-strategic services (see Figure 4.1). As of 2012, the firms providing services to mining corporations across the country amounted to 5,000, 25% of which were less than 6 years old (COCHILCO 2013a, p. 141).

**Figure 4.1**

**SERVICES PROVIDED TO MINING COMPANIES**

<b>Maintenance</b>	<b>Engineering and consultancy</b>	<b>Construction</b>
Catering	Engineering	Mining developments
Camps	Architecture	Fortification
Cleaning and industrial security	Geology	Civil works
Environmental	Management control	Electrical and mechanical works
Computational	Legal services	
Administrative	Planning support	
Training	Technical inspection	
Lettings (landed property and machinery)	Management of information systems	
Port services	Land surveying	
Minor installations	Topographical works	

<sup>76</sup> According to the Chile's Library of Congress (BCN in Spanish), unemployment in Vallenar has fluctuated between 6,2% and 13,1% during the 2003-2011 period (BCN 2013).

Production support	Chemical laboratory services
Primary drilling	Environmental services
Transportation	Other technical consultancies
Maintenance	

**Source:** COCHILCO (2005), p. 295.

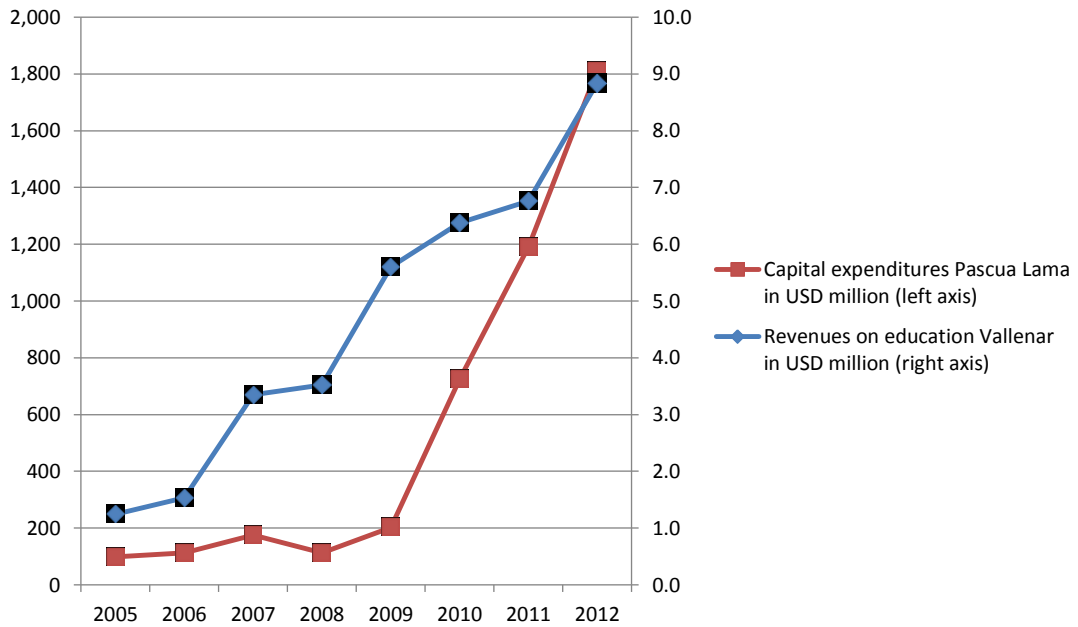
As the previous section briefly showed for the case of Chile, the migration of jobs to the tertiary sector goes hand in hand with the mobilisation of cybernetic systems, digital and information technologies, so along with the tendency of labour to become precarious, work in the Huasco Valley has also been subjected to the pressures of the informatisation of production. This does not mean that the predominant type of labour in the Huasco Valley is now the type of labour that Hardt and Negri refer to as “immaterial”, because jobs in primary and secondary sectors still constitute the majority. However, the emergence of this tertiary sector has resulted in very intricate and convoluted productive structures in which pre-modern, industrial and flexible labour dynamics mix and coexist. It is therefore easy to see how the extended urbanisation of the Huasco Valley has resulted in fundamental qualitative –and quantitative, although to a lesser extent- changes in the labouring activity. As Merrifield has noted, the same forces that generalise the intellect also generalise the city (2013b), so the case of the Huasco Valley shows how technology, labour and urbanisation are tightly interwoven in transformative ways.

Perhaps an important indicator that provides an idea of how the arrival of transnational mining to the Huasco Valley has determined the conditions for the transformation of human productive subjectivity is the growth of tertiary education at the local level. According to official data from the Chilean Internal Revenue Agency (SII), revenues obtained by local education centres presented almost an eight-fold increase during the 2005-2012 period, an increase that went side-by-side with the equally sharp increase in fixed capital expenditures of Pascua Lama, the largest mining project in the region (see Figure 4.2). What is perhaps most important to stress is the type of education that is being offered to locals in the Huasco Valley, because it is directly related with the pressures exerted by the informatisation of production. First of all, since 2001 the local university (Universidad de Atacama) began to offer technical careers aimed at providing services of all sorts to the mining industry. Thus, during the 2001-2008 period, several technical careers were created in addition to previously existing ones,

including for example computer analysis and programming, legal services, instrumentation and automation, and maintenance of industrial equipment among others.<sup>77</sup>

**Figure 4.2**

**REVENUES FROM TERTIARY EDUCATION IN VALLENAR**



**Source:** Author with data from the SII’s 2013 report of regional economic activity and from Barrick Gold’s 2005-2012 Annual Reports.

Enrolment in such tertiary education degrees for the 2001-2008 period in Vallenar tripled, with 95 incoming students in 2001 and 300 in 2008. Moreover, in 2006 the Universidad de la República opened a campus in Vallenar, offering programmes in education, legal assistance and social work.<sup>78</sup> Ultimately, these figures reveal that the projection and the advance of infrastructures and systems of machinery following the irruption of transnational mining have set into motion processes of technical –and informational- dynamism that were previously inexistent in the Huasco Valley. Also, most of these newly created university programmes are “technical”, which means that they aim at training personnel on the basis of “hands-on” experimental teaching, which means that scientific knowledge and practical activity become tightly interwoven in the learning process. Following Marx, and as was argued in the section on technological modernisation and labour, the interfusion of scientific knowledge and practical activity in a context of the real subsumption of labour to capital leads to an expansion in the

<sup>77</sup> In accordance with information contained in the 2009-2013 Local Development Plan for Vallenar (PLADECO in Spanish).

<sup>78</sup> See the 2009-2013 Local Development Plan for Vallenar (PLADECO in Spanish).

labourer's productive subjectivity, who becomes increasingly competent in consciously regulating the technical practicalities of the labouring process (see Marx 1973 [1939]). What is most important according to Marx, is that besides being able to consciously regulate the work process, the labourer also becomes capable of organising diverse forms of social cooperation as a result of this expansion in her productive subjectivity.

These phases in the real subsumption of labour to capital have not only taken place in the sphere of the service, mining or industrial sectors. In contemporary agriculture, and as Section 4 of this chapter explored in detail, information technologies are currently exerting the same revolutionary transformations that industry did during the Industrial Revolution, because as local activists note, increasing concentration in land tenure, along with the implementation of corporate strategies for flexibility (such as for example 'just-in-time' procedures) aimed at operating on the basis of fluctuations in international demand have not only exerted substantial qualitative changes on the labouring activity, but have also hampered substantially the stability and the conditions of work.<sup>79</sup> They also note how such concentration of ownership and the rationalisation of the productive process have resulted in the encroachment of monoculture agriculture, something that besides affecting the fertility of the valley's soils, has had devastating effects upon the landscape. Smallholders who used to work their own plots of land have been enclosed and displaced by land-grabbers and are now forced to work as *temporeros* in large-scale vineyard agriculture.<sup>80</sup> The local peasantry is therefore being transformed into a neo-proletariat, that is, a class that increasingly relies on self-employment, underemployment, temporary or outsourced work in order to subsist.

The emergence of agribusiness in Chile has its origins in the Pinochet dictatorship, when legal frameworks aiming at the liberalisation of land tenure and at the reduction of tariffs for imported goods were implemented, something that demanded the establishment of economies of scale in agriculture with the purpose of achieving competitiveness before international producers (Cid 2001). This, reports Cid, led to over-indebtedness among small producers, to the pauperisation of the peasantry and to the bankruptcy of traditional fruit companies at the same time that it boosted agro-industrial production (ibid). With the consolidation of agribusiness in Chile -and in Latin America in general-, the rural economic

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<sup>79</sup> Interview with a member of the Asociación de Agricultores del Valle de San Félix, 2 December 2013; interview with a member of Creando Valle, 1 December 2013.

<sup>80</sup> A '*Temporero*' is someone who engages in seasonal, informal or temporary work, usually in agro-industrial complexes.

system that for decades had gravitated around the *hacienda* broke down due to its incapacity to cope with the new international context purported by neoliberal capitalism.<sup>81</sup> Agribusiness then came to herald a transformation in Latin American agriculture in which the urban/non-urban divide begins to erode in economic, geographical and demographic terms. As Ávalos (2013) highlights, agribusiness complexes draw a considerable part of its workforce from floating populations that come from urban agglomerations, and also tend to encompass primary, secondary and tertiary sectors of the economy.

The arrival of transnational mining in the wake of the commodity boom, added to the processes of rural change described above, has produced profound impacts in the Huasco Valley, where the peasantry has been undergoing a radical transformation not only regarding ways of living but in terms of their productive subjectivities. As a result of the introduction of spatially integrated systems that nurture physical mobilities and communication, new class configurations have emerged which transgress the boundaries of gender, race, ethnicity, labour and geography. Labourers no longer see themselves exclusively as peasants, but also as agro-industrial workers and environmental activists; as gendered, ethno-racially secluded and as colonised subjects. This labouring subject is therefore an eminently fragmented one, but this does not imply any sort of limitation, because as Loftus (2012) has argued, it is precisely because of such fragmentation that the contemporary labouring subject is more open to an environmental politics –and one might add, to a class politics as well.

In this regard, Cid (2012) for example illustrates how labour in the Chilean agro-industrial (mainly in fruit and salmon production) sector is particularly feminised because corporations prefer to recruit women under the assumption that not only they have privileged fine motor skills such as delicate fingers, speed, agility and coordination, but that they tend to be more docile and compatible with seasonal/temporary work. It is therefore usually assumed that women would be more compatible with flexible forms of labour and of production because they have a tendency to favour their family relationships and would be willing to settle for unstable salaries and variable workdays if they can spend more time with their families (Cid 2012). Yet, Cid notes that despite these predominant representations among the corporate management, women working in agro-industrial complexes tend to be heavily unionised –

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<sup>81</sup> The *hacienda* was the foremost unit of mercantile agricultural production during the colonial period in Latin America. It was based on feudalistic social relations and although it subsisted to some extent after colonial rule ended, it was gradually superseded by industrialised agriculture in the nineteenth and twentieth centuries.



sometimes to a larger extent than men. This participation in labour unions, she notes, is not construed by women as a rupture in their traditional gender roles but is viewed as a way of extending them and continuing them along class lines (ibid). In fact, when participating as union leaders, women usually view themselves as projecting their role as mothers upon the labour union, and therefore feel they need not only to protect but also to offer advice to union members (Cid 2012).

This resonates with what Hardt and Negri (2004; see also Hardt 1999), following socialist feminist theorists like Jennifer Pierce and Arlie Hochschild have termed the ‘feminisation of labour’, something that circumscribes itself within the passage to flexible forms of production. For them, characteristics usually associated with women’s work such as kinship, caring or domestic work -which have a strong somatic and corporeal component-, have been increasingly extended to all sorts of labour in different sectors of the economy (Hardt and Negri 2004), including fruit production in putatively rural areas, as the case of Chile illustrates. In fact, during my fieldwork several of the community leaders of the Huasco Valley that were interviewed were women working as *temporeras* in vineyard agribusiness, all of them heavily unionised and with a strong sense of belonging and of caring for their communities. In my view, such labouring subjectivities are quite reminiscent of the nineteenth-century English peasant, which Raymond Williams described as being “intelligent, self-taught, strong and honourable” (2011 [1973], p. 191), and despite struggling with precarious and ill-paid employments, also managed to worked unremittingly for her own people (ibid).

The modernising drive of transnational capital in the sphere of reproduction has also been fundamental for the emergence of these new labouring subjectivities, because as a local activist and agricultural worker pointed out to me, satellite television, cellular phones, computers and internet for everyday use have followed the arrival of mining and energy corporations to the Huasco Valley.<sup>82</sup> Also, and as it was explored in detail in the previous chapter, retail stores selling all sorts of electronic devices and car dealers have been increasingly populating the streets of Vallenar, the largest town in the Huasco Valley. Furthermore, and in order to mitigate resistance to large-scale mining, a local activist noted how Barrick Gold –one of the largest corporations operating in the area-, have given laptop computers to the local community and also installed free wireless internet connection so that

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<sup>82</sup> Interview with a member of Consejo de Defensa del Valle del Huasco, 28 November 2013.

it can be used by everyone in Alto del Carmen.<sup>83</sup> It is hard to see all these changes and not to think of Marx and Engels' comments on the emancipatory potential of technological modernisation, especially when it becomes so evident that communication is indeed replacing the isolation of individuals with their union through association, opening avenues for new forms of political solidarities, social networks and forms of community.

Ever since the arrival the first megaproject (the Pascua Lama gold mine) to the area in 2001, social mobilisation has been fierce and wide-ranging. From that moment on, the people of the Huasco Valley have been developing strong, politically organised communities and advocacy networks in order to stop the encroaching threat that mining and energy activities represent to their territories and ways of living. What is important to note here is how these apparently free-floating processes of social mobilisation have an eminently material substratum, underpinned by the revolutionary changes in the technical composition of labour than have been described above. According to Lukács (1971 [1923], p. 171), to the extent that the productive process is expanded and becomes more complex, the capitalist must set into motion even more elaborate calculation and rationalisation dynamics. For the working classes, on the other hand, this same development has a different class meaning because it underlies the 'abolition of the isolated individual', it leads workers to become conscious of the social character of labour and its intrinsically revolutionary potential (Lukács 1971 [1923]). According to my interviewees, before the arrival of transnational mining there was no sense of community either within the villages or between them. Now, although they have considerable disagreements regarding strategies of mobilisation, demands and worldviews, they nonetheless feel themselves part of a growing community that stretches not only throughout the Huasco Valley, but through northern Chile in general.

These economically disempowered, labouring subjects have come to constitute the backbone of social resistance against mining, which at the local level has been supported by the clergy and often by authorities, and at the national and international levels by advocacy networks such as Mining Watch Canada, OCEANA, Green Peace and Protest Barrick in the Global North, as well as by the Latin American Observatory for Environmental Conflicts (OLCA in Spanish) and the Observatory for Mining Conflicts in Latin America (OCMAL in Spanish) in the Global South. At the local level, community organisations for political mobilisation have flourished, with the most relevant of them being the Pastoral Salvaguarda de la Creación, the Council for

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<sup>83</sup> Interview with a member of Creando Valle, 1 December 2013.

the Defence of the Huasco Valley (Consejo de Defensa del Valle del Huasco), Brigada SOS Huasco, Comunidad Diaguita Huascoaltinos, Asamblea por el Agua del Guasco Alto, Comité Ecológico y Cultural Esperanza de Vida, Unidos por el Agua, Comunidad Diaguita los Tambos, Comunidad Diaguita Patay Co, Comunidad Diaguita Montañas Fértiles, Asociación de Pequeños Agricultores de San Félix, Junta de Vecinos Piedras Juntas, Junta de Vecinos Chollay, Pajareteros Alto del Carmen, and the Huasco Valley Socioenvironmental Movement (Movimiento Socioambiental del Valle del Huasco). These organisations span the communities of Vallenar, Freirina, Huasco and Alto del Carmen, the four villages located within the valley.

The sociospatial aspect of these processes of resistance also resonates in various ways with the views of urban space as social factory that were discussed in previous sections of this chapter. Because labour markets have become extremely mobile and flexible, capitalist exploitation and oppression in the Huasco Valley have not been restricted to situated areas of production, but have spilled over to the whole geography of the region. As a result, political organisation and its concomitant expressions of rebellion and antagonism have overflowed agro-industrial complexes, mines and firms, and have unfolded across the emerging urban landscapes of the whole valley. Besides issues of labour, political contestation is also underpinned by concerns over socioecological degradation, mining and energy regulations, ethno-racial seclusion and lack of access to public services. In general, these labouring subjects thoroughly rely on the urban spaces that have emerged around them in order to demand their right to the city. Following Hardt and Negri (2009), one can see here how in the same way in which the industrial proletariat had ready-made practices of cooperation in the factory, this urbanised peasantry has developed circuits of communication and social cooperation that transverse the four villages of the Huasco Valley, as if its built environment, landscapes and geographies corresponded to a gigantic factory.

In terms of strategy, social mobilisation against mining and energy megaprojects has comprised diverse activities, with the Internet and social media being perhaps the most important tools for the dissemination of blog entries, documentaries, statements, as well as for creating international alliances and organising events (see also Urkidi 2008, 2010).<sup>84</sup> Several forms of direct action, such as demonstrations, marches, occupations, roadblocks and picket lines have also been very effective.<sup>85</sup> These forms of mobilisation have not remained

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<sup>84</sup> Interview with a member of Huasco Valley Socioenvironmental Movement, 5 December 2013; interview with a member of OLCA, 11 December 2013.

<sup>85</sup> Interview with a member of SOS Huasco, 4 December 2013.

exclusively tethered to the valley, as picket lines and demonstrations have also been organised in Santiago de Chile with the purpose of exerting pressure over the national government and to socialise their struggle with civil society organisations at the national and international levels. Members of local communities have travelled in several occasions to Toronto with the purpose of attending the AGMs of large mining corporations that are developing projects in the valley. In these AGMs, community leaders usually denounce before shareholders the bad practices of the companies not only at extraction sites, but also in terms of corporate governance.

Litigation has been the most relevant institutional strategy adopted by these social movements, as lawsuits, allegations, legal resources and several other sorts of juridical mechanisms have been advanced not only before national courts, but also before international organisations such as the Interamerican Court of Human Rights. These legal mechanisms are usually aimed at denouncing flawed assessments of environmental impact, unlawful degradation of the environment, noncompliance with Convention 169 of the International Labour Organisation (ILO),<sup>86</sup> displacement and loss of livelihoods. At the national level, litigation has been a very effective mechanism against investment projects, because according to the OLCA,<sup>87</sup> as of December 2013, USD 37 billion on energy and mining investments had been put on hiatus as a result of judiciary measures.<sup>88</sup> Also, and according to the world ranking of countries attractive for mining investments that is issued yearly by the Fraser Institute, Chile went from the fourth place in 2010 to the thirteenth in 2015.<sup>89</sup> According to a member of the Fraser Institute, Chile's drop in the ranking can be attributed not only to the implementation of more stringent regulatory measures, but to a sense of 'uncertainty' regarding land tenure

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<sup>86</sup> Convention 169 of 1991 is a legally binding international instrument dealing specifically with the rights of indigenous and tribal peoples. Among the special measures adopted to protect the environs, livelihoods, beliefs and ways of living of indigenous peoples, is the mechanism of consultation. Put briefly, Convention 169 requires that indigenous peoples are consulted on any issues that affect them, and this naturally includes the development of investment projects (such as mines, transmission lines and power plants) in their territories.

<sup>87</sup> Website entry available online at: <http://olca.cl/articulo/nota.php?id=103832> (accessed 24 July 2014).

<sup>88</sup> In fact, Chile's ruling elites have expressed serious concerns over such judiciary measures. At a recent address before the National Mining Association, Michelle Bachelet –Chile's current President-, argued that the Government intends to develop a comprehensive assessment of all projects that have been put on hiatus by courts and make significant efforts to streamline the ones that comply with domestic laws and regulations (see 28 August news report in Radio Bio Bio Chile: <http://www.biobiochile.cl/2014/08/28/bachelet-advierete-por-judicializacion-de-proyectos-mineros-y-anuncia-revision-de-retrasos.shtml> (accessed 3 September 2014).

<sup>89</sup> See <http://www.mch.cl/2015/02/25/chile-ocupa-el-puesto-13-en-ranking-mundial-de-atractivo-para-inversion-minera/> (accessed 26 February 2015).

schemes among investors –as mining projects tend to generate conflicts with local communities.<sup>90</sup>

Like David facing Goliath, the communities of the Huasco Valley have achieved the unimaginable in their struggle against transnational capital and the state. With all odds against them, especially considering the manifold layers of state spatial planning and engineering, the wrath of international commodity markets, and the enactment of institutional and legal frameworks aimed at attracting billions of dollars' worth of FDI –as Chapter 2 explored in detail-, they have been able to stop the relentless advance of capital. First, an investment project like Pascua Lama, whose sheer magnitude has made it the eleventh largest undeveloped open-cast mining project in the world (Natural Resources Holdings 2012) at the hands of an equally gargantuan company like Barrick Gold (see Chapter Three), has suffered all sorts of setbacks due to social resistance, to the point of being currently at the verge of financial and technical unviability. Fines ranging from USD 12.000 to USD 17 million have been imposed by domestic authorities due to allegations of bad practices, which include the obstruction of waterways (April, 2007), unlawful appropriation of water resources (February 2011), degradation of glaciers (January, 2013), and discharging wastewater to the Huasco River (February, 2013), among several others.<sup>91</sup>

Most of the time, these fines have included the suspension of activities, and have led to deeply problematic consequences for Barrick Gold, not only in terms of conducting actual land surveying and construction operations at the extraction site, but also in terms of operational costs and shareholder confidence, something that has ultimately undermined the performance of its shares at the Toronto Stock Exchange (see De los Reyes 2014). In 2014, several institutional shareholders filed a class action against Barrick Gold before the Ontario Superior Court of Justice for USD 6 billion, under allegations of concealing information about the obstacles faced by the company in Chile<sup>92</sup>. Currently, the mining project is suspended as a result of a litigation process before the Chilean judiciary that is not only aimed at deciding whether or not to impose further fines, but to judge whether the concession conferred to the company can be revoked on the grounds of bad practices and socio-environmental unviability.

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<sup>90</sup> See See <http://www.mch.cl/2015/02/25/chile-ocupa-el-puesto-13-en-ranking-mundial-de-atractivo-para-inversion-minera/> (accessed 26 February 2015).

<sup>91</sup> Information about the fines imposed upon Barrick Gold can be found online at the website of the OLCA ([www.olca.cl](http://www.olca.cl)).

<sup>92</sup> The Globe and Mail, 22 May 2014 (<http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/barrick-named-in-class-action-suit-over-troubled-pascua-lama-project/article18798574/>), accessed 24 July, 2014.

Besides Pascua Lama, and as Chapter Five will explore in more detail, the operations of a pork processing plant located in Freirina, which had an established capacity for 2.5 million animals, were also brought to an indefinite halt after massive roadblocks and protests by local communities. As Chapter Five will also illustrate, the construction of Punta Alcalde -one of the country's largest projected thermoelectric plants- was also stopped after a 2013 ruling from the Court of Appeals of Santiago after the local communities denounced flaws in the assessment of environmental impacts. A further project facing suspension of its operations is El Morro, an open-cast gold mine with a projected investment of USD 2.5 billion, owned by GoldCorp and New Gold, and geographically contiguous to Pascua Lama. In November of 2013, the Court of Appeals of Copiapó decided to temporarily withdraw El Morro's mining license due to socio-environmental unviability and lack of compliance with Convention 169 of the ILO, following a lawsuit filed by fifteen Diaguita indigenous communities based near Alto del Carmen.<sup>93</sup>

Declaring war on investment projects of up to USD 8 billion and actually being able to stop them is completely out of the reach of the traditional peasant. The processes of extended urbanisation taking place in the Huasco Valley therefore provide a privileged vantage point for getting a glimpse of the intense metamorphoses undergone by the labourer when confronted with the revolutionary transformations introduced by the current productive paradigm. The traces of the socialised worker envisaged by Negri and of the *citoyen* envisaged by Lefebvre, begin to burst into view underneath the layers of political organisation, strategy, litigation, physical mobilities, and communicational campaigns developed to stop extractivism in the 'Garden of Atacama', the last fertile valley in northern Chile. Hence the emancipatory potential of complete urbanisation, because the development of the material powers of the individual as working subject do not take place in a vacuum. The swarming networks of solidarity, organisation and experience that gravitate around extraction projects have as their material substratum the networks of road, telecom and energy infrastructures advanced by transnational capital, a reality that reflects Hardt and Negri's claim that under the informatisation of production, technical systems of production invariably mirror their social composition.

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<sup>93</sup> Information about El Morro and the ruling that suspended its operations can be found in the OLCA website at: <http://olca.cl/articulo/nota.php?id=103800> (accessed 24 July, 2013).

The labouring subjects that have been emerging in these new urban landscapes encapsulate all the complexities and contradictions that for Berman (1990 [1982]) constitute the experience of modernity, because along with the crumbling of everything they had always known, they have also come to find themselves as part of an environment that offers them joy, power, adventure, growth and the possibility for the transformation of themselves and their world. In my conversations with local communities, the interviewees invariably expressed a sense of loss towards their rural past, but were simultaneously enthralled by the vital experience that ensued from discovering the intense satisfactions that underlie political and communal life. This echoes in many ways Raymond Williams' observations on the effect that the industrial revolution had on England's labouring subjects, because for him, amidst all the talk of the degeneration of the worker, what he mainly noticed was a "development of spirit and of skill" (2011 [1973], p. 184). In fact, the notion of community, Williams noted, is forged in and through struggle because for him, "there is more real community in the modern village than at any other period in the remembered past" (ibid, p.195).

## **6. Conclusions**

This chapter set out to answer some of the most crucial research questions of the thesis. First, and on the basis of two overlooked yet thought-provoking texts by Lefebvre (1973 [1972]; 2014 [1989]), it has proposed to conceptualise the worldwide extension of the urban form and the transformation of social forms of labour as being mutually constitutive. Such reconciliation opens important avenues to integrate labour studies to further research in urban political economy and on the political economy of resource extraction. After *The Urban Revolution* (Lefebvre 2003 [1970]) was published in 1970, Manuel Castells criticised Lefebvre for supposedly conveying an ideological approach to 'the urban' in which issues of class and of labour were understated. Although Lefebvre did not make any specific mention to such criticisms, some of his subsequent works –especially the 1972 book *La Pensée Marxiste et la Ville* and an essay written in 1989 for *Le Monde Diplomatique*- revolve around questions of labour and technological innovation as fundamental aspects in the dynamics of global capitalist urbanisation.

By building on such important interventions, the chapter has sought to make an enquiry into recent debates on flexible forms of capitalist accumulation in order to think about the ways in which the expansion of the urban fabric across the planetary domain goes hand in hand with new ways of exerting and of organising production. I have argued that processes of extended urbanisation underlie a radical metamorphosis of the peasant which leads to its ultimate

demise as a political category. By shedding its isolated state, the peasantry discovers itself to be sharing common conditions of existence with impoverished labourers across the world, something that leads to new forms of labour organisation and strategy that collapse any clear distinction between city and country. Through the analysis of the Huasco Valley the chapter has sought to illustrate such transformations, because the arrival of material infrastructures for large-scale resource extraction has necessarily implied dramatic changes in the labouring activity. In opening avenues for increased communication and interaction is where the emancipatory promise of planetary urbanisation lies.

Along with energy transmission lines and roads, contemporary techniques for resource extraction require sophisticated telecommunication infrastructures<sup>94</sup>, which means that extended urbanisation following the commodity boom has fostered new ways of exerting production that are concomitant to physical mobility and communication, in themselves crucial preconditions for political action. The labouring subjects that have emerged in the Huasco Valley do express a sense of loss towards what they see as their rural past, when work was steady, abundant and relatively well remunerated. However, they have also learned to thrive and delight in the possibilities of mobility and communication introduced by the urbanisation of their environs. As such, they have been gradually discovering the intense and all-encompassing satisfactions that underlie the communal life that ensues from a shared, radical political project. This is also reflected on Chapter Five, which will address the case of energy landscapes in Huasco specifically. Such chapter continues the exploration of the political and socio-metabolic dimensions of planetary urbanisation by looking at the case of Huasco, a village in the Huasco Valley that has become the recipient of numerous energy megaprojects required to power the operations of mines.

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<sup>94</sup> As argued in Chapter One, and in terms of investments on infrastructure, telecommunications was the most successful sector in Latin America, attracting 47% of regional investment (totaling USD 146 billion, according to the World Bank). Energy ranked second place with 31% of regional investment (USD 94.7 billion) and transport ranked third, with 20% of regional investment (USD 60 billion) (see World Bank 2010, p. 1).



## CHAPTER FIVE

### Energy Systems, Metabolic Exchange and Commodity Fetishism in Huasco

#### 1. Introduction

The previous chapter reflected on how the expansion of the urban fabric underlies the reconfiguration of relations and instruments of production, leading to the degradation of both the worker and the labouring activity on the one hand, and to vibrant forms of political organisation on the other. This chapter will continue to explore some of the political ramifications of extended urbanisation, but underscoring their socio-metabolic and ecological register. Specifically, this chapter sets out to answer the research question that asks about the types of commodity fetishism that emerge in the context of expanded infrastructural networks like the ones in the Huasco Valley (and beyond). As was argued in the introduction to the dissertation, the intensity and scale of socioecological destruction taking place in operational landscapes of extended urbanisation tends to be rendered invisible, and most city dwellers are not aware of the devastating effects that are concomitant to modern urban life. This phenomenon was initially theorised by UPE (see for example Kaika and Swyngedouw 2000; Kaika 2004, 2005), but given the city-centric epistemology that informed such accounts, the analytical gaze did not extend beyond processes of socionatural transformation taking place in large urban agglomerations.

Perhaps one of the key characteristics of contemporary territories of extraction is that despite being enabled by the most sophisticated technological innovations, they are not celebrated as wonders of human engineering but are instead swept under the carpet and hidden from view.<sup>95</sup> Yet, the sheer magnitude of such landscapes of extraction alert us to the fact that the metabolic exchanges of matter, energy and capital required to feed the contemporary urban world have been distorted and up-scaled to the point that they have now reached a hypertrophic, global extent. In this context, and as it was argued in Chapter Two, despite UPE's valuable contributions to contemporary understandings of metabolic flows within cities, it has been recently criticised for not expanding its radical political-ecological imaginary beyond urban agglomerations (Wachsmuth 2012; Angelo and Wachsmuth 2014; Ibañez and Katsikis 2014). Allegedly, UPE has persistently centred its analysis on urban areas, in both its site

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<sup>95</sup> Kaika (2009) illustrates this by analysing how, during a large part of the twentieth-century, large-scale dams were construed as symbols of progress and as the material embodiment of the aesthetic beauty of technology. She illustrates how, after the 1970s, such representations of dams changed dramatically as they started to be vilified as ecological disasters indicative of the unfulfilled promise of modernity.

selection and analytical framework and as a result, the global socio-natural dimensions that stretch from the city to the non-city have remained unexplored (Angelo and Wachsmuth 2014).

By engaging with the notion of extended urbanisation, as well as with UPE's ideas of the urbanisation of nature, this chapter interrogates the emerging patterns of urban metabolism that ensue from the expansion of the resource extraction frontier through an analysis of energy infrastructures in Huasco, a small village in northern Chile. During the last three decades, Huasco has witnessed the arrival of massive energy undertakings required to power the operations of large-scale mines that supply raw materials to international markets. Places like Huasco, I will argue, have come to constitute the geographical imprints of an expanded urban reality where the fetishisation of urban infrastructural networks –initially observed by UPE- has reached a global extent. In very much the same ways that flows of matter and energy are rendered invisible when circulating throughout the city (see Kaika and Swyngedouw 2000), I will argue that an up-scaled metabolic relation has severed even further the process of transformation of nature from the process of urbanisation. This disconnection, however, is an intrinsically contradictory process that tends to manifest itself in the form of crises and disruptions where the fetish is dismantled and the violence that transforms nature into urbanisation is cast into stark light.

Besides such unrelenting violence, it should be noted that processes of urbanisation in Huasco have also resulted in new forms of political mobilisation and communal life. In the midst of all the debris, the fumes and the noise produced by machineries of all sorts, the community of Huasco has been prefiguring vibrant and disalienated socio-natural worlds. Here is precisely where the Lefebvrian dialectic that underpins this dissertation bursts into view, because there is an immense emancipatory potential underlying the relentless urban explosion that follows investment flows for resource extraction. For Lefebvre (2003 [1970]), what distinguishes the urban from the non-urban are precisely the possibilities for assembly and encounter, for the unexpected and the playful to erupt. Following Lefebvre, Merrifield (2013b) argues that the more urbanisation continues to cover the world, the more encounters are likely to take place, and the more political opportunities will then intersperse the urban landscapes of the future. In facilitating interaction, mobility and communication, the expansion of the urban fabric also carries with it enormous possibilities for radical and emancipatory change.

Foregrounding the geographical embeddedness and immanent contradictions of these expanding metabolic flows by looking at the case of Huasco is therefore at the core of this chapter. In that sense the chapter is directly linked not only to the aspiration of this dissertation to contribute to new conceptual repertoires for the study of urban political ecologies, but to understanding the broader political ramifications of planetary urbanisation. The first section of the chapter elaborates on notions of urban metabolism in the face of an expanding planetary urban fabric. In so doing, it expands on some of the ideas presented in Chapter Two and also reveals its underlying tensions and contradictions. In doing this, I propose to re-scale Kaika's (2004, 2005) notion of the "urban uncanny". The second section provides some empirical context on the case of Huasco and its transformation into an industrial hinterland supporting processes of urbanisation unfolding at broader spatial scales. The third section reveals the politics and limits intrinsic to such metabolic exchanges, pondering on their potential for emancipation.

## **2. The Fetishisation of Infrastructural Networks and Extended Urbanisation**

The notion of the urbanisation of nature arguably constitutes one of the most central contributions of UPE to the field of urban studies, because it debunked the myth of the urban as being the putative outside of a supposedly pristine and untouched natural world. In what could be considered one of UPE's founding statements, Kaika and Swyngedouw (2000) contend that as natural resources become commodified and integrated into the city through technological networks, "nature itself becomes re-invented in its urban form..." (p. 121), while at the same time being severed from its raw state as a mere use-value (see also Heynen et al 2006). The modern city then becomes a network of pipes and conduits through which water, energy and raw materials become part of dense metabolic flows that are socially mediated (see Swyngedouw 2004, 2006). The urbanisation of nature would then be predicated on the social mobilisation of these metabolic processes under capitalist and market-driven social relations, where "nature" (i.e. a glass of water, steel, concrete, an orange, etc.) assumes the social form of commodities (Heynen et al 2006; see also Swyngedouw and Heynen 2003). Crucially, the urban also becomes subject to the same process of fetishisation of commodities described by Marx (1976 [1867]) and for that reason, the networks that facilitate such metabolic flows attain a phantom-like character, usually being hidden from view and relegated

to the ‘underbelly’ of the city (see Kaika and Swyngedouw 2000; see also Kaika 2005; Bridge 2009).<sup>96</sup>

Despite its success in bringing this radical political-ecological critique to the city, as was argued in Chapter Two, UPE has been criticised for overlooking Lefebvre’s process-oriented view of urbanisation, because its research agenda has remained tethered exclusively to large urban agglomerations, in both site selection and analytical framework (Angelo and Wachsmuth 2014, p. 5; see also Ibañez and Katsikis 2014). A reformulated UPE therefore becomes the more urgent in a context where the urbanisation of nature has broken free from the fetters of self-contained, geographically distinct urban areas and extended to vast stretches of the Earth. Thus, as Ibañez and Katsikis (2014) argue, under contemporary globalised urbanisation, cities appear more connected to a planetary system of production and exchange than to their surrounding hinterlands. As urbanised regions expand and become denser, these authors note, they extend their metabolic reach and “become increasingly interdependent with the development of specialised regions of service and supply (agricultural regions, resource extraction zones)” (ibid, p. 6; see also Brenner 2014).

Operational landscapes like Huasco, which have been completely engineered to provide low-end energy for the extraction of raw materials destined for consumption in remote corners of the globe, are the geographical imprints of these expanded, wide-sweeping metabolic exchanges. Like the sewage and piping networks that feed the life of cities, subsequent sections will show how Huasco -as a provider of cheap energy- has also been hidden from view, and thus the fetishism of urban technological networks that was initially described by Kaika and Swyngedouw (2000; see also Kaika 2006), has been ratcheted up to the global level by the mediating powers of neoliberalising capitalism. According to Bridge (2009a) anthropogenically driven material flows now rival in scale those occurring independent of human agency. Activities like industry, mining and fossil fuel burning, Bridge (2009a) argues, have reached material footprints comparable to rock weathering, volcanic emissions and water erosion on a planetary scale.

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<sup>96</sup> For Marx (1976 [1867], Chapter I), the social relations that lead to the production of commodities become fetishised –that is, they acquire a seemingly autonomous objectivity, as soon as they leave the sphere of production and enter the sphere of circulation. Despite being the congealed state of abstract social labour, a commodity in the sphere of circulation appears to the senses as completely independent from the social relations that produced it.

In that vein, Jason Moore's (2014) world-ecological reading of metabolism discussed in Chapter Two proposes viewing capitalism as both producer and product of the 'web of life'. More than an economic system, Moore insists that a world-ecological framework would reconceptualise capitalism as a way of organising nature (ibid, p. 12). Capitalism therefore internalises to some extent the relations of the biosphere and in so doing, becomes the metabolic engine that yields patterns of geographical organisation that lead to the planetary extension of the urban form (ibid). Thus, on a continuous basis, Ibañez and Katsikis (2014) note how buildings and cities, dams and highways, mines and oil rigs, become interwoven in global metabolic exchanges of energy, food, people, metals, and so forth (ibid). Such relentless upscaling and intensification of metabolic flows has been driven by new international divisions of labour, as well as by processes of technological innovation in finance, cybernetics, systems of machinery and logistics. For Deborah Cowen (2015), a global revolution in logistics and labour organisation has eroded the boundaries between production and distribution such that commodities today are manufactured "across logistics space" rather than in a singular place. This leads Bridge (2009a) to view the capitalist global economy as a powerful, pulsing metabolic engine for mobilising and transforming materials, something that was analysed in more detail throughout Chapter Two by looking at Chile's recent history with neoliberal policy apparatuses.

This framework resonates in certain ways with traditional accounts of political ecology (see Peet and Watts 2004 [1996] for a programmatic statement), and especially with the notion of global political ecology developed by Peet et al (2011), basically because it emphasises global capitalism as its main causal theme. Accounts of political ecology, Peet et al (2011) suggest, need to be attuned to global flows of labour, capital and information, as well as to the complex workings of power-knowledge within a crisis-prone capitalist system. The problem is that despite their resonances, the methodologies and ontological commitments of UPE and political ecology have been repeatedly at odds, because whereas the former ignores wilderness and rural areas, the latter ignores cities, and this divergence has, paradoxically, precluded the establishment of any fruitful dialogues between them (see Angelo and Wachsmuth 2014). The view of global metabolism that this chapter intends to foreground is therefore aimed at further disassembling the spatial epistemologies upon which much of the scholarship on critical socio-environmental politics has been underpinned, and hopefully set the foundations for intellectual cross-fertilisation between UPE and political ecology.

The global scope of contemporary environmental politics, however, does not imply that the urbanisation of nature has ceased to be site-specific. As Ibañez and Katsikis argue, the more seamless the global metabolic system of exchange becomes, “the more it is engraved in a geographically discontinuous organization of the earth’s surface” (2014, p. 6). The result of these expanding flows is a series of distinctive and sclerotic fabrics of urbanisation in which geographical difference becomes coupled with uneven patterns of capitalist development (Ibañez and Katsikis 2014). Therefore, just as the spatial arrangement of the city is profoundly uneven, with circulation networks, waste systems and marginalised populations being continuously rendered invisible (see Heynen et al 2006; Kaika 2004), so the urban fabric tends to occlude some of the operational landscapes that facilitate the socioecological mediations that make possible the functioning of the urban system. Thus, massive industrial estates, mining districts, oil extraction sites and agribusiness complexes are usually pocketed in remote places where they remain obscured. This process of fetishisation is intrinsically violent and often results in deeply problematic consequences.

### *2.1. The World-Ecological Uncanny*

At the other side of the spectrum, in the receiving end of the networks supplying raw materials torn from extraction sites, we find ourselves before a world of megacities, suburbs, and various sorts of concentrated agglomerations, where the capitalist mode of production ceaselessly spawns veils upon these dense metabolic exchanges and hides them in plain sight. In the Western, urban household, Kaika (2004) notes, the sense of ease and familiarity of the dwellers is premised upon a violent exclusion of socio-material networks that continuously pump in *good nature* (water, gas, electricity) while pumping out *bad nature* (wastes). At a world-ecological level, our modern lifestyles are likewise premised on the irrational consumption of the latest electronic gadget, cheap food and cheap clothing. The very existence and overabundance of commodities like these, it should be noted, also rely on the visual and ideological exclusion of extended forms of urbanisation, usually in the form of massive holes in the ground –such as the ones surrounding Huasco–, and whose geographies are often shaped by explosives, pollution, brutalisation of workers, state violence, enclosures and market volatility.

The phantasmagoria that becomes attached to these infrastructures, however, is often demystified, and the urban dweller is abruptly made conscious of the violence that tends to be occluded when things are working smoothly. At the level of the city and of the (urban) household, Kaika notes how in times of crisis, “hidden elements can surface unexpectedly, and

familiar objects can behave in unusual ways” (2004, p. 276; see also Kaika 2005). Sometimes urban infrastructural networks erupt to the surface in the form of an apartment block explosion, a gas tank leaking to ground water, or an urban oil pipeline fire (Bridge 2009). It is precisely in such moments of intrusion when the normalised character of the fetishisation and commodification of nature is put into question, provoking feelings of uneasiness and anxiety (Kaika 2005; Bridge 2009). Kaika (2005) refers to these situations of disruption and their associated feelings of agitation as “the urban uncanny”. In a context of planetary urbanisation, the sense of uneasiness and anxiety provoked by clogs or disruptions in the system can be as supersized as the infrastructural networks that connect operational landscapes with the rest of the world. I will refer to this type of disruption as a “world-ecological uncanny”, because the spatial scale on which it unfolds supersedes distinct spatial categories of households, cities and operational landscapes. Whenever a transoceanic oil tanker sinks, or there is a failure in a tailing dam that results in millions of cubic metres of toxic slurry spilling uncontrollably through villages and forests, the world watches in awe, and the uncanny is so pervasive that it often leads to financial collapses and full-on political crises -the 2010 British Petroleum oil spill in the Gulf of Mexico being a case in point.<sup>97</sup>

The threat of global catastrophe that looms large over discussions on climate change also constitutes a world-ecological uncanny of sorts, albeit one with different temporalities and trajectories. It haunts us like a ghost, but one whose presence has not yet been actualised. State crackdowns on environmental protest, face-melting air pollution in Asian industrial towns, slave labour on agro-industrial complexes, malformations in children living close to genetically modified crops, are but a few of the issues that reconfigure our attachments to everyday objects and activities. The ecologies of the Anthropocene (see Chapter Two) are, in sum, riddled with new ways of experiencing anxiety and distress, and the planetary urban fetish becomes the more ruthless, the more remote the exploited and plundered ecosystems are from the point of consumption. Like Timothy Morton’s (2013) “hyperobjects”, the events that set into motion the world-ecological uncanny are non-local, massively distributed across time and space, and tend to occupy a high-dimensional phase that exceeds all manner of stable representation.

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<sup>97</sup> In April 2010, the Deepwater Horizon oil rig, located in the Gulf of Mexico, suffered a technical failure and produced the largest, most devastating maritime spill in the history of oil production. The US government faced intense pressure from the general public to impose sanctions and press criminal charges against British Petroleum, the owner of the oil rig. This triggered a political and diplomatic crisis in the Obama administration.

There are, however, definitive limits to how much can resources be depleted and communities dispossessed in order to support a bourgeois mode of existence that depends on the continuous fabrication of an illusion of autonomy from the natural world on which it depends. To the extent that the global metabolic system is an open-flow system that continually exhausts its sources of nourishment (see Foster 2000; Moore 2014), up-scaled process of urbanising nature are intrinsically fractured and rest on shaky foundations. As David Harvey (2006 [1982]) has forcefully argued, space constitutes at once the *locus* and platform for accumulation, as well as the barrier that needs to be circumvented. The tensions between fixity and motion, concentration and dispersal within the circulation of capital, Harvey contends, “put immense strains upon the organisational capacities of capitalism” (ibid, p. 422). Similarly, Moore (2014) argues that within a world-ecological framework, the amount of new work that can be squeezed from new working classes, forests, aquifers, oilfields and mineral deposits is by all means limited. In other words, nature is finite, while capital is premised on the infinite, and this simple fact constitutes a crucial historical determination for the unfolding crisis of capitalist civilisation (Moore 2014).

A sense of world-ecological uncanny is, in fact, increasingly manifesting itself across Latin America as a result of uprisings and failures in mega-infrastructure that reveal not only the social frailty of large-scale resource extraction, but also the intransigence of human freedom and of extra-human natures. With those things in mind, the following section provides some empirical context of how Huasco was transformed into a place for power production that supports large-scale resource extraction.

### **3. Huasco and the Geographical Embeddedness of Global Metabolism**

As was argued in Chapter Two, Chile has been diversifying its mining matrix and besides copper, is now beginning to supply gold, silver and titanium among other metals to international markets. According to COCHILCO, the investment portfolio for 2021 has reached USD 112 billion, which represents an almost threefold increase in mining investments in comparison with the portfolio for 2009, which amounted to USD 45 billion (COCHILCO 2013a, p. 16). For Anna Tsing (2005), trajectories of investment like these tend to perform the globalism of the sort described in the previous section because they entail opening-up processes where remote places submit to international finance. Within the force field of these wide-ranging flows, Tsing insists, the dreams of financiers and investors are reimagined as “transcendent, circulating, beyond culture” (ibid, p. 74).



Mining is an activity that requires large amounts of energy, meaning that alongside mineral extraction, Chile's energy matrix has also shown a burgeoning growth during the last decades. The mining sector currently demands more than one third of the country's total energy production, and it is estimated that by 2020 it will consume 80%. For that reason, the rate of energy production has been increasing dramatically, going from 1,600 megawatts (mw) per year during the last decade to around 5,300 mw in 2012 (COCHILCO 2013a, p. 22). In order to attract further mining investments, the country has sought to intensify the development of low-cost power sources, and this means that thermal energy projects –especially coal and petcoke powered plants- have become the main drivers of resource extraction in Chile.<sup>98</sup> Between 1983 and 2000, there was a strong boom in the construction of thermoelectric plants, a boom which stagnated for three years and by 2004 showed a steady recovery.

Huasco is one of the four villages in the valley. With a population of 7,945 (BCN 2013, p. 3), it is located on the coast, near the mouth of the Huasco river. Before the irruption of the urban fabric in the 1980s, Huasco was among the main producers of olives and olive oil in the country, and it was known for the diversity of its fauna –with over 21 species endemic to the region- and for its beautiful beaches.<sup>99</sup> *Huasquinos* (the name for the people of Huasco) worked either at olive plantations, artisanal fisheries or in small-scale mining. Because Huasco is far from large urban areas, the community still retains a deeply engrained rural identity with very close ties to the land.<sup>100</sup> The arrival of large-scale transnational mining to the valley, however, distorted the patterns of metabolic exchange that had always gravitated around agriculture, and thus changed the fate of Huasco forever. This does not mean that previous histories of metabolic exchange in the valley as a result of migratory settlement, colonial rule and state-developmental projects, among others, were not problematic in their own right. Yet engaging in a discussion of previous trajectories and historical periods not only goes beyond the scope of this chapter, but could shift the focus of attention from the unprecedented patterns of sociospatial transformation that have followed the current hyper-globalised, financially-driven and industrially rejuvenated commodity boom.

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<sup>98</sup> There are no disaggregate figures of energy production for Huasco, and for that reason it is not possible to know exactly how much of it goes to powering mining activities. This information is only available at the national level. Members of the local community argue that the unavailability of local figures of morbidity and energy production is a deliberate attempt by the government to mask what happens in places like Huasco.

<sup>99</sup> Interview with a member of Freirina Conciencia, 5 December, 2013.

<sup>100</sup> Interview with a member of SOS Huasco, 5 December 2013.

Huasco's history with planetary urbanisation therefore dates back to the late 1980s, when international metal prices rose and foreign direct investment flowed haphazardly as a result of investor-friendly regulatory frameworks enacted during the Pinochet dictatorship (see Budds 2004; Alcayaga 2005; Infante 2011), when the need for low-cost energy became more pressing. Although the first two thermoelectric plants arrived during the mid-1970s, they did not cause considerable harm to the local community because aside from their small capacity, they were not working at full-power at the time. The first large-scale thermoelectric plant, Guacolda I, began operations in 1997, and although it was coal-powered, it had to switch to petcoke after a diplomatic crisis with Argentina resulted in the suspension of gas exports to Chile. The government of Ricardo Lagos sought desperately for low-cost ways to power thermoelectric plants and in 2001, approved the use of petcoke as the fuel for thermal energy production in many towns of Chile, including Huasco (Ramos 2011). Petcoke is a carbonaceous solid that is left over from oil refining processes and despite being extremely toxic and polluting, it is usually sold in international markets as a low-end fuel with an average cost of one US dollar per ton. The use of petcoke is currently banned in most countries with the exception of India, China and as of 2001, Chile (Ramos 2011).

These were the first steps in a process of extended urbanisation where infrastructures and built environments of this sort began to be projected aggressively across the once pastoral geographies of Huasco. Today, Huasco has six thermoelectric plants, three industrial sea ports, a large iron refinery and several industrial tailings ponds, as well as their concomitant road infrastructures, transmission lines, piping networks and heavy machineries.<sup>101</sup> The beautiful sceneries that once characterised this village are now interspersed with enormous chimneys, high tension towers, freight trains, cargo trucks and massive ships that continuously load and unload all sorts of materials. Besides the projects that are already in operation, there are further plans to build in Huasco's vicinities a titanium mine, a pork processing plant with the capacity for 3 million animals,<sup>102</sup> and Punta Alcalde, the largest thermoelectric plant in the country -with an estimated cost of USD 1.4 billion and a projected capacity to produce 740mw per year.<sup>103</sup> Huasco's sea ports, it should be noted, constitute the pivot that facilitates the ongoing metabolic interfusion between local environment and global flows. They constitute at once the entry point for fixed capital investments -in the form of systems of machinery- and

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<sup>101</sup> Interview with a member of SOS Huasco, 3 December 2013.

<sup>102</sup> Interview with a member of Freirina Conciente, 5 December, 2013.

<sup>103</sup> See <http://olca.cl/articulo/nota.php?id=101658>, and also <http://olca.cl/articulo/nota.php?id=102650> (accessed 17 January 2014).

for the petcoke and coal required for electricity generation, as well as the point of departure for raw materials that are continuously shipped to manifold destinations across the globe.

The devastating effects of these metabolic flows have not only transfigured the mountains and coastlines of Huasco, but also the very texture of everyday life among locals. Thus, as Ibañez and Katsikis (2014) argue, contemporary accounts of metabolism not only need to be reflexive to the spatially transcendent systems of flows, but also to emphasise “the physical configuration of human occupation ‘on the ground’” (p.6). In Huasco, the human body itself bears the imprints of these emerging patterns of exchange. Reportedly, *huasquinos* have been increasingly dying from cancer, leukaemia, strokes, heart attacks, as well as from several respiratory diseases, and children have been increasingly showing signs of cognitive damage.<sup>104</sup> A 2005 study of urine samples from children living in towns with petcoke-powered thermoelectric plants concluded that children living in Huasco presented “significantly higher” levels of nickel (see Pino 2005). This, the study argued, could be attributed to a synergistic effect caused by the combination of coal and petcoke fumes with the particulate matter emitted by the iron refinery (ibid, p. 28). Combined, these fumes release into the atmosphere 118,2 tons of carbon dioxide on a daily basis (Ramos 2011).

As a 2006 study by Universidad de Chile noted, mortality rates for women aged 20 to 44 in Huasco exceeds the national average by far. If the national average is 65.91 per 100,000 inhabitants, in Huasco the figure goes up to 236.78 (referenced in Ramos 2011, p. 58). Also, the rate of hospitalisations for respiratory conditions is twice that of the whole country, and deaths by cancer have been said to be 400% above the national average (see Ramos 2011, p. 58). According to members from the local community, there are no official illness reports for Huasco (all official statistics are aggregated at the regional level), because that would force the government to regulate emissions, ultimately undermining mining activity in the area. Nonhumans have also assumed the burden inflicted by these energy undertakings, because on the one hand marine fauna has either disappeared or is highly contaminated, and on the other olive trees have been greatly affected by air pollution, with harvests reducing to unprecedented levels (PUC and DICTUC 2013).

Expanding patterns of metabolic exchange have not been circumscribed to capital and raw materials only, for energy undertakings have also unleashed dense migratory flows. Many

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<sup>104</sup> Interview with a member of SOS Huasco, 4 December 2013.

*huasquinos* have been proletarianised, being forced to leave their families behind in order to work in mines located in other regions of the country. Also, as energy projects require large amounts of unskilled industrial labour force to work “7x7” shifts (seven days working at the industrial site, seven days away), the village has become the recipient of large numbers of floating populations. These temporary workers –informally called “*faeneros*” by the local community- come from all across Chile, and sometimes even from other countries, have no attachments to the host town, are usually underpaid and face overcrowding in their accommodations. As a result, social ills that were completely unknown to *Huasquinos* before the mining boom such as prostitution, theft, street fights, drug abuse and sexual assaults, are now common.<sup>105</sup> As Tsing (2005) observed of the case of Indonesia, the phenomenon of temporary work in extraction sites mixes locals and migrants in an anti-local regionality, resulting in a tendency to obliterate local places, knowledges, flora and fauna.

These processes of transformation of nature and of space on a massive scale have been completely veiled by an entrenched neoliberal rationale among national decision-makers and regulators. Government officials have not only ignored the situation in *Huasco* and several other operational landscapes throughout the country, but have implemented policies to intensify thermoelectric power production. For a movement leader, “although it is evident that emissions in *Huasco* exceed national and international standards by far, officials have been reluctant to do any serious measurement because they know that would jeopardise ‘business as usual’”.<sup>106</sup> One of the last regulations passed by former President Sebastián Piñera before the end of his term in office consisted of sanctioning a threefold increase in the amount of particulate matter that can be released by power plants into the atmosphere (50ug/m<sup>3</sup> to 150ug/m<sup>3</sup>).<sup>107</sup> Such processes of state-led sociospatial engineering not only affect *Huasco* but several other towns that have also been swept under the carpet as they have been overburdened with thermoelectric plants. *Ventanas*, *Coronel*, *Mejillones*, and *Tocopilla* are only a few of the villages that, like *Huasco*, have been banished from collective consciousness as government institutions make every effort to intensify resource extraction. Places like these, where nature is ceaselessly transformed into urbanisation at very large scales, are the geographical embodiments of up-scaled metabolic processes.

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<sup>105</sup> Interview with a member of SOS *Huasco*, 4 December 2013.

<sup>106</sup> Interview with a member of SOS *Huasco*, 4 December 2013.

<sup>107</sup> See Supreme Decree No. 20, published on 16 December 2013, in the Official Gazette.

None of those places, it should be noted, are featured in Chile's tourism guides, or are even celebrated as foundations of the country's economic growth. As framed by mainstream measures of economic success, Chile's macroeconomic performance during the last twenty years has been nothing short of outstanding. With an average growth rate of 5.7% of GDP, a fivefold increase in per capita GDP, huge reductions in public debt and recent admission to the OECD, Chile is praised by many as one of the most dynamic economies in the world (Chile's Ministry of Finance 2010, p.13). This myth of progress, however, has been fiercely contested by civil society organisations such as Oceana, which in 2012 launched a campaign in labelled "No More Sacrifice Areas" (*No más zonas de sacrificio*).<sup>108</sup> Its purpose was to raise awareness on the way in which poor, remote and rural areas –like Huasco- were being redesigned as industrial hinterlands to supply the low-cost energy required to power Chile's burgeoning economy. Just like Kaika and Swyngedouw (2000) argued that there is an aesthetic disconnection between the "ugly", "dirty" and "unsafe" urban networks from the actual city, places like Huasco have likewise come to be transformed into the underbelly of whole country.

The notion of "sacrifice area" is then aimed at piercing through a deeply entrenched urban fetish in which the socioecological plunder that underlies Chile's "economic miracle" is actually pocketed in mountains or buried in the vowels of the Atacama Desert, where neither tourists nor investors can see it. Yet, like the layers of cables, pipes and sewages that support a city, sacrifice areas like Huasco are nodes in a black-boxed network of operational landscapes that are fundamental for supporting processes of urbanisation unfolding at broader spatial scales. The more expanded the transformation of nature that infrastructural networks perform, the stronger the tensions and the contradictions embedded in the metabolic relation. In all possible ways, Huasco contrasts starkly with Santiago de Chile –which has become one of the most modern, wealthy and dynamic hubs in all of Latin America. However, and as the following section illustrates, such processes of urban fetishisation have been contradictory and highly problematic.

#### **4. The Limits to Capital as World-Ecology**

According to Moore's (2014) world-ecological reading of metabolism, there is an unbroken coincidence between the production of consciousness and global metabolic flows of matter and energy. In the case of Huasco, it is not difficult to note how the subjective experience of these expanding patterns of exchange profoundly punctuates the ways in which members of

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<sup>108</sup> Video clip of the campaign available at <http://vimeo.com/40473561> (accessed 18 January, 2014).

the local community conceive politics, society and the global economy. They frequently point out how their everyday lives are marked by loss and tragedy, as they all claim to have friends or relatives who are dying –or have died- from cancer, tumours or some other disease. Furthermore, the sheer magnitude of these industrial complexes also inflicts a sense of visual distress that is reminiscent of Edmund Burke’s (1968 [1757]) idea of the sublime as an aesthetic category that excites ideas of pain, danger and terror. In the words of a local musician and activist,<sup>109</sup> those gargantuan chimneys, tailings ponds, cargo ships and high tension towers have the appearance of something “devilish” that evokes an apocalyptic underworld of sorts.

Within the household, water canisters are as indispensable as is the stove or the refrigerator, because water from the tap cannot be consumed under any circumstances due to high levels of pollution. Constant traffic of freight trains and cargo trucks that pass through the village to load and unload materials not only produces anxiety among adults but has enclosed the spaces that were used by children to ride scooters, play football or do any other outdoor activities. For *Huasquinos*, the experience of these socio-natural relations is a thoroughly politicised one. This resonates with Goonewardena’s (2005) claim that daily experience of urban space determines our representations of the global structures of capitalism. *Huasquinos* are well aware of how the immediacy and seeming banality of these everyday events are intimately connected to the ebbs and flows of global capitalism. Since 2009, they have been taking to the streets, developing campaigns and forms of collective action aimed at defying oblivion and demanding their right to the city. Among the fumes, the dispossession and the socioecological destruction produced by energy megaprojects, *huasquinos* have been prefiguring new worlds and ways to be otherwise.

The construction of a pork processing plant in Freirina -the village contiguous to Huasco-, constituted a tipping point in the way in which communities produce everyday urban environments and relate to their territory. A 70,000 hectare plant with an established capacity for 2.5 million pigs –the largest of its kind in the world- was built next to Freirina, a village with around 5,000 inhabitants.<sup>110</sup> When the plant began operations in 2011, Freirina was immediately covered by foul smells and water sources suffered severe contamination. In other words, the externalised and hidden relations of under regulated agro-industrial production erupted into the surface, revealing the presence of the excluded ‘outside’ as a constitutive part

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<sup>109</sup> Informal conversation with one of the leaders of SOS Huasco, 4 December 2013.

<sup>110</sup> Interview with a member of Freirina Conciente, 5 December 2013.

of the 'inside' (see Kaika 2004). The sense of urban uncanny was intense not only in Freirina, but also in neighbouring villages –including Huasco- that were also affected by the trenchant smell of decomposing pigs.

*Huasquinos* were the first to show their solidarity and contributed actively to the campaign to stop the plant. In early 2012, they joined their comrades in Freirina in marches and demonstrations and after continued indifference from authorities, they decided to block the highway that connects Huasco to the rest of the mining district. What began as an urban uncanny unfolding at the local level quickly metastasised into a full-blown world-ecological uncanny that was widely covered by the media in Chile and led to severe market disruptions at the international level. Media images of protesting *Huasquinos* were broadcasted amidst tear gas, setting barricades on fire, clashing with anti-riot police and putting into jeopardy the smooth functioning of all power plants, agro-industrial complexes and mines operating in the area.<sup>111</sup> Using Kaika's (2004) terms, one could say they put the normalised character of the transformation and commodification of nature into question as they brought into view the hidden costs –both social and environmental- that underlie something as apparently mundane as buying pork at the supermarket. The case shocked public opinion, and made politicians, journalists and other commentators outspokenly condemn the practices of the plant owners.

At the end of the fifth day of road blockages that resulted in massive losses for mining corporations, as well as in market disruptions in many parts of the world –especially in China, where most of the pork meat, the copper and the iron ore are traded- the owners of the plant issued a statement declaring an indefinite suspension of all activities. It should be noted that this world-ecological uncanny was not only limited to glitches in market transactions, because analyses from Chile's Criminal Investigations Police found that the pork meat that was being exported to China contained levels of mercury poisoning that were 1,700 times above the norm.<sup>112</sup> The pigs had been bred with underground water sources which carried wastes and chemicals used in mining activities nearby. Thus, the extent of these metabolic relations also became embedded in the bodies of consumers in China who inadvertently bought meat from pigs that had been bred with highly polluted water recycled from mining and energy complexes, thousands of kilometres away from the point of consumption.

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<sup>111</sup> See report by DiarioUchile at <http://radio.uchile.cl/2012/05/19/vecinos-de-freirina-se-enfrentan-con-carabineros-en-protesta-por-empresa-agrosuper> (accessed 29 September, 2014).

<sup>112</sup> Interview with the leader of Movimiento Socioambiental Valle del Huasco, 5 December 2013.

Out of the chaos of such contradictions in the planetary system of metabolic exchange, this case demonstrates –as in Chapter Four- how the Lefebvrian whirlwind of multiplied urban encounters facilitates new possibilities for association and emancipation to emerge. In the words of a movement leader, “it was in the heat of these confrontations where new bonds of brotherhood and solidarity with *Huasquinos* began to take shape, as well as new forms of belonging and of relating to our territory”.<sup>113</sup> Indeed, the creation of the Huasco Valley Socioenvironmental Movement (Movimiento Socioambiental del Valle del Huasco), an advocacy network for the whole Huasco Valley whose sole purpose is to defend the access to water, was one of the outcomes of those roadblocks. Currently, the community is seeking to stop a transnational corporation from building Punta Alcalde, a thermoelectric plant with a projected capacity to produce 740mw and an estimated cost of USD 1.4 billion.<sup>114</sup> On 1 August 2013 the Court of Appeals of Santiago revoked the license to build the plant on the grounds of flawed assessments of environmental impacts.<sup>115</sup> Even though the litigation process continues and has had several setbacks, many *Huasquinos* remain fully mobilised against transnational capital.

These processes of social mobilisation have a fundamental material substratum, because the advance of material infrastructures for energy production has served as a springboard for the enactment of vibrant networks of interaction not only among the community, but also with neighbouring villages. Roads, internet connection, commuting networks and so forth, have followed the arrival of investment projects<sup>116</sup>. This resonates with Marshall Berman’s (1990 [1982]) claim that the modernisation of the city goes hand in hand with the modernisation of its denizens’ souls, because *Huasquinos* have adopted the fluid and open character of these sprawling infrastructural networks and have developed lively forms of communitarian and political organisation. Far from being particular to the case of Huasco only, and as Chapter One briefly illustrated, this phenomenon is instead becoming endemic to many parts of Latin America, where infrastructures for resource extraction –especially information technologies- are replacing isolation and parochialism with layers of political organisation and revolt. In Chile

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<sup>113</sup> Conversation with a leader of Freirina Concierte, 6 December 2013.

<sup>114</sup> See <http://olca.cl/articulo/nota.php?id=101658>, and also <http://olca.cl/articulo/nota.php?id=102650> (accessed 13 March 2014).

<sup>115</sup> See <http://olca.cl/articulo/nota.php?id=103375> (accessed 13 March 2014).

<sup>116</sup> Interviews with a member of the Latin American Observatory of Environmental Conflicts (OLCA), 23 December 2013, with a member of Semillas de Agua, 27 November 2013, and with a member of Consejo de Defensa Huasco, 29 November 2013. For example, one of the interviewees noted how Barrick Gold – one of the mining corporations operating in a neighbouring village, installed free wireless internet signal for everyone.



alone, and as of December of 2013, local communities had been able to put on hiatus USD 37 billion worth of energy and mining investments as a result of multiscale mobilisation strategies and legal proceedings.<sup>117</sup>

Social resistance has also been coupled with the intransigence of the natural environment, which in many cases has led to cost overruns for companies, making several megaprojects financially and logistically unviable. Penelope Harvey and Hannah Knox's (2012) ethnographic study of mega-infrastructure in Peru illustrates how engineers on the ground are constantly negotiating an engagement with the unpredictable, unruly forces of the biophysical environment, which takes on an "increasingly anthropomorphic guise as variously capricious, resistant, and exhibiting distinct likes and dislikes" (p. 528). The failure in Freirina's pork-processing plant, for example, was a result of miscalculation and of the unpredictability of the biochemical composition of water sources, and attests to the very limits that for Moore, constitute insurmountable frontiers for capitalist expansion. In the Huasco Valley, a combination of geographical and social factors has managed to stop a range of large-scale investment projects that includes not only two power plants in Huasco and the pork-processing plant in Freirina, but also Pascua Lama and El Morro, two gold mines whose combined capital expenditures to date amount to nearly USD 10 billion. The great accomplishment of the capitalist mode of production, Moore (2014) suggests, "has been not to pay its bills" due to the existence of vast social and ecological frontiers. The end of these frontiers today, he concludes, "is the end of 'cheap nature', and with it, the end of capitalism's free ride" (p. 17).

## **5. Conclusion**

As a bleeding wound in the surface of the Earth, Huasco encapsulates all the tensions and contradictions that underlie the relentless explosion of spaces that ensues market-driven forms of urbanising nature. Above all, this small village is the patent reminder that despite their apparent hyper-mobility and interconnectedness, contemporary processes of metabolic exchange effect profound socio-natural transformations upon spatially fixed physical environments. The case of Huasco, however, signals a break with some of the assumptions on which much of the scholarship on urban metabolism is grounded, because processes of metabolic exchange are no longer circumscribed to distinct regions evolving in relations of physical proximity or juxtaposition. The minerals extracted from the mines contiguous to

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<sup>117</sup> See website entry available online at the OLCA website: <http://olca.cl/articulo/nota.php?id=103832> (accessed 22 December 2014).

Huasco are not shipped to Santiago or to any other city in Chile, because its three international sea ports are there precisely to dispatch them to manifold destinations across the globe where they feed various layers of urbanisation processes. In that sense, the chapter has sought to make an original contribution to UPE's conceptual repertoires so that the focus on cities can be radically decentred in order to include other morphological expressions of urbanisation.

Also, this chapter has sought to answer the research question that asked about the types of fetishisation that emerge in a context of planetary urbanisation. As the case of Huasco exemplified, if urban infrastructural networks and the metabolic flows they perform have reached an unprecedented density and breadth, then this implies that the phantasmagoria that is attached to them has been equally up-scaled. Aerial images of tar sands in Northern Alberta, Canada, for example, epitomise how nature is being fetishised perhaps to an unparalleled extent, because despite their sheer size and devastating effects, we know they exist only because activists and politically committed photojournalists have made serious strides to debunk their fetish.<sup>118</sup> This new urban phantasmagoria becomes the more ruthless and eerie, the more familiar we become with the apparently banal and mundane objects that fill our (urban) everydayness. Questioning our most familiar environments, Kaika (2004) reminds us, is in itself an act of subversion, one that needs to be reinstated as a key priority in any project oriented towards human emancipation.

In answering the aforementioned research question, the chapter has also illustrated the importance to pay attention to the fact that the global up-scaling of social and ecological infrastructures is riddled with contradictions that not only lead to severe crises but also provoke intense feelings of anxiety and distress. Such scenarios of crisis and malfunctioning – which I have referred to as the “world-ecological uncanny”-, are crucial opportunities for reconfiguring our political engagements with the natural world, as they render visible the practices of exclusion and violence that underlie global forms of urbanising nature. The chapter that follows constitutes the final layer of analysis of this dissertation, and sets out to reveal how the historicity of contemporary forms of resource extraction has an intrinsically emancipatory potential not only in terms of properly instrumental political aims, but also in the radical transformation of everyday urban environments through artistic practice.

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<sup>118</sup> See for example the work of Garth Lenz ([www.garthlenz.com](http://www.garthlenz.com)).

## CHAPTER SIX

### Extended Urbanisation and the Transformation of the Art Form in Alto del Carmen

*For the perfect flâneur, for the passionate spectator, it is an immense joy to set up house in the heart of the multitude, amid the ebb and flow of movement, in the midst of the fugitive and the infinite... Thus the lover of universal life enters into the crowd as though it were an immense reservoir of electrical energy (Charles Baudelaire 1970 [1859], p. 9).*

*We are popular artists not because of our popularity, but because we are immersed in the working class (Victor Jara, folk musician murdered in 1973 during the Pinochet dictatorship in Chile).*

#### 1. Introduction

This is the final chapter of the dissertation, and although it expands and builds upon some of the ideas developed in Chapter Four regarding the politics of labour, it also steers away from the exclusively instrumental aspects of politics to also cover the aesthetic –an eminently sensuous, pre-conceptual dimension of social life. I consider this an adequate way to end the dissertation because the chapter responds to the last of the research questions, which asks about the particular artistic and cultural forms that emerge in a context of planetary urbanisation. In answering such research question, I intend to contribute to the literature on planetary urbanisation not only in terms of its political aspects but also in terms of the cultural and experiential basis that underpins it. According to Schmid (2014), analytical methods are not sufficient to fully grasp the extent of complete urbanisation and for that reason, it is important to recur to the analysis of forms of artistic expression like poetry, literature, film, and so forth. In exploring how the expansion of the urban fabric and its neo-industrial relations of production render new and exciting forms of ‘high culture’, this chapter seeks to grasp in the concrete, artistic act, the playfulness and beauty that for Lefebvre were also constitutive of urban life. The chapter does this by analysing the case of Alto del Carmen, the smallest village of the Huasco Valley, which has been radically transformed into a living artwork by Creando Valle, a local artist collective.

Lefebvre’s lifelong commitment to a materialist and praxis-based aesthetic led him to claim that the ultimate *telos* of both the city and everyday life was to become a work of art (an ‘*oeuvre*’ as opposed to a mere ‘product’) (see Lefebvre 1996, p. 147; 2000 [1971], p. 203-204).

For him, a true cultural revolution has no purely cultural aims, but needs to be directed towards experience, towards the material transformation of the everyday (2000 [1971], p. 204). Indeed, Lefebvre's commitment to the body and to the materiality of social life in general, Nadal-Melsió (2008) notes, calls for a reappraisal of the spatial where "the city functions like the aesthetic expression of the body in space – a work of art that produces knowledge as well as history" (ibid, p. 165). Therefore, and in a similar vein to Guy Debord and the Situationist project (see Debord 2006 [1957]; 2000 [1967]), Lefebvre argued against the encroaching rationalisation and reification of the modern city, where bourgeois high culture and spatial planning had eviscerated any possibilities for daring, play, and creativity (see Merrifield 2005, 2008). For both Lefebvre and Debord then, the city had to be reclaimed from these alienating tendencies by aiming at a revival of the festival, of the lived over the conceived and of use value over exchange value.

Well ahead of their time, Lefebvre and Debord envisaged a praxis-based aesthetic model that did not begin to take shape until the publication of Nicolas Bourriaud's now in/famous work *Relational Aesthetics* in 1998,<sup>119</sup> when participatory art became a mainstream phenomenon in city streets as well as in art galleries. For Dawkins and Loftus (2013), the artistic practices that have been proliferating after Bourriaud's work "take the sphere of human relations as the site and object of artistic production" (p. 671), and tend to radically decentre the author, positioning her within such imbroglio of social relations (ibid). In this emerging model of artistic practice, the finished work of art becomes less important than the creative act as such, because the aim is to restore a social bond through the collective elaboration of meaning (Loftus 2009, 2012; Bishop 2006; Bourriaud 1998). The main drivers of such relational aesthetic, Bishop (2006) and Rancière (2006 [2004]) have noted, are a perceived crisis in community and collective responsibility, as well as a desire to constitute an active subject empowered by the experience of participation.

The stream of relational aesthetics inspired by Bourriaud has nonetheless aroused fierce criticism from many fronts (see Bishop 2004, 2005, 2012; Rancière 2011 [2008]; Foster 2006 [2004]; Martin 2007), usually under the charge that it tends to produce utterly depoliticised 'microtopias' or 'micro-communities' where there is no inherent friction or struggle. Such

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<sup>119</sup> *Relational Aesthetics* is a landmark book in contemporary art history because it can be considered a manifesto of sorts for the emergence of a new paradigm of creative practice where the realm of human interaction –instead of the assertion of an independent symbolic space- constitutes the aesthetic horizon of the creative act (Bishop 2004, pp. 53-54).

discussions, however, tend to be underpinned by an abstract-declarative conception of politics in which the material and sensuous aspects of the aesthetic are excluded (see Dawkins and Loftus 2013). If the work of art is both work and a product of work (Jameson 1971; Nadal-Melsió 2008), then the ontological key to understanding the radical democratic/democratising potential of any aesthetic paradigm would lie above all in political economy. Lefebvre and Debord were well aware of this, and for that reason the praxis-based aesthetic envisaged by them during the 1960's was aimed first and foremost at overcoming the devastating effects of a Fordist-Taylorist economic system whose manufactured goods they saw as nourishing inactivity and non-participation (see Lefebvre 2008 [1961]; Debord 2000 [1967]). This chapter builds upon materialist readings of the aesthetic (Jameson 1971, 1991; Eagleton 1990; Negri 2011; Hardt 2005; Goonewardena 2005; Dawkins and Loftus 2013; Loftus 2009, 2012; Benjamin 2008 [1936]), to think about how recent transformations in the global economy can shed light upon the nature and political potential of participatory art and in so doing addresses the last of the research questions.

Specifically, I will contend that the passage from an industrial to an informational paradigm of production, as discussed in Chapter Four, has created the conditions of possibility for the realisation of Lefebvre's view of the city and the everyday as an *oeuvre*. If as Marx surmised in some of his early writings (see Marx 2007 [1844]; Marx and Engels 2002 [1848]; Berman 1990 [1982]; Starosta 2011; Hardt 2010), the historical transformation of social forms of labour is where the key to the abolition of capital –and thus to revolutionary subjectivity- lies, then a materialist critique of relational aesthetics necessarily has to explore the emancipatory potential embedded in contemporary means of production. If earlier stages of capitalist development underpinned vibrant forms of futurist, realist, impressionist and modernist art, I will argue that technological innovation in the age of internet-driven, microelectronic and financialised capital has enabled the artistic substance to assume novel and radically democratic forms. In proposing this argument, I explicitly shy away from deterministic readings of the art form that replicate a vulgar base/superstructure model. My understanding of cultural change, it is worth stressing, is inspired by Marx's view of technology as a force that

'reveals' our active relation to nature, and not as a causal agent in human evolution (see Marx 1976 [1867]; Harvey 2010, p. 193).<sup>120</sup>

The rapidly urbanising town of Alto del Carmen offers a very illustrative example of how transformations in the materiality of social life concomitant to extended urbanisation can result in new forms of creative praxis that extend not only to the built environment, but to the very confines of the everyday. With the arrival of Pascua Lama -one of the largest gold-mining projects in the world (see Chapter Three for a detailed description)- to its vicinities in 2001, Alto del Carmen became the recipient of massive investments in road, telecom and energy infrastructures. Therefore, and along with the arrival of economic and technological modernisation, the inhabitants of this town have been experiencing the socioecological degradation of their environs a result of mining activity. Since 2011, the local artist collective Creando Valle -aided by these new instruments of production- has been mobilising against Pascua Lama through street theatre, urban intervention, music and graffiti, and in so doing, has made of Alto del Carmen a living artwork that fiercely resists haphazard extractivism.

The chapter is structured as follows: To understand the emergence of relational aesthetics in operational landscapes as an offshoot of global-economic structures, the first section offers a periodisation of art that is analytically interwoven with the development of capitalist forms of production. On those grounds, the second section takes the periodisation a step further to argue that recent transformations in the social and technical composition of labour are what underpin new, politically radical forms of participatory art which are increasingly leaving art galleries and making urban space the medium not only for artistic expression but also for knowledge production. Finally, and after providing some contextual background on Alto del Carmen and the Pascua Lama conflict, I conclude by showing how Creando Valle has managed to realise Lefebvre's clarion call to make the city and the everyday an artwork. With this, the chapter aims at addressing one of the most important research questions of this dissertation, which has to do with the urban commons and political solidarities that emerge in the context of extended urbanisation in extraction sites.

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<sup>120</sup> Fredric Jameson (1971) has also argued that historical materialism, as a conceptual system, eschews deterministic readings of technological change because the concept of historical necessity or 'inevitability' is only operative *after the fact*. This means that it does not work as an *a priori* philosophy of history but rather as a canon of historical interpretation (ibid, pp. 361-362). Similarly, Bertell Ollman (2015, p. 18: see also Ollman 2003) considers the historical materialist method to constitute an *a posteriori* form of determinism because it is based on what actually occurred and not on what had to occur based on prior conditions. In his view, such deductive move is best described as "studying history backwards" (ibid, p. 18).

## 2. Economies of the Spectacle, Economies of Participation

For Fredric Jameson (1971), the work of art –invariably an external object produced for a public-, is seen from within to be a commodity of sorts, and thus reflects either directly or through its negation the relations of production of its historical period. In a series of letters on the nature of art written to some of his friends between the late 1980s and the late 1990s during his exile in France and subsequent imprisonment in Italy, and published under the title *Art and Multitude* (2011), Antonio Negri argues that artistic experience is necessarily imbricated with the structure and development of the mode of production. To show the historically contingent condition of art, he develops a periodisation that takes as its starting point the years following the industrial revolution. A first period comprises the years between 1848 and 1870, which for Negri, were characterised by “a massification –crude and powerful- of working class labour in all its materiality” (2011, p. 102). In art history, this period would correspond to ‘realism’, in which artists such as Courbet, Cézanne and Manet were driven by sheer sensuousness –rather than by conceptions- to depict the world they inhabited. In a 1945 essay on Cézanne, the French philosopher Maurice Merleau-Ponty described the painter’s commitment to realism by noting how every stroke of his brush reflected above all his devotion and fidelity to the visible world (Merleau-Ponty 1993 [1945]), a tendency that apparently was common among many artists at the time.

A second period, between 1871 and 1914, would correspond to impressionism. For Negri, this period is characterised by a deepening of the division and specialisation of labour that went hand in hand with the workers’ development of a “subversive project of the self-management of production” (2011, p. 103). During this period, Negri contends, the labourers realised that the capitalist world could be dissolved and rebuilt differently, and such dissolution and reconstitution of the world had powerful echoes in artistic expression. For Negri, the slogan “creation lay in dissolution” (ibid, p. 103), encapsulates the tensions and contours of impressionism, which is known for not aiming at precise representation of reality, but at the subjective interpretation of the artist (see Cuddon 1999 [1976]). During a third period, inaugurated by the Bolshevik revolution in 1917, the revolutionary impetus that had become widespread throughout the world was stifled by capitalism’s drive to establish further massification, new incentives for working-class consumption and systems of scientific rationality for manufacturing processes (i.e. Taylorism). Along with the abstraction in labour that resulted from these initiatives, artistic expression also began to develop in the abstract forms that came to be labelled ‘expressionism’. For Cuddon, expressionist artists “sought to

avoid the representation of external reality and, instead, to project themselves a highly personal vision of the world” (1999 [1976], p. 297).

With some slight variations, the third period continued until 1968, a time where abstraction – in both capitalism and art- was rampant, and which most certainly inspired Debord to write *Society of the Spectacle*, which was published in 1967, right at the pinnacle of this historical conjuncture.<sup>121</sup> Debord described an aesthetic that was completely detached from lived experience, where reality was replaced by representations and images (i.e. the spectacle) that were divisive, pacifying and led to false consciousness and heightened alienation (Debord 2000 [1967]; see also Debord 2006 [1957]). Two of Lefebvre’s works on everyday life were published around that period, and also reflect –albeit tangentially- on such aesthetic of spectacle and reification (see Lefebvre 2000 [1971]; 2008 [1961]). Lefebvre and Debord developed a close friendship during 1957 and 1963, a period where they influenced each other’s work (see Merrifield 2008). Although their friendship did not last very long, their shared views on Marxism, urbanism, everyday life and aesthetics are clearly evidenced in their subsequent writings, some of which became powerful influences for the uprisings of 1968 (ibid, p.183).

After 1968, however, Negri (2011) identifies a turning point that leads to a fourth stage in his periodisation, where a transition from a mass worker to a ‘socialised worker’ (*operaio sociale*) begins. After further developments in systems of machinery and information, Negri argues, work became diffused throughout the entire society (both within and outside the factory), as the scale of production became vaster and the integration of labour processes more complex than ever before (Negri 1989; see also Hardt and Negri 2004). Every subject in this productive complex became caught up in overpowering cooperative networks, and whereas the mass worker was animated by an awareness of cooperation bounded by areas of mass production, the socialised worker started to recombine “conception and execution within a universal horizon” (Negri 1989, p. 78).

The socialised worker thus internalises and appropriates for herself the cooperation necessary for work –a function that formerly pertained to the capitalist-, resulting in a magnification of collective consciousness (Negri 1989; see Chapter Four). From the point of view of art, this transition led artistic development to transform the abstraction of social relations into

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<sup>121</sup> It should also be noted that Roland Barthes’ essay *Death of the Author* (1973 [1967]) and Umberto Eco’s *The Open Work* (1989 [1962]), were also published in the 1960’s and to a certain extent also reflected on what they perceived to be the open nature of modernist art.



corporeal figures, giving importance to living bodies and the vitality of flesh (Negri 2011). In other words, the reign of images and reification described by Debord in the late 1960s began to tremble under this new productive paradigm, and for that reason *Society of the Spectacle* could be interpreted as the harbinger of a *fin de siècle* in art history –and in capitalist development as well-, because as Bishop (2006, 2012) notes, it was perhaps around the early 1970s when the first experiments with participatory art began to take shape. Since Negri's letters on art were written before relational aesthetics became a mainstream phenomenon, the author does not make any explicit reference to participatory practices as such. However, he in certain ways foresees this new paradigm of artistic expression by contending that after the transition to a socialised worker, the expressive act begins to re-envisage social communication, a communication that creates community and common projects (Negri 2011). Indeed, he goes on to argue that art lives by production to the same degree that production lives by the collective, a collective that increasingly seeks to find itself as a subject (ibid, p. 43).

The form of artistic expression that began to emerge from changes in the means of production, Rancière (2006) notes, does not respond to the excess of commodities and signs but to a lack of connections. "The loss of the social bond", he continues, "and the duty incumbent on artists to work to repair it, are the words in the agenda" (Rancière 2006, p. 90). The publication of Bourriaud's *Relational Aesthetics* in 1998 signalled the moment when participatory art began to spread like wildfire throughout galleries across the world. For Bourriaud (1998), encounters are more important than the individuals producing them, and so the artist usually has a hands-off approach where agency is delegated to the viewer, who becomes a key participant in the creative act (see Bishop 2005). Most importantly, the focus on immediacy is what characterises the type of relational art that followed the years after the fall of the iron curtain. Its purpose is not to set a utopian agenda towards social change, but instead to learn to inhabit the here-and-now in better ways (Bourriaud 1998). This is achieved by enacting what Bishop refers to as "microtopias" or "microcommunities" among viewers and artist(s), however temporary or ethereal they might be (Bishop 2005).

Liam Gillick, Rikrit Tiravanija, Pierre Huyghe, and Jorge Pardo, are some of the names commonly associated with this guise of participatory art, and their installations, sketches and performances have filled biennials, triennials and many other cultural/artistic events during the last fifteen years. A paradigmatic –and perhaps pioneering- example of this sort of relational art is Tiravanija's *Untitled (still)* installation performance at the 303 Gallery in New York in 1992 (see Bishop 2004; see also Martin 2007). For this installation, Tiravanija

assembled a kitchen, refrigerator and dining table inside the gallery, where he cooked curries for spectators and dined with them. During the time he was absent from the gallery, the utensils and food packets became the art exhibit (ibid, p. 56). Underlying this installation, Bishop notes, were the artist's desire "not just to erode the distinction between institutional and social space, but between artist and viewer" (ibid, p. 56). In the late 1990s, participatory artists decentred themselves even further by aiming at delegating full creative agency to their audiences, and participatory art achieved an even higher degree of relationality.

Despite the fact that Bourriaud's manifesto is clear in suggesting that the aim of participation in art, besides aesthetic, is ultimately political (see Bourriaud 1998), the notion of democracy and of community on which such work rests has been the subject of open questioning and criticism (see Bishop 2005, 2012; Dawkins and Loftus 2013; Rancière 2011 [2008]; Martin 2007; Swyngedouw 2002). Bishop, who is among the fiercest critics of this stream of participatory art, has argued that it too readily accepts the assumption that encouraging dialogue between viewers is unequivocally a good thing. Yet, the quality of the relationships that are produced is never examined or problematised by artists and curators (Bishop 2005). Using Laclau and Mouffe's (2004 [1985]; see also Mouffe 2005) notion of 'the political' as a dimension of social life that is intrinsically dictated by antagonism and disagreement, Bishop views participatory practices inspired by Bourriaud as thoroughly depoliticised microtopias that fail to "presuppose the viewer as a subject of independent thought, which is after all the essential requisite for political action" (Bishop 2005, p. 35). Rancière (2011 [2008]) on the other hand, goes even further than Bishop, as he even rejects the alleged assumption of participatory artists and curators that there is a distance between viewer and artwork that needs to be overcome. For him, the viewer has always been active and engaged, as "every spectator is already an actor in her story" (Rancière 2011 [2008]).

Although I agree with these criticisms to a certain extent, they nonetheless lack enough analytical traction to grasp the full extent of participatory art because they are underpinned by a vision of the aesthetic that is detached from the materiality and historicity of social life. Without being particularly idealist, such critiques retain some of the traits of a representational aesthetic that expels all sensuousness, leaving behind only reason and form (see Eagleton 1990 regarding the characteristics of the Kantian/idealist aesthetic). Dawkins and Loftus (2013) juxtapose this view to a Marxist aesthetic, which by contrast implies an "interrelationship between sensuous experience, practical activity, consciousness, creative practice and, ultimately, politics" (p. 668). As Eagleton has noted, aesthetics is above all a

discourse of the body; it constitutes the “first stirrings of a primitive materialism –of the body’s long inarticulate rebellion against the tyranny of the theoretical” (1990, p. 13). Marx, Eagleton notes, devotes much of his *Manuscripts of 1844* to thinking history and society, although from the body upwards (1990, p. 198). Since the subjectivity of the human senses is a thoroughly objective affair, Eagleton suggests, “it is only through an objective historical transformation that sensuous subjectivity might flourish” (1990, p. 202; see also Nadal-Melsió 2008). As such, Marx is profoundly aesthetic in his belief that the senses are alienated under capitalism, and so any unfolding of the repressed sensuous richness can only be achieved “through the rigorously instrumental practice of overthrowing bourgeois social relations” (Eagleton 1990, p. 202).

This is the view that leads Negri (2011) to develop a periodisation in which art history and political economy can be reconciled as two sides of the same coin. Such was also the view that underpinned much of Lefebvre and Debord’s thinking on aesthetics and creative practice. Therefore, to fully elucidate the nature, prospects and political potential of participatory art, it is important to transcend the immediacy of aesthetic contemplation and of situated artistic practices and turn towards recent historical transformations in the means and instruments of production. Although Bishop hints at the explanatory potential behind political economy by arguing that relational art can be interpreted as a response to the shift from a goods to a service-based economy (2004, 2005), her analytical focus remains tethered to what she sees as the post-political condition of some artistic practices. The purpose of the following section is therefore to take Negri’s periodisation a step further by investigating how recent transformations in the global economy can shed some light on the emergence of new forms of participatory art that besides being politically radical, have spilled-over from the safe and elitist spaces of art galleries to the noisy, more democratic realm of city streets, especially after the global recession that began in 2009.

### **3. Urban Space as Canvas**

If relational aesthetics emerged at a time and place (i.e. the 1990s and the Global North, respectively) when neoliberal capitalism seemed to be the ‘end of history’ (Fukuyama 1992), it is only natural that it was co-opted by capital from the very moment it set foot on this world. For that reason, and although I share Bishop’s frustration towards the seeming political irrelevance of what is perhaps an influential stream of participatory art, I nonetheless derive much hope towards its future given recent developments in the world economy. The passage from an industrial to an informational paradigm of production holds the potential to liberate relational aesthetics and realise Lefebvre’s call to make the city and everyday life a work of art.

As a modernist, Lefebvre was well aware that to realise itself in the city, art should necessarily dispose of “every technical means” aimed at transfiguring everyday life (Lefebvre 2000 [1971]). Indeed, some of Marx’s early writings are punctuated by his firm view on the fact that the conditions of possibility for a self-abolishing proletariat are likely to emerge from the very technologies of capitalist production developed by the bourgeoisie itself (Marx 2007 [1844], 1976 [1867]; Marx and Engels 2002 [1848]; Starosta 2011; Berman 1990 [1982]; Hardt 2010).

Although Negri’s letters on art were written at a time when the transition from a mass worker to a socialised worker was still under way, the works he co-authored with Michael Hardt in subsequent years (Hardt and Negri 2001, 2004, 2009, 2012) capture to full extent the revolutionary impetus embedded in late stages of capitalist development -an impetus that as we shall see, has percolated to artistic practice as well, especially after the 2009 global recession. As Chapter Four outlined, the city has become a crucial site of capitalist production and exploitation, as well as of worker organisation. Perhaps the cycle of struggles that began in 2011 with the *indignados* and subsequently advanced to city streets and squares of Athens, Istanbul, New York, Santiago de Chile, Cairo and Sao Paulo, among others, is perhaps a clear manifestation of how the city itself has become the *locus* of class-based mobilisation and struggle. These new geographies of labour have had a direct effect on participatory art, because from once being enclosed within the straitjacket of art galleries in the 1990’s, creative practices of many sorts have also been recently exploding into the city in recent years. Thus, a recent wave of urban artistic interventions and critical spatial practices, Loftus notes, “rather than seeing the canvas or oils as the starting point for a work of art”, make of the city itself the means of artistic production (2012, p. xi).

As well as responding to changes in structures of production, this emergent wave of artistic practices also reflects the nefarious consequences of a period of economic turbulence that was inaugurated with the 2009 financial crisis and that, as Douzinas and Žižek (2010) have noted, has metastasised into a fully-fledged political crisis of global proportions. However paradoxically it may seem, Peck et al (2012) have recently argued that the most perverse legacy of the global crisis has actually been “a further entrenchment of neoliberal rationalities and disciplines” (p. 265). Far from being hampered by these events, neoliberal capitalism has demonstrated that it thrives on crisis and devastation, and thus new waves of market disciplinary modes of governance are being enacted by multilateral organisations and national governments around the world (Peck et al 2012, 2013). Naturally, this has resulted in further

precarisation of labouring conditions and hence further alienation among workers<sup>122</sup>. Yet, Hardt and Negri are adamant in claiming that workers subjectivity is most swiftly created in the antagonism of the experience of exploitation (2004, p. 151), so the more acute the exploitation, the more arrogant and radical the production of revolutionary consciousness. Drawing from Marx's notion of 'labour as poverty' developed in the *Grundrisse*, they contend that the double character of poverty and possibility is what defines the subjectivity of labour with ever increasingly clarity in the age of flexible forms of production (Hardt and Negri 2004, p. 152-153). As we shall see in the following subsection, the evolution of participatory art not only resembles these transformations in productive structures but, most importantly, springs from them.

Writing in the 1980s Marshall Berman reflected on how modernism in art had become the quest for the pure, self-referential art object, one that was completely detached from its context (1990 [1982]). The proper relation of modern art to modern social life, Berman suggested, was no relationship at all (ibid, p. 30). The only permissible subject for a modernist painter for example, he continued, was the flatness of the surface where the painting takes place. What this meant was that ultimately, the medium was the message (ibid, p. 30). After some time, however, very few still endorsed this worldview, as art without personal feelings or social relations is likely to become arid and lifeless (Berman 1990 [1982], p. 30). One could argue that something similar has happened to participatory art, because from being detached from all social and political context and relegated to an exclusive set of galleries in the Global North, after the 2009 crisis it has acquired a new political impulse.

Most importantly, however, it has mirrored the tendency of labour to transgress the workplace (i.e. art gallery or workshop) and spread to the city, because as Loftus (2009, 2012) has observed, everyday urban environments have been increasingly becoming both the subject and the means of artistic production. Besides democratising the process of producing and contemplating art, Loftus notes, this has made the environment of the city "both a resource and a terrain over which democratic struggles to create a new reality might be conducted" (Loftus 2009, p. 327). In a sort of Lefebvrian universe that moves joyously and defiantly towards actuality, art has been furiously taking to the streets and transforming urban

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<sup>122</sup> In a recent report by the World Bank, it was noted how despite the fact that Latin America is among the regions with less unemployment, the quality of labour has deteriorated substantially during the last decade. Half of the region's population does not have any access to the pension system or to any sort of social security (World Bank 2013a, p. 30). This echoes Hardt and Negri's claim that "the more unregulated the regime of exploitation, the more work there is" (2001, p. 338).

environments into radically open places where the aesthetic now intermingles with the immediacy of everyday events. For Lefebvre, the highest mission of art is not to represent but to metamorphose the real, to transfigure the everyday (1988), an ambition that by all means is now central to the agendas of contemporary urban interventionists and street artists everywhere.

The fact that most of these urban creative practices are usually developed by artist collectives and not individual artists attests to the fact that the technical and social composition of production has percolated into artistic practice in terms of authorship, as they have assumed the eminently collaborative and networked character of immaterial labour. Space Hijackers, PLATFORM, Forays, City Mine(d) in the Global North (see Loftus 2009, 2012; Dawkins and Loftus 2013), as well as Toxicómano Callejero, Acciones Urbanas, Bache Multicolor and Grupo Toma in the Global South, are some of the collectives that reflect this new generation of participatory art. Although these emergent urban artistic practices are quite diverse (including street theatre, graffiti, installations, performances, and sketches among others), they are usually grouped under the label of ‘urban interventions’ (Loftus 2009) or ‘critical spatial practices’ (Rendell 2006). Moving between architecture, art and activism, these are above all forms of cultural resistance that seek to intervene in the everyday life of cities (Loftus 2009) and in so doing, to transfigure reality. In Latin America for instance, urban intervention has become very popular during recent years, and cities like Santiago, Bogotá and Sao Paulo have inaugurated their own festivals in which collectives from all over the world transform not only the built environment,<sup>123</sup> but the daily networks of interaction that constitute urban life in those cities.

For example, Grupo Toma -a Santiago de Chile-based collective-, has as its main objective the achievement of an empowered citizenry able to develop ideas which can lead to the transformation of public space. To achieve this, they recur to mechanisms such as *autogestión*, a concept Lefebvre himself wrote about at length (see for example Lefebvre 2009 [1966]), and to “self-construction, involving diverse actors and creating new networks of collaboration”.<sup>124</sup> In 2013, Grupo Toma built a labyrinth in a very crowded place of Santiago’s city centre with the

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<sup>123</sup> Hecho en Casa is Santiago de Chile’s main festival of urban intervention, which has taken place each year since 2012. In Bogotá, the Iberoamerican Festival of Theatre, which is one of the most established cultural events in the region, has recently devoted a section for artist collectives to develop urban interventions. In Sao Paulo, the Call Parade festival takes place once a year and consists of painting, intervening and decorating payphones throughout the city.

<sup>124</sup> <http://www.hechoencasa.cl/artists/grupo-toma> (accessed 16 May, 2014).

purpose of “disrupting the linear nature of mobilities ... thus enacting an independent world in which the passer-by feels the invitation to divert from her path ... responding to her own logics, creating her own spaces”.<sup>125</sup> In sum, and generally speaking, the words collectivity, space, knowledge, empowerment and community are what drive the agendas of these emergent urban interventionists. The resonances with the ontology of immaterial labour are manifold, as Dawkins and Loftus (2013) have argued that in general, these interventionist collectives tend to “move away from the production of objects for public consumption and towards a focus on transience, process and performance” (p. 672). Moreover, this focus on immateriality makes co-option, appropriation or commodification difficult to achieve (see Phelan 1993) and in so doing, enacts a type of artistic practice that eludes the capitalist economic context and the logic of the commodity.

In these types of participatory art there is indeed a political dimension that relational aesthetics (in Bourriaud’s guise) seemed to lack during its formative moments. This new political dimension, although usually ascribed to recent debates on the new communist thinking (see Dawkins and Loftus 2013; Roberts 2009), is in reality a result of transformations in the materiality of productive structures. Thus, by extending Negri’s periodisation of art to the current productive paradigm, a new breed of participatory art begins to emerge. More than fostering participation among viewers and facilitating the formation of microtopias, these new artistic practices seek to immerse the spectator within a context, one in which the everyday rhythm of the city is usually disrupted and where the spectator is invariably interpellated as a subject. The contexts in which the viewer is immersed usually collapse the interaction between linear and cyclical temporalities, something that according to Lefebvre (2008 [1961]) is a precondition for the transfiguration of the real and the everyday.<sup>126</sup> Also, knowledge and practice become tightly interwoven within this process of immersion, something that for Lefebvre was also integral to a radical transformation of the everyday.

These practices are therefore quite different from the ones that emerged in the late 1990’s, and although they are usually referred to as ‘post-relational’ or as ‘relational urban interventions’ (Roberts 2009; Dawkins and Loftus 2013), they nonetheless transcend relations and inscribe themselves within the very dialectic of historical change. For Berman (1990

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<sup>125</sup> Taken from their website at <http://issuu.com/guayoperez/docs/librolite5> (accessed 16 May, 2014).

<sup>126</sup> For Lefebvre, in the everyday experience, linear temporalities (the time scales of modern industrial society that are dictated by rationality and quantity) prevail over cyclical ones (those dictated by biological and physiological rhythms) (2008 [1961], pp. 49-50).

[1982], p. 145), modern art needs to continuously appropriate the vast transformations of matter and energy produced by modern science and technology. The real intent of the modern artist, Berman continued, is to re-enact such processes of historical change, to “put his own soul and sensibility through these transformations, and to bring these explosive forces to life in his work” (ibid, p. 145). The type of participatory art that has been emerging after the global recession in 2009 appropriates the explosive forces of technological modernisation and cooperative engagement, and it is precisely for that reason that it has been able to permeate the everyday and the confines of the city. For Charles Baudelaire, Berman argued, an art that is not *épousé* (married) with the lives of men and women in the crowd is not modern at all (ibid, p. 146). Therefore, an art that is only relational but that fails to connect such relations to the context in which they are embedded is destined to keep reproducing the naïve and depoliticised microtopias that have been arousing so much criticism since the late 1990s.

Within a context of planetary urbanisation, it becomes clear how the rapid transformations in the materiality of social life affect the ways in which sociality itself is produced. As Hardt has noted (1999), “humanity and its soul are produced in the very process of economic production” (p. 91). Thus, places that are becoming rapidly urbanised offer privileged vantage points to get a glimpse of how processes of economic modernisation have direct repercussions in the way in which their inhabitants and communities begin to view and appropriate the world. If Chapter Four examined the transformations in patterns of political mobilisation in communities living in the Huasco Valley as a result of processes of extended urbanisation, this chapter goes a step further and investigates how art is produced in this context. Insofar as the artistic act is an end in itself (Eagleton 1990), looking at transformations in artistic practices within a context of extended urbanisation can definitely illuminate important social and political lessons not only about the global urban condition, but about social life in general. The remainder of this chapter then analyses the case of Creando Valle, an artist collective based in Alto del Carmen, one of the four villages of the Huasco Valley. In mobilising against Pascua Lama –a gargantuan mining project adjacent to the village-, Creando Valle has not only made of Alto del Carmen a living artwork, but has extended the creative act itself to the everydayness of its inhabitants.

#### **4. Everyday Aesthetics in Alto del Carmen**

Alto del Carmen is a village located in the Chilean Andes at 674 metres above sea level and 704 kilometres north of Santiago de Chile. It is one of the four villages of the Huasco Valley. With 4,808 inhabitants as of 2012 (BCN 2013), the main economic activity of Alto del Carmen is fruit



production, especially grapes for distilling Pisco and also for export (Urkidi 2010).<sup>127</sup> Although since the mid-1980's irrigation technologies for fruit production required a certain supply of wage labour and the industrialisation of agriculture, most of the farming lands are still owned by smallholder producers, who also usually herd livestock (Urkidi 2008). In the village, the river fosters a culture of strong attachments to its waters, which not only are used for agriculture and herding, but also for human consumption and recreational activities (Salinas 2007). Although there are indigenous settlements of the Diaguitas people in the areas contiguous to Alto del Carmen, in the village itself the majority of its population considers to be non-ethnic or *mestizo* (BCN 2013). Because Alto del Carmen is pocketed high up in the mountain range, its community has developed in considerable isolation from the rest of the villages in the valley, and perhaps for that reason is the one with the strongest rural identity.

After the governments of Chile and Argentina signed the binational mining agreement analysed in Chapter Two, Barrick Gold arrived in the areas contiguous to Alto del Carmen to develop the Pascua Lama gold-mining project. As previous chapters have illustrated, Pascua Lama is among the largest untapped gold deposits in Latin America, and because of the scale not only of its mineral wealth but also of its extractive infrastructures, is usually considered the largest, low-cost mine in the world (see De los Reyes 2014). The mine is located in the Chile-Argentina border at 4,600 metres above sea level and roughly 80 kilometres away from Alto del Carmen, and due to fluctuations in international gold markets and domestic hindrances such as continued civil society opposition and regulatory penalties as a result of the company's bad practices, the mining project has been put on hiatus several times. Despite the setbacks, however, mineral forecasting and extraction activities have produced severe and irreparable damages to the glaciers Toro I, Toro II and Esperanza and as a result, have reduced considerably the flow of the Huasco River, resulting in adverse impacts for agriculture in the whole valley (see Molina and Yáñez 2008).<sup>128</sup>

The modernising effect of nearly USD 7 billion in capital investment has been fully felt on the ground, because during the last decade the village has witnessed the arrival of diverse infrastructures not only for transportation, energy transmission and production, but for telecommunications as well. Reportedly, Barrick Gold paved the road that connects Alto del Carmen with the rest of the valley, and in order to mitigate resistance from the local

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<sup>127</sup> Pisco is Chile's traditional alcoholic beverage, distilled from grapes.

<sup>128</sup> Interview with a member of the local Association of Farmers and with a member of the Consejo de Defensa del Valle del Huasco, 29 November 2013 and 2 December 2013, respectively.

community, has made considerable investments to improve the material infrastructures of the village.<sup>129</sup> Besides funding community projects (education, health and support for smallholders) and the construction of schools (Salinas 2007), the company has also introduced the information technologies required for its forecasting and mining activities and as a result, the people of Alto del Carmen have now access to cellular phones, internet, television and radio. In addition to distributing laptop computers to some members of the local community, the company even installed wireless internet connection in the town square so that it could be used free of charge.

Besides material infrastructures, Alto del Carmen has also witnessed the burgeoning growth of the tertiary sector described in Chapter Four –a phenomenon that cuts across all of Chile’s mining districts. Although there is no disaggregated data available for Alto del Carmen, the changing character of the technical and social composition of labour can be clearly evidenced when speaking to the local community and inquiring further on the economic activities that have emerged with the arrival of Barrick Gold. Although this does not mean that Alto del Carmen has been fully subsumed by an informational type of capitalist production, it reinforces Dean’s (2012; see also Hardt and Negri 2004) claim that information technologies – and their concomitant effect on the labouring activity- have become inextricably linked with primary and secondary sectors of the economy. This phenomenon also attests to Hardt and Negri’s (2001) claim that despite the fact that immaterial labour is concentrated in more developed countries of the world, it nonetheless exerts hegemony over many other countries.

Within this context of dizzying transformations in productive structures, landscapes and built environments, an equally intense transformation of the internal landscapes of the inhabitants of Alto del Carmen has also been taking place during the last decade. Although the process of extended urbanisation that has been unfolding in the village is not captured by mainstream measurements of urban change -official reports for example still regard Alto del Carmen as ‘rural’-, the projection of these infrastructures across its geographies have by all means resulted in material and representational productions of new socialities and new urban environments. Most importantly for the purpose of this chapter, the type of artistic practice that was discussed analytically in previous sections and which reflects the hegemony exerted by immaterial labour, has been recently taking to the streets of Alto del Carmen and producing lively, colourful and democratically open urban landscapes.

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<sup>129</sup> Interview with a member of the Consejo de Defensa del Valle del Huasco, 3 December 2013.

In 2012, a group of local artists and activists founded Creando Valle, a collective whose purpose is to exert cultural and artistic resistance against large-scale mining in the valley and in so doing, to invent new ways of creating and of relating to self and others.<sup>130</sup> In the words of a founding member, by opposing large-scale mining through creative practice, Creando Valle not only intends to “rescue local culture and identity”, but seeks “to develop a politically committed art that serves the people and that simultaneously dignifies the artist”.<sup>131</sup> Therefore, she continues, Creando Valle could be thought of as “the people in art, the people turned into art”. Consequently, and inspired by Antonin Artaud’s dictum that “truth is in the streets”, Creando Valle has taken theatre off the stage where it can interact with real characters such as public officials, local organisations and the media and, in sum, has sought “to use public space as a medium of expression”.<sup>132</sup> This has clear resonances with contemporary labour geographies that, instead of being circumscribed to the workplace only, spill over to the domain of the urban. As was discussed in previous sections, this very decentring of the labouring activity began to percolate to the sphere of artistic practice through what Dawkins and Loftus (2013) refer to as “relational urban interventions”.

In what perhaps could be regarded one of its most remarkable performances, during the celebration of the village’s local festivities, a member of Creando Valle made an unexpected impersonation of the mayor of Alto del Carmen, who had allegedly received funds from Barrick Gold for her campaign. Disguised with a wig, a mask, a presidential sash and a folder packed with fake US dollars and a sign that read “Barrick”, the actress walked around the town square where the community was gathered, eagerly waving at everyone as if she indeed was the town’s mayor. The purpose of this impersonation, the actress argued, was to denounce before the community the mayor’s conflicts of interest and lack of transparency. Everyone, including the mayor, watched the performance and as soon as people realised whom was the actress impersonating, there were bursts of laughter and applause among the crowd, followed by a disproportionate and violent reaction by the police. Around seven police officers aggressively grabbed the actress, put her into a police truck and took her to a cell where she was detained for 24 hours.<sup>133</sup>

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<sup>130</sup> Interview with a founding member of Creando Valle, 1 December 2013.

<sup>131</sup> See interview with Valeska Urqueta by Marcela Pulgar (2013) published online at: <http://verdeseo.cl/2013/06/01/vivir-en-un-oasis-con-rostro-de-mujer/> (accessed 20 May 2014).

<sup>132</sup> See interview by Marcela Pulgar (2013).

<sup>133</sup> Interview with a founding member of Creando Valle, 1 December 2013.

Most paradoxically, the impersonation reached its creative and discursive pinnacle in the exact moment when the actress was being detained by the police, as journalists took photos that were published in the main regional newspapers the following day. In those photos, police officers themselves –without knowing- were also dragged into the impersonation, because precisely the image that the actress wanted to convey was that of a corrupt public official being arrested for accepting Barrick Gold’s money. In Lefebvre’s view, the peasant festival is a moment of rupture and of spontaneous eruption where by looking at the past, one can get a glimpse of the future (Merrifield 2006; Loftus 2012; Lefebvre 2000 [1971]). In that moment of pure rupture and pure immediacy, which was captured graphically by local newspapers, anticipations of the still unrealised possibilities of participatory art begin to be perceived. If as Walter Benjamin (2002 [1982]) surmised, the image is ‘dialectics at a standstill’, the photo of an artist making a performance with the police could constitute an archetype for the participatory art that is likely to punctuate an urban world that is increasingly dictated by political turbulence and revolutionary impetus.

The production of emancipatory consciousness, which underlies the networks of production that have been projected across the valley, is also one of the main aims of Creando Valle. For one of its founding members, “the lack of attachments to the land and the loss of cultural identity is what allows mining companies like Barrick Gold to displace and dispossess communities”.<sup>134</sup> For that reason, the name of the collective reflects their aim to create (*crear*) the social bond and the attachments required for the community to oppose the adverse effects of transnational mining in its territory. For that reason, in 2012 Creando Valle invited a hip hop artist and social activist named Guerrillerokulto to Alto del Carmen with the purpose of developing a workshop on “rhymes and hip hop culture” with the local youth. For several days, Guerrillerokulto shared thoughts and experiences not only on music, but also on the importance of knowledge, culture and the learning process as such. At the end of the workshop, they composed a song together in which the youths contributed with their own rhymes and where they reflected not only on their bonds as a community but on the beauty of Alto del Carmen and its surroundings. Most importantly, a member of Creando Valle noted, throughout the process the kids developed self-confidence and learned to express themselves before others.

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<sup>134</sup> Interview with a founding member of Creando Valle, 1 December 2013.

In an essay written in 1993, Marshall Berman reflected on how rap music, despite usually being associated with urban marginality and social decay, could paradoxically work as a potent medium of education. For Berman, rap was able to realise itself as an instrument of critical pedagogy when instead of reproducing the romance of violence, drug and alcohol abuse, rejected it as a fatal lack of knowledge –something that he observed at that time in rap artists such as KRS-One and Public Enemy. In an era of massive attacks on public education, Berman (1993, p. 13) concluded, “rap and rappers at their best manage, ironically, to be a thousand points of light”. Furthermore, and among all forms of artistic expression, hip hop music could arguably stand out as the one which has succeeded the most in appropriating for itself the rhythms and dialectics of technological modernisation that are immanent to capitalism. Created in the 1980s by people who could not afford to buy instruments or music lessons, rap democratised the production of music by relying almost exclusively on the advantages provided by mass technology (i.e. audio sampling and recording). In an interview, Guerrillerokulto notes how in Latin America, the very accessibility of hip hop –whose production only requires a recorded track and a boom box-, has made of this genre the new ‘folk music’ among the urban poor who see it as a way of escaping delinquency and marginality and becoming popular artists.<sup>135</sup>

Another aspect that reflects Creando Valle’s immersion within the context of historical change is its proficiency in the use of social media. Access to the internet is another factor that has contributed substantially to Creando Valle’s project to extend the aesthetic experience to all of Alto del Carmen. With the aid of Facebook and Twitter, members of the collective have been able to network with other artists across the whole country and host different types of events. In 2013, the collective celebrated its first anniversary with the attendance of over 70 artists from many towns and cities of Chile.<sup>136</sup> In the event, which lasted two days, artists and the local community enjoyed street theatre, dance, poetry readings, music, and also painted murals and graffiti in many streets of the village –most of which are allusive to its landscapes, flora and fauna (see Figure 6.1). The purpose of having those murals in the streets of the village, a member of Creando Valle argued, is not only to embellish the built environment but also to raise awareness among the local community of what is at stake if Barrick Gold pursues forward its multi-million dollar mining project.<sup>137</sup> As a result of these emerging networks of

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<sup>135</sup> Interview with Guerrillerokulto by *La Makinita*, published online at [http://www.lamakinita.com/artistas/guerrillero\\_okulto/index.html](http://www.lamakinita.com/artistas/guerrillero_okulto/index.html) (accessed 21 May 2014).

<sup>136</sup> See blog entry by Marcela Pulgar at: <http://www.futurorenovable.cl/2013/10/artistas-se-reunieron-en-alto-del-carmen-para-protger-el-agua-y-los-glaciares/> (accessed 21 May 2014).

<sup>137</sup> Interview with a member of Creando Valle, 2 December 2013.

interaction, which have largely been facilitated and enhanced by the use of information technologies, a Lefebvrian cultural revolution -one in which culture is not an institution but a style of life (Lefebvre 2000 [1971], p. 203-204)-, has been taking place in Alto del Carmen.

**Figure 6.1**  
**MURALS IN ALTO DEL CARMEN**



**Source:** Author.

Creando Valle is aware of how important it is to involve the local community in its artistic project, and so the collective regularly organises “work brigades” to clean the river, paint murals, play music or make crafts.<sup>138</sup> In other words, the artistic act is stripped down of its otherworldliness and brought to the level of the everyday where it can interact with the inhabitants of the village and make part of a collective endeavour. It is in these sort of events where the traces of Lefebvre’s cultural revolution become visible because for him, the word “creation” should no longer be restricted to works of art but “signify a self-conscious activity, self-conceiving, reproducing its own terms, adapting these terms and its own reality ... being its own creation” (2000 [1971], p. 204). The resonances with Marx’s vision of art under his idea of

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<sup>138</sup> Interview with a member of Creando Valle, 2 December 2013.

communism are also manifold, because he does not imagine a society where everyone is surrounded by works of art, or where everyone is a painter, poet or musician (Lefebvre 2008 [1961], p. 37). Rather, Marx imagines a society where “everyone would rediscover the spontaneity of natural life and its initial creative drive, and perceive the world through the eyes of an artist, enjoy the sensuous through the eyes of a painter, the ears of a musician and the language of a poet” (Lefebvre 2008 [1961], p. 37).

Perhaps some of the lyrics of the song composed by the local youth and GuerrilleroKulto evince the sensuous emancipation being experienced by the former through collective engagement and everyday creative praxis. In this song, one of the oldest in the group takes the lead: “We are not delinquents, just a group of people making good music straight from Atacama ... here art is lived and rhymes are given away for free, they stand out in a more peculiar, more unique way.<sup>139</sup> [In Alto del Carmen] There are many artists that at night paint, putting forward their resistance through lively colours”. Another, discernibly younger participant continues: “(we want) Street music so that people shout out loud, and rap enters this valley and flows through it”. Subsequently, one of them celebrates the way in which the workshop and rap music have interpellated him as a subject: “Before, I did not have a voice and now I can speak out loud thanks to hip hop”.

If communism is necessary, Eagleton (1990, p. 101) suggests, is because we are unable to touch, smell, hear and see as fully as we might. Therefore, if the goal of Marxism is to restore to the body its plundered creative powers (ibid, p. 201), then Creando Valle deserves much credit for unfolding the sensuous richness that has been alienated from the people living in Alto del Carmen since the arrival of Barrick Gold. Needless to say, the arrival of the company - along with its countless millions of dollars on capital expenditures- has distorted all social relations and all objective reality, not only fostering division and antagonism within the community, but ravaging the fragile ecosystems that sustain the village. Yet, Creando Valle itself is an offshoot of urbanisation and technological modernisation in Alto del Carmen, so by using the instruments of production brought by the company itself, it has managed to work towards the sensuous emancipation of the community. Thus, the case of Alto del Carmen evinces how changes in the technical composition of labour, despite sometimes intensifying exploitation and alienation, also create the means by which the city and the everyday can shed

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<sup>139</sup> Atacama is the region where the Huasco Valley is located. Translations into English are my own.

the prison of the commodity form and move towards their radical transfiguration into works of art (*ouuvres*).

## 5. Conclusions

As a modernist, Lefebvre was aware that a cultural revolution –understood as social praxis becoming aesthetic-, would require further developments in systems of machinery and further layers of technological innovation, and that is why his clarion call to make everyday life a work of art is also accompanied by a call to mobilise “every technical means” (Lefebvre 2000 [1971], p. 204) required for the realisation of such purpose. Also, he was fervent in his belief that the conditions of possibility for the realisation of philosophy as art in social practice -which would also pave the way for a self-abolishing proletariat-, would necessarily spring from science and technology (see Nadal-Melsió 2008, p. 166). Unfortunately, he did not live to see the shift from an industrial to an informational paradigm of production and the spectrum of possibilities it has opened for the radical transfiguration of the everyday. By grounding my argument on materialist readings of the aesthetic, I have answered the last of the research questions, which aimed at understanding the relation between planetary urbanisation and the art form. In so doing, I have stressed that the relation between technological change and ‘high culture’ is not causal but dialectical, and this means that the two unfold openly without any of them acting as a historical determinant of the other.

To adequately answer the aforementioned research question, I have grounded the analysis in the case of Alto del Carmen, analysing the ways in which the emerging character of participatory art can create conditions of possibility for the realisation of Lefebvre’s idea of the city and the everyday as an *oeuvre*. The way in which artistic practice has been percolating deep into the fabric of everyday life in this small village allows drawing important social and political lessons about the emancipatory potential of extended urbanisation. The types of artistic practice taking place in Alto del Carmen evince a broader, global phenomenon that has followed the global recession and the subsequent entrenchment of neoliberal discipline, making participatory art mirror the tendency of labour to overflow the workplace and spill over to the domain of the urban. Relational art is increasingly leaving galleries and seeking the streets as the place to unfold its creative and political potential, and the emergence of many collectives and festivals whose purpose is to use urban space as a medium of expression attests to such trends and transformations in the global economy. With the arrival of large-scale mining and its gargantuan material infrastructures to Alto del Carmen, the possibility for an emancipation of the senses has been moving steadily towards actuality since Creando Valle



was founded in 2012. Hence, this small village may well be an archetype for the future worlds that are likely to emerge after the supersession of bourgeois society, where as Guy Debord argued, “there will be no more painters, only situationists who, among other things, make paintings” (2006 [1957], p. 99).

## CONCLUSION

This dissertation has offered an analysis of the processes of sociospatial reconfiguration taking place in the Huasco Valley in the wake of one of the longest, most intense commodity booms in recent world history. A combined context of industrialisation of the Global South (especially in Asia), urban and neoliberal regulatory restructuring, and technological innovation have rendered a comprehensive paradigm of territorial transformation that ceaselessly encloses places like the Huasco Valley to serve as operational landscapes of urbanisation. As David Harvey (2006 [1982]) suggests, the historical geography of capitalism is nothing short of remarkable. People living in an incredible variety of cultural and physical circumstances, he observes, “have been welded, sometimes greatly and cajolingly but more often through the exercise of ruthless brute force, into a complex unity under the international division of labour” (2006 [1982], p. 373). With the planetarisation of the urban, which implies not only the relentless growth of cities but the continuous fabrication of operational landscapes to cope with the material and logistical requirements of demographic concentration, the ‘welding’ of territories described by Harvey in 1982 has been accelerated and intensified dramatically.

The case of the Huasco Valley is therefore very illustrative of a process that is taking place across vast stretches of the world, and evinces the fact that –as Lefebvre observed (2009 [1980]-, the production of peripheries, as well as their subsequent domination and depredation, is an intrinsic moment within the expansion of the urban fabric across the planetary landscape. In Chile, the growth and consolidation of the capital Santiago as one of the most modern and wealthy cities in Latin America –and praised by many as the materialisation of the ‘virtues’ of neoliberalism-, has gone hand in hand with the continuous production of places like the Huasco Valley. Tocopilla, Coronel, Mejillones, Ventanas, Copiapó, and the Araucanía, are but a few of the places that –like the Huasco Valley- contrast starkly with Santiago’s spectacular growth. Their existence, however, has been occluded and rendered invisible and, as a result, the wider public is unaware of the processes of enclosure, dispossession and socioecological plunder taking place in the constellation of extended forms of urbanisation that gravitate around Santiago. One of my main objectives with this thesis has been to make places like these visible, and in so doing, to introduce contemporary forms of resource extraction directly into the research agenda of a reformulated urban political economy.

Ultimately, this is the political project that underpins the emerging field of planetary urbanisation. By placing the analytical lens exclusively on cities, Brenner (2014) argues, urbanists are unable to perceive the dense rhizomes of operational landscapes that are being comprehensively engineered and redesigned, only to be commodified and destroyed in order to feed an explosive rate of urban growth. Under a city-centric framework, Brenner adds, such forms of mass dispossession and displacement are uncritically catalogued and even glorified as ‘rural to urban demographic change’ (see Brenner 2014, p. 20; see also Brenner and Schmid 2013). As was argued in Chapter Five, such occluded operational landscapes nonetheless erupt violently to the surface from time to time, reminding city-dwellers of the frail socioecological relations that enable the existence of internet, mobile phones, subway lines, cars and fast food. In April 2015, for instance, several days of intense rainfall in certain parts of the Atacama Desert led to one of the most devastating landslides in Chile’s history, with hundreds of homes destroyed, dozens of people dead and multimillion dollar losses in economic activity. One of the most affected towns was Copiapó, a traditional mining district two hundred kilometres north of the Huasco Valley. In the aftermath of the landslide, civil society organisations and community leaders noticed that the mud covering a large part of Copiapó actually contained highly poisonous chemicals leaking from tailings dams located in the mountain range (Semillas de Agua 2015).

What was initially thought to be ‘just a landslide’ has been gradually escalating into a full-blown environmental catastrophe that is thought to be able to unleash cancer and tumour pandemics, respiratory diseases of all sorts and even malformations among future generations. As I write, the extent of the leakage from tailings dams is still uncertain and the mainstream media and government have been accused of occluding information. It has been reported that there are around 100 abandoned tailings dams only in the Copiapó region, all of which are likely to burst open after situations like these<sup>140</sup>. As a result, a sense of world-ecological uncanny is increasingly suffusing Chilean social media, independent newspapers and even certain segments of mainstream journalism that are becoming aware of the violence that is silenced when things are working smoothly. Throughout the six chapters of this dissertation, I have intended to systematically render into view such forms of violence which, far from being incidental or random, are instead immanent to the process of metabolic urbanisation and the mediation of capitalist social relations.

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<sup>140</sup> According to OLCA, there are around 600 tailings dams in Chile, 244 of which are currently inactive (<http://olca.cl/articulo/nota.php?id=105257>, accessed 20 April, 2015).

## **1. Planetary Urbanisation as an Analytic for the Political Economy of Resource Extraction**

This dissertation is underpinned by the overarching assumption that Lefebvre's notion of planetary urbanisation holds great explanatory potential for making sense of contemporary forms of resource extraction and their effects upon ecosystems, territories and ways of living. Under the current framework of urban change, cities and non-cities are becoming increasingly interconnected through wide-ranging and dense infrastructural networks that serve as the material basis for global circuits of capitalist production, circulation and exchange. Mines, oilfields, fisheries, power plants, agro-industrial and forestry complexes constitute the precondition for the very existence of modern urban life and in that sense they need to be understood as internal to the urban world. Through a sustained engagement with the case of the Huasco Valley, I have sought to reveal several dimensions of those relations of mutual transformation. In order to contribute to future studies on planetary urbanisation and resource extraction, I have also sought to extend my analysis beyond the limits of the Huasco Valley and consider the broader context of sociospatial change not only in Chile, but in Latin America as a whole.

For that reason, Chapter One offered an analysis of the political economy of the commodity boom and of the region-wide transformations it has summoned into being. In this chapter I showed how dense flows of foreign direct investment have radically transformed regulatory frameworks, urban geographies, material infrastructures and social relations in deeply problematic ways. In that sense, Chapter One answered the research question seeking to understand the processes of urban and territorial transformation following the commodity boom. The uneven geographies of the urban fabric, I argued in that chapter, are summoned into existence by a contradictory tension between spatial homogenization –in the form of multiscalar governance frameworks and infrastructural programs-, and territorial fragmentation –in the form of fixed capital allocations and state-led spatial segregation. Such contradictory movement, the chapter concluded, allows one to grasp to full extent the relentless explosion of spaces that according to Lefebvre, characterises capitalist urbanisation, and that is clearly evidenced in Latin America under the commodity boom.

Despite the global scope that characterises many of the processes described in Chapter One, the nation-state remains a fundamental mediating agent in the outburst of the urban fabric across hitherto non-urban geographies. For that reason, the aim of Chapter Two was to answer the research question concerning the role of the state in the production of extended forms of urbanisation and the way in which such large-scale territorial transformations

demand new ways of engaging with UPE's conceptual framework. Drawing from some elements of world-ecology and the performativity of economics, I offered an exploration of the role played by technocratic rule and neoliberal policy toolkits in the design of an export-oriented economy in Chile. Most importantly, I explicitly illustrated the geographical embeddedness of such economic models and ideas, and the way in which they gradually actualised the conceptions of society and territory they represented. This encompassed an analysis of legal and regulatory frameworks for water, electricity, mining and investment, and the types of territorial transformations they produced. The broad-ranging effects of these regulatory frameworks supersede distinct spatial categories of city and non-city and for that reason, the chapter argued for the need to broaden UPE's analytical repertoire.

Chapter Three analysed the role of finance capital in the processes of extended urbanisation taking place in the Huasco Valley. The purpose of this chapter was therefore to answer the research question that related to the role of finance in the production and reproduction of operational landscapes in the context of the commodity boom. In answering such question, one of the most important conclusions consisted of determining how an investment ethos that has become utterly disciplined by the logic of finance in the mining industry, has resulted in devastating effects at extraction sites. Using the case of the Pascua Lama mine I showed how, in order to yield ever increasing returns for shareholders, the corporate management has been forced to implement an extremely disciplined capital allocation framework that has severely degraded the material conditions under which extractive activities are developed. I also showed how microeconomic distortions caused by inward investment flows led to an exponential growth of personal debt and in that sense, how processes of financialisation mediate the process of extended urbanization from the global to the everyday life of the household.

As was argued in the Introduction, thinking about the political implications of planetary urbanisation was one of the core objectives of this dissertation. To the extent that this thesis is underpinned by geographical-historical materialist philosophy, I suggested that labour and relations of production were an important place to look for answers to the broad political questions that emerge in a context of complete urbanisation. Specifically, the purpose of Chapter Four was to reflect on the research question that concerned the type of labour transformations taking place in the Huasco Valley after the commodity boom and their emancipatory potential (if any). To answer such question, I revisited some key texts by Marx regarding technological change and labour and tried to interpret them against a contemporary

background of informatisation, lean production and flexibility. With the arrival of transnational mining, I showed how labour in the Huasco Valley has become increasingly unstable, temporary and precarious. I also illustrated how a burgeoning service economy has begun to replace traditional forms of labour like agriculture, mining and fishing. The chapter also showed how such emerging forms of production have set the foundations for a new matrix of social relations and political solidarity among erstwhile isolated communities in the valley.

Chapter Five continued to foreground the political register of planetary urbanisation, only this time not on the basis of labour but of commodity fetishism and of the contradictions implicit in large-scale infrastructural networks for urbanising nature. The purpose of this chapter was therefore to answer the research question regarding the pervasive invisibility that becomes attached to infrastructures underlying global circuits of production and exchange. In answering the research question, the chapter used the case of Huasco, a village in the valley of the same name that has been overburdened with thermoelectric plants aimed at powering the operation of mines. On the basis of UPE's work on the 'phantasmagoria' of urban infrastructural networks and on Maria Kaika's (2004, 2005) notion of the urban uncanny, the chapter showed how large-scale infrastructures in Huasco shared the same principles of exclusion and invisibility that affect the private space of the modern home and of the city – albeit in an amplified context of extended urbanisation. In illustrating how Huasco had been occluded from public view in Chile, the chapter concluded that the planetary extension of the urban form demands renewed engagements with notions of urban metabolism where the non-city is also considered a constitutive part of urbanisation.

Finally, Chapter Six continued to reflect further on issues of labour and production, and especially on the cultural ramifications of extended urbanisation. On the basis of the case of Creando Valle, an artist collective in one of the villages of the Huasco Valley, the chapter answered the last of the research questions, which concerns the types of artistic practice that emerge under conditions of extended urbanisation. In the midst of labour insecurity, ecological degradation and dispossession, Creando Valle has made of art a powerful means of empowering the community and of producing disalienated urban environments. Street theatre, performance, dance, urban intervention and murals have made Alto del Carmen –the smallest village in the valley-, a living artwork. In that sense, I argued that planetary urbanisation contains the potential to realise Lefebvre's idea of the city and everyday life as an *oeuvre* and not a product.

In this way, the thesis has presented an analysis of resource extraction through an original interpretation of Lefebvre's notion of planetary urbanisation. Such interpretation, which has drawn from and also built upon the lively scholarly discussion that has begun to emerge among critical urbanists on the urbanisation of the world, has been strongly grounded on the empirical examination of the processes of sociospatial transformation taking place in the Huasco Valley, a region thoroughly operationalised to serve the imperatives of transnational capital accumulation. In what remains, I will conclude by outlining the core contributions made by this thesis and also by identifying future avenues for research.

## **2. Key Contributions**

Through the exploration of the concerns addressed throughout the six chapters of this thesis, my intention has been to contribute not only to the field of urban studies broadly considered, but to urban political ecology as well. The Lefebvrian notion of planetary urbanisation, as well as its reinterpretation by critical urban scholars (see Brenner 2013, 2014; Brenner and Schmid 2013, 2014, 2015; Merrifield 2013, 2014; Angelo and Wachsmuth 2014), provides important elements with which to disassemble deeply entrenched dualisms between city and non-city, urban and non-urban, and nature and culture, which abound in studies of urban processes. In developing some of the ideas proposed by this emerging strand of work, I consider this thesis to be well-positioned to make three core contributions.

### *2.1. On the Political Implications of Planetary Urbanisation*

For Brenner (2009), critical urban theory not only needs to render visible the forms of enclosure, dispossession and exploitation associated with capitalist processes of urbanisation, but also to imagine concrete possibilities for overcoming them. So far, the research agenda of planetary urbanisation has not integrated the study of political organisation and revolutionary consciousness as a core objective for the development of such strand of work. This is unfortunate, as manifold processes of social mobilisation and political-economic contestation are unfolding across the variegated urban geographies of the world –whether in concentrated or extended forms. Brenner has repeatedly argued that the fragmented condition of such processes of social resistance undermines the possibilities for the type of scale-jumping manoeuvres required to form a consistent interurban, anti-neoliberal front (see for example Peck et al 2013; Brenner 2015). The analysis of such processes of urban struggle, however, have been equally fragmented as they have failed to foreground one of the most pressing political questions of the twenty first century, which is the materialisation (or lack thereof) of a global urban working class. In a recent interview, Paul Robbins admitted that political

ecologists –including himself-, had inexplicably bypassed the study of labour as a fundamental mediating force in the production and transformation of nature.<sup>141</sup> As argued in the Introduction, a similar claim has been recently made by Ekers and Loftus (2013) in the field of UPE, and by Selwyn in the field of International Political Economy (2014).

For Marx, it is only the revolutionary movement of the labouring classes as the subject-object of history which can fully actualise the supersession of bourgeois society. If as Friedrich Engels (2009 [1845]) claimed in his study of industrial urbanisation in nineteenth century England, every factory built in the country bears in it ‘the germ’ of a manufacturing town, then the urban explosion we are currently witnessing should constitute fertile ground for studying the emergence of new forms of working class consciousness and solidarity. By firmly rooting my analysis in labour transformations in the Huasco Valley, I have intended to show how production needs to be directly integrated into the research agenda of critical urban theory. If there is no insistence upon relations of production, then critical urban theorists will possibly overlook one of the most important contributions of Marx’s materialist philosophy of history. Studying the political ramifications of planetary urbanisation should necessarily encompass an exploration of labour and production, and the case study of the Huasco Valley could provide some initial elements for such purpose. In a recent article published at *Jacobin Magazine*, Joe Allen (2015) argues that the political potential of the workers involved in sprawling production and supply chains is enormous and can actually hold the key to elevate the organisation and politics of the entire class. After all, and in line with Castells’ (1977 [1972]) reading of the urban, planetary urbanisation would be nothing but an attempt at organising labour globally. It is in the latent political power of labour in a context of real subsumption –and possibly in no other place-, where we should start to imagine a society beyond capital.

## 2.2. *On the Necessity for Empirical Studies of Planetary Urbanisation*

To the extent that the field of planetary urbanisation began as a theoretical attempt to rework and build upon Lefebvre’s ideas on the urban, its programmatic statements have been more speculative and analytical than empirically grounded. Although this is a necessary moment in the complex task of theory-building, it is of much relevance to confront theoretical speculation with empirical explorations of actual processes of urbanisation. In a recent commentary on

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<sup>141</sup> For Robbins, all value comes from labour, and value is one of the most –if not the most- fundamental mediating engines in environmental change. Interview available at the Entitle Blog (<http://entitleblog.org/2015/03/01/paul-robbins-on-labour-and-political-ecology/>, accessed 21 April, 2015).



Brenner and Schmid's article "Towards a new epistemology of the urban?", published this year by the journal *CITY*, Richard Walker (2015) gives a scathing critique of the planetary urbanisation framework on the basis of its disproportionate attention to questions of 'philosophy/metaphysics' over what he considers to be the 'hard work' of urban studies. Although such critique is arguably based upon a distorted and caricatured reading of Brenner and Schmid's work, it nonetheless raises a legitimate point, which is the importance of systematically striving to produce empirically grounded urban research.

Although the purpose here is not to defend Brenner and Schmid against such criticisms, it is worth stressing that their research clusters were already aware of the importance of complementing theoretical speculation with actual empirical research. For the last few years, these authors have been developing a research project on 'Extreme Territories of Urbanisation', which is scheduled to be published as an edited volume with case studies of 'pristine' and geographically remote regions of the world that have been dramatically transformed by extended forms of urbanisation. In this sense, I consider this dissertation to be well-equipped to make specific contributions to such strand of work, which would constitute a 'second phase' of sorts in the development of the research agenda of planetary urbanisation. In my view, the case of the Huasco Valley is particularly illustrative of the inner workings and actual effects of extended urbanisation and may well be able to illuminate future scholarly work on the subject.

### *2.3. On the Advancement of UPE's Conceptual Framework*

Although UPE scholars have made ground-breaking contributions to the ways in which we understand the relation between nature and urbanisation, the focus of analysis has been placed exclusively on cities. This obscures all the entanglements and networks of processes that include the city but stretch far beyond its boundaries, and for this reason Angelo and Wachsmuth (2014) have argued that the field should reorient itself in order to become a political ecology of urbanisation, instead of a political ecology of *cities*. This is no easy task, as it involves a process of theory-building that is able to extend its conceptual repertoires in order to encompass other morphologies of urbanisation. Therefore, and although the chapters of this dissertation (especially Chapters Two and Five) do not propose a specific programmatic statement on how to reformulate UPE, they nonetheless indicate potential avenues and offer certain elements for the elaboration of such research agenda.

To begin with, the selection of the research sites of Chapters Two and Five (both of which engage directly with UPE) reflects my aspiration to avoid privileging the city as the sole category of analysis. Chapter Two considered the socioecological impacts of policy instruments regarding resource extraction and investment at the national level, and this entailed adopting a view of the urban as process and not as settlement type. Chapter Five focussed on energy production in Huasco, a place that could be hardly considered a city in terms of population density or demographic heterogeneity, but that plays an important part in the metabolic flows that contribute to the ongoing reproduction of distant cities. Also, and besides the selection of research sites, I have sought to contribute to UPE by establishing a direct dialogue with some of the ideas developed by key authors in the field, such as Maria Kaika and Erik Swyngedouw. Much of the work developed by UPE has an immense potential to complement and speak directly to scholarly work on planetary urbanisation, so I see this thesis as a potential first step in going beyond mere criticism and create a much needed dialogue between the two.

### **3. Future Avenues for Research**

Insofar as the field of planetary urbanisation is currently on a preliminary stage of theoretical and methodological formulation, there is naturally a broad range of issues that need to be broached and figured out. As research for this thesis progressed, I was particularly astonished by the technical dynamism and sophistication of contemporary forms of resource extraction. As Bridge (2009) contends, getting oil, food, metals, coal and gas to travel the world through complex global infrastructures is something far from trivial and has required massive concerted efforts from science, technology and law. Just as industrialised forms of mining and agriculture produced dramatic material and sociocultural shifts in the countryside during the nineteenth and twentieth centuries, I became increasingly interested in how contemporary forms of resource extraction –which have been qualitatively rejuvenated by ground-breaking innovations in information technologies, biotechnology and flexible accumulation-, seem to be exerting an even greater transformative effect.

For example, Manaugh (see Maisel 2013) notes how the territorial impacts of open-cast mining have been dramatically amplified by sophisticated cybernetic systems and geological modelling tools that allow engineers on the ground to monitor the fluctuations of international commodity markets in real time, and on that basis, redesign the shape of the mining pit at an almost hourly rate. Even the slightest price increase makes the extraction of lower-grade metal ores financially profitable and this means that, similarly to what happens in the Toyotist system of lean production, supply is shaped by constant ‘just in time’ reaction with the market.

In this context of untrammelled technical sophistication, Tsing (2005) notes how the boundaries between various kinds of expertise become blurred, because “geologists... must be promoters to raise the money to finance their mineral finds, market analysts must be geologists to evaluate those finds, and stock promoters must explain their offers in geologically convincing terms” (p. 60). Besides information technologies, innovations in biotechnology have likewise contributed to the radical transformation of extraction. Labban (2014a) illustrates how the introduction of microorganisms to metal ore mining has enhanced microbial metabolism and extended the material basis of extraction to new reserves by harnessing the process of extraction at the molecular-cellular level. This leads Liam Young (in Manaugh 2013) to argue that geographies of extraction have become ‘constructs of technology’ that render accelerated geologies whose very physical configurations are not shaped by rivers, tectonic shifts or weather systems, but by virtual indexes and data-processing platforms.

In light of such considerations, my immediate future research projects will interrogate these layers of technological innovation that not only are remaking biophysical systems in the image of capital, but are also reconfiguring everyday life and human productive subjectivity in operational landscapes for resource extraction. The projection of these intelligent machines and infrastructures across the rural realm is creating new iterations of industrial urbanisation and new encounters with technology. The sudden appearance of the machine in the garden, said cultural critic Leo Marx in the 1960s (2000 [1964]), is “an arresting, endlessly evocative image”, one that produces an instantaneous clash between the seemingly opposite states of mind of the rural myth and industrial urbanisation as a counterforce to that myth (p.229). During my fieldwork in the Huasco Valley, narratives of encounters with machines and new technologies –from power plants to surveillance cameras and smartphones- ran like a thread through my interviews and conversations with communities. Such encounters are complex and contradictory, because on the one hand these technological infrastructures form breeding grounds for socioecological degradation and dispossession, but on the other, they set the foundations for vibrant forms of political organisation, association and metabolic interaction with extra-human natures.

In my post-doctoral work, I intend to explore the technical underpinnings of these processes of sociospatial change in order to reclaim a materialist conception of technology that provides an alternative to the naïve ontologism of STS and ‘assemblage urbanisms’ on the one hand, and to the pastoral visions that abound in contemporary environmentalist thought, on the other. In the *Manuscripts* of 1844, Marx (2007 [1844], p. 109) argued that the history and objective

existence of modern industry constituted nothing less than the “open book” of the essential powers of the individual. Through this worldview, he pioneered a modernist humanism of the highest pitch that eschewed unilinear and simplistic readings of technological change, and that instead foregrounded the recalcitrance of nonhuman nature and the intransigence of human freedom. My purpose will therefore be to investigate further the context of planetary urbanisation in Latin America and use resource extraction as a springboard to reflect on the role of technology at a time of generalised socioecological crisis.

## APPENDIX

### List of Interviewees

Álvarez, Patricia, Council for the Defence of the Huasco Valley (Santiago, 28 November 2013). Patricia Álvarez is one of the leaders of the Council for the Defence of the Huasco Valley, and has been active in the struggle against Barrick Gold and its Pascua Lama project since the late 1990s.

Brenner, Neil, Harvard University's Urban Theory Lab (Cambridge MA, 18 October 2013). Brenner is a leading theorist of planetary urbanisation.

Bou, Francisco, Association of Smallholders of Alto del Carmen (Alto del Carmen, 2 December 2013). Francisco Bou is a local pisco (pisco is Chile's traditional alcoholic beverage) producer who has been opposing the negative effects of the Pascua Lama mine in the Huasco Valley.

Cisternas, Andrea, Freirina Conciente (Freirina, 5 December 2013). Andrea is the leader and spokesperson of Freirina Conciente, the social movement opposing the pig-processing plant adjacent to Huasco.

Cuenca, Lucio, OLCA (Santiago, 23 December 2013). Lucio Cuenca is the Director of the OLCA, and one of the most experienced socio-environmental activists in Latin America. He has been working closely with local communities across Chile and Latin America.

Drury, Peter, Amnesty International (London, 20 June 2013). Peter Drury worked at Amnesty International, helping to promote accountability from states and corporations in terms of human rights violations. Some of his ongoing investigations had to do with bad practices from coal mining companies in Latin America.

Fierro, Julio, Terrae (Bogotá, 26 September 2013). Julio Fierro is a renowned geologist and mining expert in Colombia, where he has edited several books that document and raise awareness about the pervasive effects of large-scale mining.

Fonseca, Carmen, RECLAME (Bogotá, 10 October 2013). Member of a nation-wide network against transnational mining in Colombia.

Fuentealba, Soledad, SOS Huasco (Huasco, 4 December 2013). Leader of SOS Huasco, the social movement that opposes the production of dirty energy in Huasco.

Galpin, Ixent, London Mining Network (Manchester, 3 May 2013). Galpin is an activist against transnational mining, and has broad experience working with local communities in conflict.

Guerrero, Jorge, Council for the Defence of the Huasco Valley (Vallenar, 3 December 2013).

Infante, Consuelo, OLCA (Santiago, 11 December 2013).

Karmy, Javier, Semillas de Agua (Santiago, 27 November 2013). Javier Karmy is one of the leaders of Semillas de Agua, a civil society organisation that convenes a radio show titled “the voice of communities”, where local leaders of communities in conflict are interviewed.

Labrín, Juan Carlos, SOS Huasco (Huasco, 4 December 2013). Juan Carlos Labrín is an activist and local musician who has toured Chile on several occasions in order to raise awareness about the negative effects of large-scale mining.

Montaña, Carlos, Planning Department of Vallenar (Vallenar, 3 December 2013).

Pachacutec, Amaru, Tawantinsuyu Nation (London, 19 June 2013).

Roa, Tatiana, CENSAT Friends of the Earth Colombia (Bogotá, 24 September 2013).

Rojas, Yahir, Huasco Valley Socioenvironmental Movement (Freirina, 5 December 2013).

Solly, Richard, London Mining Network (London, 17 June 2013). Solly is the co-ordinator of the London Mining Network.

Urqueta, Valeska, Creando Valle (Alto del Carmen, 1 December 2013). Creando Valle is the local artista collective based in Alto del Carmen that opposes the Pascua Lama mining project through artistic and cultural practice.

Urrea, Danilo, CENSAT Friends of the Earth Colombia (Bogotá, 6 September 2013).

Winstanley, Louise, ABColombia (London, 20 June 2013).

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